

URBAN PLANNING, PUBLIC SPACE & MOBILITY



YOUNG PLANNERS WORKSHOP 2016

Creating our futures

ECTP-CEU

European Council of Spatial Planners
Conseil européen des urbanistes

© Authors (Planners from ECTP-CEU Young Planners Workshop 2016)

URBAN PLANNING, PUBLIC SPACE & MOBILITY

ECTP-CEU young planners workshop

ISBN: 978-2-9601363-5-7

EAN: 9782960136357

First edition, 2016

ECTP-CEU

Editor: ECTP-CEU

Coordinator: Ignacio Pemán

Graphic designer: José Luis de Miguel

Editor Address:

ECTP-CEU

Avenue d'Auderghem 63

B-1040 Brussels - Belgium

<http://www.ectp-ceu.eu>

INDEX

Presentation

Joris Scheers, President of ECTP-CEU

Introduction

Ignacio Pemán Gavín, ECTP-CEU Young Planners Workshop Chair

Papers

1. Measuring the Pedestrian Experience in Dublin: The Role of Urban Design Theory in Understanding and Re-designing Public Space in Cities

by Fergus Browne & David Jordan

2. Ethnic diversity and public spaces: A crucial symbiosis

by Daniel Radai

3. Mobility - An Outcome of Comprehensive Planning and Integrated Urban Design Solutions

by Allie Biggs, Tomás Bradley, Hannah Breshears, Seamus Donohoe & Rachel Ivers

4. Creating and Maintaining Access Routes into City Centres to Facilitate Greater Pedestrian Permeability: A case study of Cork City

by Shauna Mc Gettigan & Matthew Cox

5. Interaction between design of public spaces and pedestrian mobility in city branding effort of Novi Sad (Serbia)

by Stefan Škorić, Dijana Brkljač, Aleksandra Milinković & Milena Krklješ

6. How to improve urban mobility through general urban plan?

the case study of the city of Šabac, Serbia

by Ksenija Lukić, Bojan Alimpić & Branislav Antonić.

7. The Movement of Lisbon. Study of the urban mobility space in the city and its Planning

by Rita Isabel Graga Catarino

8. Cycling in a megacity: the case of London

by Graziano Di Gregorio & Simona Palmieri

9. Sustainable Urban Mobility Plans in Spain. Assessment of walking promotion and its impact in the quality of public space

by Mateus Porto Schettino

Final conclusions

Jonathan Manns

PRESENTATION

By Joris Scheers, President of the ECTP-CEU

Dear reader,

The annual Young Planners Workshop is strongly promoted and supported by the European Council of Spatial Planners (ECTP-CEU). One of its central objectives is to bring young planning professionals together from different parts of Europe. By doing so, participants experience in a very direct way how different viewpoints and approaches of different planning cultures can bring on a variety of solutions to specific planning issues. The Working Group offers great networking opportunities, but is above all designed for on-the-spot learning by discussing and valorizing input from many young professionals. A variety of methods, instruments and techniques relevant for spatial planning is presented during the workshop. This way, participants experience the relevance and dynamics of spatial planning as it is implemented in different cities and regions throughout Europe. By tackling real planning projects, the planning professionals can contribute to real improvements of our environment, our social condition and our economy. The added value offered by the spatial planner is definitely the integrative approach. By visualizing the different consequences sectorial decisions can have on the spatial development of a specific place, a real coherent set of solutions can be examined.

This year's Working Group focused on urban planning, public space & mobility. At the occasion of the 11th European Planning Awards ceremony last July, the workshop members gathered in Brussels. The call for proposals led to a wide range of submissions from many different

parts of Europe. It is because of this enthusiastic response that the 2016 event became a big success. The Working group pursued their discussions after the Awards ceremony, reaching the conclusions that are presented in this e-book.

Let me recommend the e-book to all - young and older - spatial planners, members of the ECTP-CEU member associations throughout Europe, not only to inform themselves on the topic and the approach by different teams, but also to encourage young planners to partake in the 2017 Young Planners Workshop event.

Finally, I cannot conclude without thanking Ignacio Peman, member of the ECTP-CEU Executive Committee and representative delegate from the Spanish association AETU, who not only initiated the young planner's workshop, but is the untiring promotor and organizer of the working group, as well as final editor of this e-book. Thanks a lot, Ignacio!

INTRODUCTION

By Ignacio Pemán Gavín, ECTP-CEU Young Planners Workshop Chair

1.- Urban planning, public space and mobility

This publication contains the findings of the ECTP Young Planners on the topic "Urban planning, public space and mobility". The results were presented in Brussels (Belgium) on June 3rd-4th 2016 in the frame of 11th European Urban and Regional Planning Awards 2016 organized by ECTP-CEU and hosted the Committee of the Regions.

Public space and mobility in the cities of the XXI century is still one of the most important challenges of our urban life. Since the sixties the car has been the predominant mode of transport in our cities and is also the cause of two of the basic problems of our cities: urban pollution and loss of quality of streets and public spaces.

Regarding urban pollution it is not necessary to question if urban pollution is caused by cars. Many International and European official documents point out urban transport cars as one of the most important causes of CO2 emissions, road accidents, and urban congestion.

As reminder, the European Commission has indicated that "cities suffer most from congestion, poor air quality and noise exposure. Urban transport is responsible for about a quarter of CO2 emissions from transport, and 69% of road accidents occur in cities" (European Commission, 2011, pp. 7, Section 2.4 article 30).

Cars not only remove citizens from the streets, but are also one of the causes of their death. To solve this, the European Commission points out that "demand management and land-use planning can lower traffic volumes...facilitating walking and cycling should become an integral part of urban mobility and infrastructure design (European Commission, 2011, pp. 7, Section 2.4, article 30 &31)".

But after decades of urban policies aimed at reducing car use, the results have been very different. In leading cities, walking and cycling facilitate over 40% of the daily urban trips, [European Environmental Agency 2013] but in many European cities cycling is almost non-existent.

The loss of quality of public spaces and streets is other consequence of the dominant role of cars as way of transportation. Even nowadays, city planning focuses mainly on new infrastructures for cars and urban transport. Consequently, streets and public spaces have lost their former functions of meeting and relationship places.

This context reminds us the high profile of Jane Jacobs; a figure and legacy who we celebrated the 100th birthday in 2016. Jacobs' theories and ideas are central to many different urban perspectives and one of her most important topics she defended was *"urban streets as the main spaces where social interaction takes place must not be ignored"*. Indeed her description of cities in the sixties could be transferred to our cities today: *"Since the 1960s motorways and large retail areas have replaced existing streets, tearing the urban fabric and transforming the qualities of the urban landscape"*.

Jane Jacobs had a clear idea of how streets could recover its former functions: "A sidewalk life arises only when the concrete, tangible facilities it requires are present. (...) If they are absent, public sidewalk contacts are absent too." -Jacobs Jane, *The death and life of great American cities*, The Modern Library, New York 1961, 1993, P92-

But streets are not only sidewalks, parks and avenues; public spaces are also surrounded by buildings. In the opinion of Jane Jacobs the encounter between streets and buildings are necessary to get a street alive: "Streets and their sidewalks are framed by buildings. These buildings provide the important threshold between public and private spaces. They are the *tangible facilities* that allow streets to be vibrant public spaces. If buildings fail to provide permeability, harmony and rhythm, the street as public space suffers".

In the book published this year *-Jane Jacobs: The Last Interview & Other Conversations* (Melville House, 2016)-, Jane Jacobs insisted in her *public spaces solutions*: "We should get rid of automobiles, but in a positive way. What we need is more things that conflict with their needs—wider sidewalks, more space for trees, even double lines of trees on some sidewalks, dead ends not for foot traffic but for automobiles, more frequent places for people to cross streets, more traffic lights—they're an abomination to automobiles, but a boon to pedestrians".

Saskia Sassen reminded her memory in a recent interview highlighting two important thoughts developed in this e-book. On one hand the importance of place: "She continuously returned to the issue of "place", and its importance when considering the implementation of urban

policies – notably the loss of neighbourhoods and erasure of local residents' experiences"¹.

And on the other hand, Saskia Sassen emphasised the importance of Jane Jacobs approach of the micro level to face urban problems: "Her input made me shift my thinking to more "micro" levels; I am still doing quite a bit of work today on the need to re-localise pieces of national and city economies".

Jane Jacobs thoughts, concerns and solutions are partially developed in this e-book, such as public spaces use as a right of citizens, cars as a problem, zoning as one of its causes, and the importance of the micro urbanism for finding solutions. In the same way that Ann Forsyth & Kevin Krizek, the papers confirm that urban design considerations and practices "can be different if the experience of walking and bicycling was provided a more central place in key dialogues regarding the future of cities" - Urban Design: Is there a Distinctive View from the Bicycle?, Journal of Urban Design, Vol. 16. No. 4, 531–549, November 2011-

This e-book addresses these same concerns, and the articles included combine theories and practical experiences from western and eastern European cities. *The findings of the workshop confront public spaces and mobility from different perspectives although from the same starting point : cities need liveable streets, public realm as wider perspective of public space, urban design from pedestrian experiences, bicycle as an alternative. Interesting proposals are proposed on how to remove cars from the core of planning and introduce the vision of pedestrians, how*

¹ <https://www.theguardian.com/cities/2016/may/04/jane-jacobs-100th-birthday-saskia-sassen>.

seeking alternatives from car use and how to improve streets design; and finally how to give voice to citizens and listen to their experiences.

2.- Papers, different perspectives for a complex challenge

Nine papers are included in this e-book related to public spaces and mobility (pedestrian and bicycles). As mentioned above, papers analyse this topic from different perspectives which can be divided into three different groups: a) Public spaces from the pedestrian perspective; b) Public spaces and urban mobility and c) Specific research on bicycle as way of transport.

2.1. Approach on public spaces from the pedestrian perspective.

Four papers focus on public spaces and streets from the pedestrian perspective. One of these papers describes the links between public space design and the pedestrian experience: a psycho geographic map of Dublin. This paper, entitled Measuring the pedestrian experience in Dublin: the role of urban Destiny theory in understanding and re-designing public space in cities explains how urban theories of Debord, Benjamin, Lynch or Gehl about the experience of the city “can be utilized to measure and promote better quality and responsive public spaces”. The paper argues that “a greater link between pedestrian experience and the design of public spaces need to occur” and hypothesizes that “the success or failure of many city projects and interventions can be simply explained by citizen assessing”.

The paper entitled Cultural diversity vs. public spaces: A crucial symbiosis offers also an interesting preliminary reflection on urban public life and spaces theories. A complete list of authors like Harvey, Amin, Kymlicka or Capel, on society’s right to shape its environment, are summed up in its

preliminary approach. From this starting point the paper explores “*how public open spaces can contribute to environmental, social and economic sustainability in close inter-relation to tackle socio-spatial inequalities*”. In particular, this paper deepens on how “*can small-scale open space interventions be most beneficial for local inhabitants in a degrading urban area with a disadvantaged ethnically diverse population*”.

The starting point of Creating and Maintaining Access Routes into City Centres to Facilitate Greater Pedestrian Permeability: A case study of Cork City is “the low quality of current pedestrian access routes which discourages people travelling by foot into Cork city centre from these sites along”. Its hypothesis is that “to reduce the use of the car is necessary to improve designate key pedestrian routes”. This paper summarizes in a preliminary chapter the main urban planning and specific plan on walking and mobility approved in Cork and the paper concludes that it is “still necessary to adopt more measures to improve cycling and walking in city centre”.

Finally, the paper entitled Interaction between design of public spaces and pedestrian mobility in city branding effort of Novi Sad (Serbia) starts from the idea of “Loss of quality of public spaces and streets as a result of the absolute role of cars as way of transportation” and explores the “relationship between the design of public spaces and walking capacities”, in order to its reconstruction. From this starting point, the paper aims “to propose possible directions for revitalization of analysed urban components, in order to create a comfortable, liveable and 'pedestrian friendly' network of public spaces within acceptable walking distances”.

2.2.- Urban mobility.

In a second group, two articles analyse mobility from a general perspective. *How to improve urban mobility through general urban plan?* analyses the city of Šabac –Serbia- as a typical example of post-socialist transformation of middle-size Central and Eastern Europe city and its relation with “newly-born “car culture”, all of which has been proved as one of the main global challenges in the last decades. The paper proposes some solutions although being aware of “the difficulty to improve mobility in the time of scarce financial resources and limited institutional capacities”. Interesting solutions for central city are proposed “especially easy-implementable and inexpensive actions” regarding parking solutions and friendly streets for walking.

The movement of city of Lisbon” Study of urban mobility in City and Urban Planning describes urban planning of the city of Lisbon regarding movement solutions. Particularly, analyses the new Plano Director Municipal (2012) where the system of mobility is one of the main vectors of the city’s planning model. In this frame, the paper describes the transformation of Lisbon’s radio centric model, the reticulated multifunctional model, the requalification of the radial old structure and finally the revitalization of historical axis and rehabilitation of consolidated fabric. It especially addresses the Program “Uma Praça em cada Bairro” in order to organize a meeting point from the local community, a micro centrality that concentrates activity and employment.

2.3. Urban cycling planning.

Finally, a third group analyses the mobility from the bicycle perspective. Three groups can be included: a) Comparative approach between two

Irish and Dutch cities on the same scale; b) bicycling in London and c) the mobility plans in several Spanish cities.

Mobility: an outcome of comprehensive planning and integrated urban design solutions analyses differences between Irish and Dutch city centres regarding the implementation of cycling transport for concluding the different situation in Dublin and Amsterdam or between Adamstown and Houten. For the authors, the research shows that “mobility cannot be considered in isolation so comprehensive planning and collective approach towards walking and cycling infrastructure in an integrated urban design is important to improve the current situation in Irish cities”.

Cycling in a Megacity: The Case of London contributes to the study of cycling from the perspective of megacities. In the opinion of the authors, cycling in a megacity is surely more problematic than small or medium cities but also can get more benefits: “Would highly benefit in term of... cost, space efficiency, energy conversation, personal health equitability, safety, speed”. This paper focuses particularly on the London strategy London Cycle -2010- to conclude that there is still a long way to go and cycling has taken a more serious range of policy.

Finally, *Sustainable Urban Mobility Plan in Spain*, analyses the document implemented in many Spanish cities -Sustainable Urban Mobility Plan- to conclude that “there is an unbalanced attention to each mode of transportation in the diagnosis and the corresponding proposals sets. Proposals and actions are mainly infrastructural”.

3.- Debate and conclusions.

Debate and questions raised by participants along the working online (April-June) to prepare the final presentations in Brussels were led by the the workshop facilitator Jonathan Manns, who has also written the conclusions of the workshop.

To conclude, I would like to congratulate all participants for their excellent work; to thank the ECTP-CEU Executive Committee for its support, Michael Stain for his participation in the final meeting in Brussels, to Dominique Lancrenon, General Secretariat, for her faith in this project and to Julian Hills who is always there when needed.

**MEASURING THE PEDESTRIAN EXPERIENCE IN DUBLIN:
THE ROLE OF URBAN DESIGN THEORY IN
UNDERSTANDING AND RE-DESIGNING PUBLIC SPACE IN
CITIES**

BY FERGUS BROWNE & DAVID JORDAN

Measuring the Pedestrian Experience in Dublin: The Role of Urban Design Theory in Understanding and Re-designing Public Space in Cities

by Fergus Browne & David Jordan

Abstract

This paper examines the pedestrian experience as a frequently overlooked factor in city planning and design and demonstrates how urban theories can be utilised to measure, understand and promote better quality and more responsive public spaces. Too often urban design theories remain in the realm of academic discourse and although contributing implicitly to the formulation of policy, are rarely explicitly invoked. By distilling and applying these theories, it has been illustrated that such an approach enables the complexities of the city to be represented and understood from the perspective of the pedestrian. This paper is divided into two distinctive areas: theory and practice. In discussing theory, the bifurcation of urban design discourse into two distinct strands of the psychological and physical cities, provided an enhanced awareness and appreciation of the plethora of urbanism fields to which human perception and experience relates. By reflecting on a number of urban design-based studies, as previously conducted by the authors in Dublin, a case is made that such an alternative approach lends a greater understanding of cognitive perceptions to urban environments. Individually, they were designed to give specific information required as part of evaluating an urban space, but collectively the studies provided a series of vital buildable layers offering an insight into how a person experiences and interacts with a city on a daily basis and providing an indicator of the physical catalysts which impact on this relationship. The research argues that a greater link between pedestrian experience and the design of the public realm needs to occur and will demonstrate how this connection is frequently missing, leading to the production of non-responsive

public space which fails to engage the pedestrian user. This paper aims to deliver a universal lesson that successful urban spaces are the ones which are the most responsive to the needs of the pedestrian. Indeed the authors believe that only through the adoption of a pedestrian-centred approach to designing and managing the public realm will sustainable mobility be fully realised in European cities.

1. Introduction

'Great cities start with great pedestrian environments'

(Jan Gehl, 2010)

'I'm a pedestrian before I'm a driver, a rider, a passenger, a worker, or a shopper'

(Seth Ullman, Project for Public Spaces, 2013)

For the pedestrian, the contemporary city can be a hostile place. Notwithstanding the fact that they are the giver of vibrancy and the embodiment of sustainable mobility, their vital role is often overlooked. Commendably, the current development paradigm witnessed favours investment in sustainable movement and restrictions on the private car. Despite this shift away from unsustainable mobility, the present situation in many cityscapes sees the pedestrian pushed to the margins of a car-dominated environment, engineered to accommodate and maximise the flow of traffic. This has the unfortunate effect of both inhibiting the pedestrians' experience of the city while also compromising their ability to fully contribute to its vitality. In such scenarios the city is indeed a hostile place for the humble perambulator.

Within this narrative, this paper will examine pedestrian experience as a frequently overlooked factor in city planning and design, demonstrating how urban theories can be utilised to measure, understand and promote better quality and responsive public spaces. Too frequently such theories remain in the realm of academic discourse and although contribute implicitly to the formulation of policy and plans for urban spaces, rarely are explicitly invoked. This paper seeks to demystify theory, illustrating not only how it is timely and useful for cities to embrace this approach, but also demonstrating how various practical studies conducted by the authors' in Dublin were inspired by certain principles, enabling the complexities of the city to be represented and understood from the perspective of the pedestrian. The paper elucidates that a poor quality or poorly managed urban environment has the ability to exclude a pedestrian from a space, both physically and psychologically, contributing to lasting negative perceptions of a particular area. By drawing on the work of Lynch (1960), Debord (1956a; 1957), Bosselmann (1998), Gehl (2006 et al.; 2010) and others, a number of experiments were carried out in Dublin to gain a greater understanding of cognitive perceptions to urban environments.

Utilising both the theoretical basis and the results of these specific experiments, the paper argues that a greater link between pedestrian experience and the design of public spaces needs to occur. It will demonstrate how this link is frequently missing, leading to the production of non-responsive public space, which fails to engage the pedestrian user or address pre-existing problems. This paper hypothesises that the success or failure of many spatial interventions can be explained by assessing whether the citizen is truly engaged and whether the design is based on their needs. Indeed the authors believe that only through the adoption of a pedestrian-centred approach to designing and managing the public realm will

sustainable mobility be fully realised in European cities. To this end an alternative people-focused methodology for evaluating and planning public space will be outlined.

2. Theoretical explorations of the pedestrian experience

In order to articulate and convey how certain principles have been extrapolated from the theoretical discourse and were the source of inspiration in the development of a working methodology to studying public space, the two themes of the psychological and physical cities will be discussed below. The study of human experience provides policymakers, planners and designers with the essential knowledge required to produce responsive and engaging designs for public space.

2.1 The Psychological City

Urban theoretical discourse frequently evokes the revered Baudelairean flâneur as the archetypal urban perambulator, who transgresses between the physical and metaphysical planes of the city at ease, representing the nexus between the conscious and unconscious state, by being simultaneously part of, but removed from the city (Benjamin, 1939). The flâneur is acutely aware of the Lefebvrian metropolis, where space is socially constructed (Lefebvre, 1991) and as a detached urban observer consciously repudiates the physical constraints imposed by authorities by exploring an alternative, sometimes un-explored facet of the city.

The psychology of walking through the city has also been explored by Michel de Certeau (1984), where he defined two conflicting modes of moving through the urban environment, that of adhering to the imposed strategies of the governing city authority, following their wayfinding and designated routes, and the manner in which a pedestrian tactfully repudiates these

constraints, navigating alternative routes which cross socially constructed boundaries. The division of the city into the two modes of physical and psychological is further complicated by the fact that each is in a constant state of flux, where one influences and is influenced by the other.

Guy Debord is credited for developing the field of psychogeography (Debord, 1955), one of the experimental fields which emerged from the Situationist International, a political and artistic movement (1957-1972). Advancing Baudelairean and Benjaminian *flânerie*, the Situationists called for a re-imagined form of urban cartography rejecting the phantasmagoric mise-en-scène of Benjamin's city (Mitchell, 2012). Guy Debord's *The Society of the Spectacle* (1967) was the most influential work to emanate from the movement, which rejected the notion of the Spectacle or consumer orientated society in favour of freedom and spontaneity. One of the principle concepts of the theory is *dérive*, which is illustrated in Debord's map of Paris titled, *The Naked City* (Debord, 1956a; 1956b; 1957). Psychogeographic mapping is based on the notion of *dérive* or drift. *Dérive*, like the practice of *flânerie*, is allowing oneself to drift or wander through the urban environment but unlike Benjaminian *flânerie*, takes a non-passive stance against the spectacle of the contemporary society (Mitchell, 2012). In Debord's *The Naked City*, the map of Paris is dissected into different spaces representing distinct atmospheric unities of the city. These are then arranged relating to the perceived distances between them, where the arrows represent the most frequently used crossings between the spaces. Psychogeography allows the city to be explored in different ways, where perception and ambience are central. It gives a degree of artistic freedom when evaluating urban spaces while attempting to map the actual lived realities of spaces. The result can give an indication as to the psychologically perceived connections and barriers within an area. While similar to Lynch's

(1960) mental mapping, a greater emphasis is placed on the artistic process of allowing oneself to be drawn by situations and emotions, rather than by the physical environment alone.

This theme is continued by Peter Bosselmann (1998) who asks if the complexity of the world can be adequately represented through abstractions, noting an apparent dichotomy between lived experience and conceptual design. His research seeks to improve visual communication in urban design, dealing with the ideas of experience, representation and reality. The experiments he carried out relating to the perception of time emphasise the importance of rhythm and scale in the experience of a space. Bosselmann mapped out a 350 metre walk in Venice as a control. This took 4 minutes and was accompanied by 39 sequential pictures of the route. He then mapped a series of 350 metre walks in a range of cities of different urban scales. He found that the same 350 metre walk taken in different cities appeared to take longer or shorter. The placement of recurring elements or rhythm and the urban scale of different cities were found to influence the perception of time.

2.2 The Legible City

The physical environment of a city is a key determinant on how people interact with and experience public space. Understanding how a city's physical attributes affect its inhabitants is perhaps best examined through the lens of a legibility study, as first pioneered by Kevin Lynch (1960). For Lynch the urban environment is an utterly complex entity where activities and urban form along with time and weather are ever changing and all interact to give the user a unique experience or image of the city. Lynch used the term 'imageability' to best describe how the quality of the built form, by the very nature of its design, colour and materials used in its construction, evokes a

strong image for the observer and creates a certain experience that is remembered. Lynch explains that the vividness and coherence of the environmental image is the crucial condition which lends a city character and legibility. Recognising that different people can have vastly different experiences of the same place, Lynch has refined this concept of imageability and applied it to examine common city experiences. Assessing this imageability of a city, his legibility study is based on the identification of five of the most common elements in a city: paths, edges, nodes, landmarks and districts. The result is, that in combination with interviews with 'city users', a mental map of the city is produced. The purpose of the study is to not only highlight and define a city's most striking characteristics but also to identify areas of the city that have problems of image. In other words areas in which the observer cannot easily relate to.

Similar to Lynch, the work of Jan Gehl is based from the perspective of the users of the space. However, whereas Lynch examined the urban morphology from a regional level, the perspective of Gehl's work is more local in nature. Indeed, the titles of some of Gehl's publications, 'Life Between Buildings' (1971) and 'Close Encounters with Buildings' (2006), allude to something more intimate; specifically how built form directly influences human behaviour. It is perhaps an interesting and revealing fact that Gehl's early research on city life is the product of collaboration with his psychologist wife.

The intervening decades of observing public space has given Gehl an incisive and authoritative understanding on the relationship dynamics between people and architecture. For example, he sees that the development of human biology has placed certain limits on our ability to observe and take in detail, as our eyesight is largely frontal and horizontal i.e. we can look

upwards 50° and from side to side by 90°. This therefore has implications for our relationship with buildings, as the closer we move to a building the less we will be able to see of it but the more detail we observe. This, Gehl argues gives the ground floor façade a crucial role in linking the scale of people and buildings. Furthermore, humans are designed to process their surroundings at a 5 km/h pace. This occurs in the presence of slow architecture i.e. buildings that are rich in detail especially on the ground floor.

In many contemporary cities the link between people and 5 km/h architecture has been broken by the presence of 60 km/h architecture. In other words, buildings designed for a car-based environment that are characterised by a lack of scale, texture and diversity of functions. Studies in Copenhagen have shown that people walk 13% slower in areas of interesting and lively façades, while people walk faster in areas of closed façades (Gehl, 2010). For successful and vibrant urban spaces, Gehl argues that there must be good close encounters with buildings. In practice this means that façades must be welcoming and transparent with many openings.

3. Theory into Practice – Measuring the Pedestrian Experience in Dublin

Inspired by the various theoretical discourses explored in section 2, the authors have sought ways to enrich their work by distilling and extrapolating ideas disseminated by such theories, developing a range of techniques and studies to survey the urban environment, in a manner which places the pedestrian experience to the fore and centre of the methodological process.

Figure 1: Case Study Areas within Central Dublin



In order to advance the arguments postulated by this paper a selection of the studies conducted by the authors from their work in Dublin will be explored in greater detail. The studies have been grouped into two broad themes: the pedestrian's journey through the city and the affect of the built form on the pedestrian experience. Individually and collectively, these thematic groups and studies will advance the merits of a people-focused approach to planning and urban design and explores the authors' alternative methodological approach and practice process, illustrating the transition from theory to praxis.

The featured studies have been taken from two case study areas in central Dublin: the River Liffey Quays and the South William Street Area (see above). The Liffey Quays are one of the defining features of the City, transecting the heart of the Capital. However they are also a space dominated by traffic, acting as a divider between the northside and southside of the City and underutilised as an amenity corridor. The South William Street area is part of the south retail core of the City. Its dense network of historic streets is for

the most part home to a vibrant environment of restaurants, cafés, bars and independent shops.

Figure 2: Liffey Quays (top left and right) and South William St. Area (bottom left and right)



While central Dublin is quite compact there are major issues with regard to movement within the area. Dependence on the private car as a means of transport is very high when compared to other European Cities, with 55% of commuters in Dublin City and suburbs using a car to get to work (Census 2011). Within the City Centre the picture is somewhat better with less than 25% of all journeys made by car (Howley & Clifford, 2009).

Despite this, a study by the City Council showed that the majority of routes within the City Centre, including the Liffey Quays are at or near capacity (Dublin City Council, 2008). Clearly, additional capacity can only be achieved

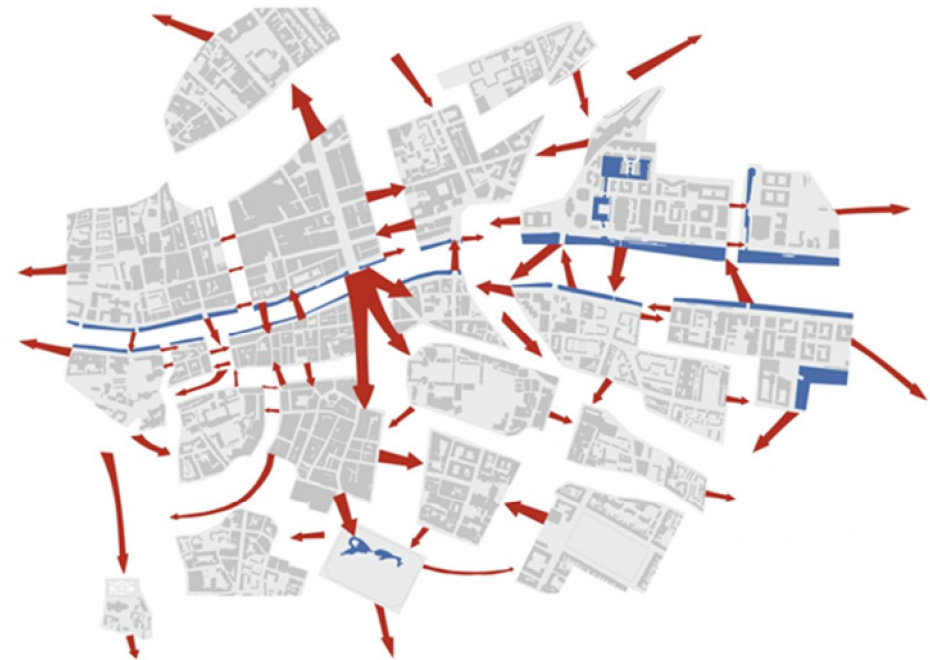
through the enhancement of sustainable modes of transport. Thus, in order to ease this transition away from reliance on the car, the public realm must first be redesigned for the person on the street.

3.1. The Pedestrian Experience – The Journey through the City

An alternative and non-conventional urban evaluation which places emphasis on the psycho-spatial landscape of the city is a useful starting point in re-imagining and re-mapping the urban environment from the perspective of the pedestrian. As part of the *21st Century Liffey* project, an urban design study and initiative founded and developed by the authors (Browne & Jordan, 2011; Jordan & Browne, 2013), psychogeographic cartographic practices were invoked, which were inspired by Guy Debord's *dérive* (1956a).

A psychogeographic walk was conducted by the authors, along with two visitors to Dublin over a number of days. This experimental study allowed a psychogeographic map of Dublin to be produced, which divided up a traditional map of the City into perceived atmospheric entities or character areas. The spatial location of the atmospheric entities on the map (see below) corresponds to their perceived distance from each other and the arrows indicate movement channels, where their frequency and size relates to the relative importance of the connection between the various urban areas (Debord, 1957; Browne & Jordan, 2011).

Figure 3: Psychogeographic Map of Dublin City Centre (Browne & Jordan, 2011)



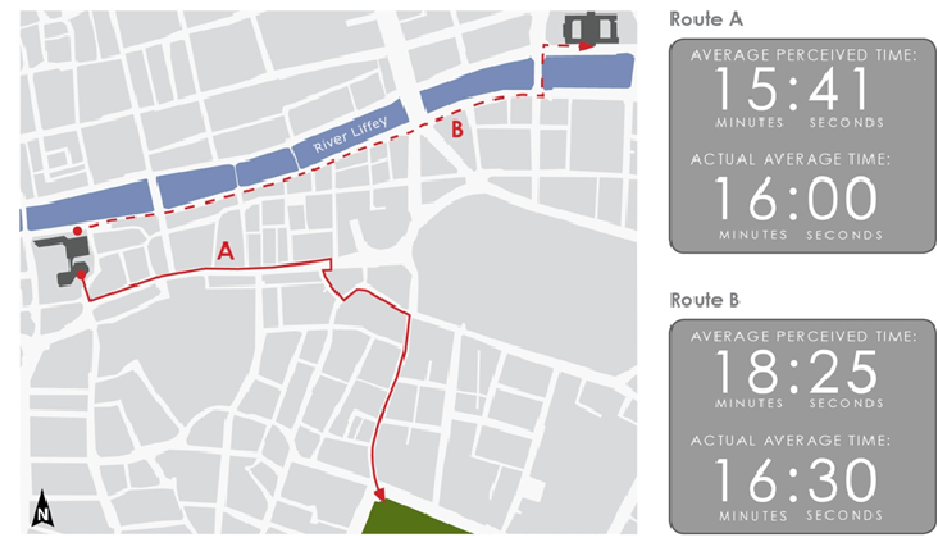
This form of urban analysis is very useful in assessing how the pedestrian experiences space and perceives the urban environment on a daily basis and provides an indication of the cognitive factors which affect where they go and how they respond to the situations they encounter. From the authors' experience, this study is beneficial in assessing a given urban space within the context of a citywide level, providing broad findings, which require further and more thorough assessment. For example, the psychogeographic map of Dublin further emphasised the notion that the River is perceived as a divider in the psychological division of Dublin into the northside and southside, where the Quays are not considered as a location in their own

right, but actually constitute the edge of adjacent character areas. The docklands are also perceived to be removed from the historic city quays, with a clearly defined zone of transition identified. In order to explain why this is the case, more detailed and site-specific studies were conducted.

This case study has illustrated the merits of psychogeographic analysis, emphasising the need for an urban design vision for the Liffey Quays, which not only addresses the space holistically, but also its connection to the wider City Centre area. An understanding of cognitive perception and psychological responses to the urban environment from the perspective of the urban perambulator in Dublin was a fundamental starting point in devising a strategy to achieve this.

As the pedestrian navigates through an urban space, their experience of time and distance walked varies greatly according to their surroundings. Thus an understanding of the factors which affect the perceived passing of time is a vital element for urban designers and planners to consider when re-designing or planning urban spaces and is an excellent example of a study which contributes towards measuring the experience of space, while assessing pedestrian permeability and mobility. Temporal perceptions of two routes (each 1,250m) in Dublin with an approximate duration of 16 minutes each were assessed using a questionnaire survey administered to staff in Dublin's City Council as part of a major public engagement exercise conducted during the 21st Century Liffey project (see below).

Figure 4: Temporal perceptions and the experience of the City (Browne & Jordan, 2011)



Route A was perceived by respondents to be shorter than the average walking time, while route B longer. While it was agreed that rhythm and the urban scale influence the perceived passing of time (Bosselmann, 1998), it was also found that psychological and cognitive responses to space were important factors for measuring the pedestrian experience. Route B is a busy traffic route, linear in nature, containing some busy pedestrian crossings, noisy, with a poor quality public realm. Route A, is a busy pedestrian route, containing a varied urban form and scale, topographical changes, takes the person through a number of streets, including pedestrianised Grafton Street and features active and diverse land uses. From this study it has been noted that while the urban environment and all its different components greatly affect the pedestrians perception of their journey through space, this particular analysis does not pinpoint specific problems or elements such as traffic congestion, activities or street clutter.

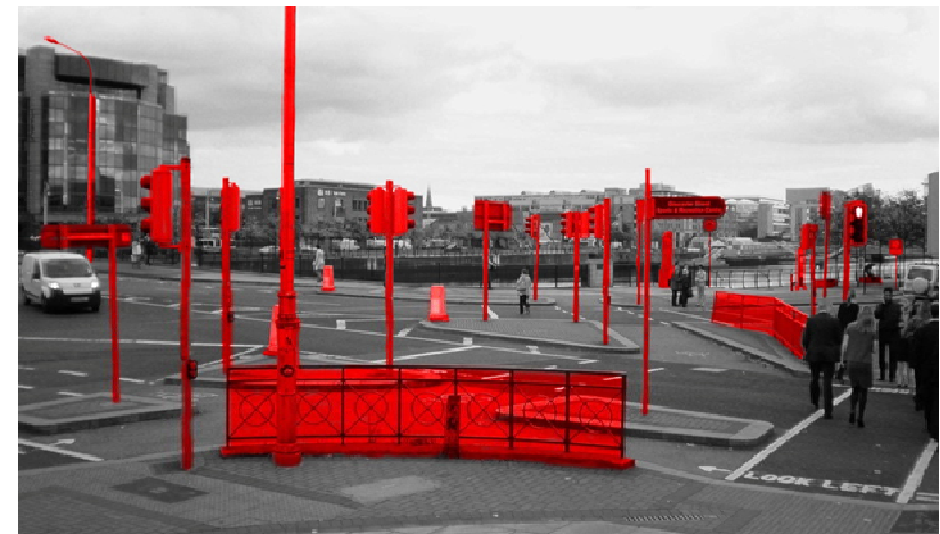
The authors have conducted much work in Dublin to encourage the removal of excessive street signage and furniture, which is proven to have a negative impact on how a pedestrian experiences a city environment, hindering their movement and in some cases proving hazardous for people with impaired mobility or disabilities (Browne & Jordan, 2011). For the authors there is no issue with individual, often vital elements of street furniture such as bins and seating but rather it is their haphazard spatial distribution, concentration and quantum that often leads to the creation cluttered public space. Comprehensive studies along the Liffey Quays and also in the South William Street area, has found that such ‘street clutter’ tends to be most concentrated in areas where there is a greater amount of public space available. This is particularly evident at street junctions, where the greatest amount of people tend to congregate (Browne & Jordan, 2011).

Figure 5: Mapping Street Clutter along Dublin's River Liffey Quays (Browne & Jordan, 2011)



The evaluation conducted along the Liffey Quays sought to convey the extent of public desensitisation to poor-quality urban space and lack of attention to detail by graphically visualising images of street clutter along the River (see below).

Figure 6: Painting the Quays Red – Talbot Memorial Bridge (Browne & Jordan, 2011)

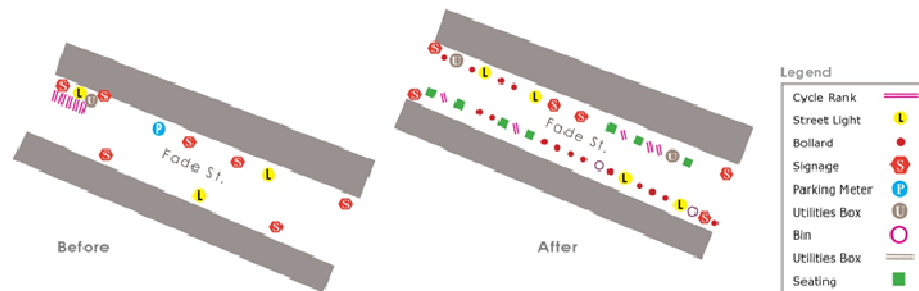


This exercise in “painting the Quays red” has proven extremely effective in proactively engaging with people as to the plight of their City’s civic spine, where the phenomenon of *addition* is being witnessed when it comes to street furniture, with heavily engineered traffic dominated solutions prevalent (Browne & Jordan, 2013).

In order to further emphasis the phenomena of street clutter the below diagram illustrates a recent intervention carried out by the City Council on

Fade St., located within the South William Street area. While the result sees a tangible improvement in the amount of space dedicated to the pedestrian, facilitated by the removal of on-street car parking, the overall increase in individual pieces of street furniture from 17 to 40 and in particular the introduction of traffic bollards, is less desirable (Dublin Civic Trust, 2012). Despite good intentions and considerable investment in the public realm, why do such schemes fail to deliver people-focused and responsive designs? This is primarily due to a lack of understanding as to how people experience space. Such 'improvement schemes' have been termed by the authors as a "garnishing exercise" as they do nothing to address the underlying problems a space may be experiencing (Jordan & Browne, 2014).

Figure 7: Public realm intervention and street clutter (Dublin Civic Trust, 2012)



Street clutter assessments have been used by the authors as a vital and effective tool in examining how the person on the street experiences the urban environment, by drawing a corollary between the presence of street clutter and negative experiences. Therefore the study highlights the potential of public realm de-cluttering as the first vital step in the creation of responsive urban spaces.

In order to study the quality and accessibility of the pedestrian environment along the Liffey Quays, an analysis of all junctions was carried out. As all major junctions along the Liffey are located at bridges, these crossings are vital channels for both north-south and east-west movement in the City. However, through observations and analysis, it has been found that the layout and quality of the junctions actually hinders pedestrian movement patterns, thus diminishing the role of the Liffey Corridor as a connector. An example of how the assessment of the south junction of Talbot Memorial Bridge was conducted is outlined below.

Figure 8: Layout of the South Junction of Talbot Memorial Bridge (Browne & Jordan, 2011)



Examining the junction from the perspective of the pedestrian, a seven point assessment scale was used where +3 is highly positive and -3 highly negative. This assessment was applied to each individual junction in relation to a

common set of criteria (outlined below) which affected a person’s journey through the space.

Figure 9: Assessment of Talbot Memorial Bridge south junction (Browne & Jordan, 2011)

| Assessment Scale | Characteristic | Comment | Rating |
|----------------------|--|--|--------|
| +3 Highly Positive | No. of Pedestrian Crossings | 3 out of 4 arms of junction have pedestrian crossings. | ● |
| +2 Positive | Quality of Pavement and Road Surface at Crossing | Pavement in good condition, although uneven in places. | ● |
| +1 Somewhat Positive | Aesthetics | Street clutter and barriers are very prevalent throughout. Soft Landscaping is lacking. | ● |
| 0 Neutral | Pedestrian Accessibility | Accessibility is poor due to the lack of an east-west pedestrian crossing on the Liffey side of the junction. The complicated and over-engineered layout of several traffic islands very confusing for pedestrians and cyclists. | ● |
| -1 Somewhat Negative | Overall Assessment of Junctions | The lack of east-west connectivity and the prevalence of street clutter gives this junction an undesirable rating as the layout reinforces the divide between the Docklands and the rest of the Quays. | ● |
| -2 Negative | | | |
| -3 Highly Negative | | | |

Calculating the Overall Assessment:
Maximum Value = +12 Lowest Value = -12

Very Good (+9 to +12)
Good (+5 to +8)
Fairly Good (+1 to +4)
Neutral (0)
Fairly Poor (-1 to -4)
Poor (-5 to -8)
Very Poor (-9 to -12)

Overall Score -4
Fairly Poor Assessment

The assessment of Talbot Memorial Bridge south illustrates the need to prioritise pedestrian movement at all junctions along the River. In particular it was found that east-west movement along the quayside footpath is hindered due to the lack of pedestrian crossings, thus reinforcing the divide between the Docklands and the City Centre. Rather than an amenity to walk alongside, the poor design of the public realm has had the effect of making the Liffey and its quays seem as an obstacle to negotiate and overcome in the mind of the pedestrian (Browne & Jordan, 2011). The quality of the public realm clearly needs to be upgraded in order to enhance the experience of the pedestrian on the Quays. Overall, the junction analysis has provided a means through which all the junctions within the study area can be compared and contrasted and has identified both the best examples and

the worst impiders to movement from the point of view of the person in the street.

3.2. The Pedestrian Experience – The Built Form Connection

In contemplating the pedestrian experience of the ‘physical city’ the authors were mindful of Gehl’s exhortations on the importance of the effect that architecture has on the person in the street. When we speak of architecture particular emphasis must be placed on the ground floors of buildings; for they are to cities, what the eyes are to the soul. They represent a nexus which links the public realm with the built form and as such, are a vital tool in connecting people to the physical city. As part of an urban quality survey of Dublin’s Liffey Quays an analysis of the transparency, texture and detail of ground floor façades along the Quays was undertaken (see below).

Figure 10: Building transparency study (Browne & Jordan, 2011)



According to Gehl, it is desirable to be able to see into buildings. Similarly, texture in the form of good quality materials and fine details is also critical. This study has assessed each of these factors in turn for every building along the Quays. Each building has been assigned to one of three respective categories: good, neutral or poor encounter. A good encounter is one where both façade transparency, texture and detail engage with the person in the street, whereas a bad encounter is one where transparency, building texture or detail does not integrate with the public realm. In the case of the Docklands (to the east of the diagram) most of the ground floor uses are inverted and consequently there are few active frontages on the street.

However, the transparency of the built form and the quality public realm is reasonably good, thus most of the built form in the Docklands is given either a poor or neutral category. In contrast, the public realm along the City Centre Quays is at a lower standard compared to the Docklands, but there are a greater proportion of good encounters with the buildings. The findings do not show bias towards historical built form. For instance, the quality of the detail and texture of the historic Four Courts (see image above left) is exceptionally high, however the building lacks transparency and its use is closed-off from the street and therefore hard to read, thus it was assigned a neutral result.

The result of this study shows that areas with a greater concentration of good encounters (i.e. the City Centre Quays) are more vibrant than areas where building transparency is lacking. This supports the thesis that a vital ingredient in the pedestrian experience and consequently for street vibrancy are buildings which offer a 'good encounter' with the person in the street. It is interesting that this seems to be a more important factor in the success of a space than the quality of the public realm, as the relatively poor standard

of space along the City Centre Quays does not detract from the vibrancy of the area in question.

An examination of ground floor frontages was carried out in the South William Street area of Dublin, a cluster of streets and lanes adjacent to the primary retail thoroughfare of the City: Grafton Street. For a district to be a vibrant hub of activity from morning until after midnight there must not only be a multiplicity of land uses sited in relatively small plot sizes but crucially, these activities need to be on display and easily identifiable to the person in the street (i.e. an active frontage).

The assessment of active frontages is useful in helping identify the areas of streets that are likely to have a higher footfall than others, owing to a high degree of active frontages. For the purpose of the study an active frontage can best be described as a shop frontage in which the use of the shop is easily identifiable and its design helps to animate the street. Therefore an active frontage can take the form of an outdoor seating area or an attractive window frontage displaying merchandise.

A well-marked entrance leading to uses on the upper floors can also be defined as active, as the more doors opening on to a street the more active it will be. Alternatively, an inactive frontage is one that detracts from the life of the street. This can take the form of a blank façade (i.e. a wall) or it can be a shop that is vacant and shuttered. Such façades create a deadening effect on a street's vitality and the pedestrian visitor will read the street as inactive and consequently avoid it.

Figure 11: Active Frontages in South William Street (Dublin Civic Trust, 2012)



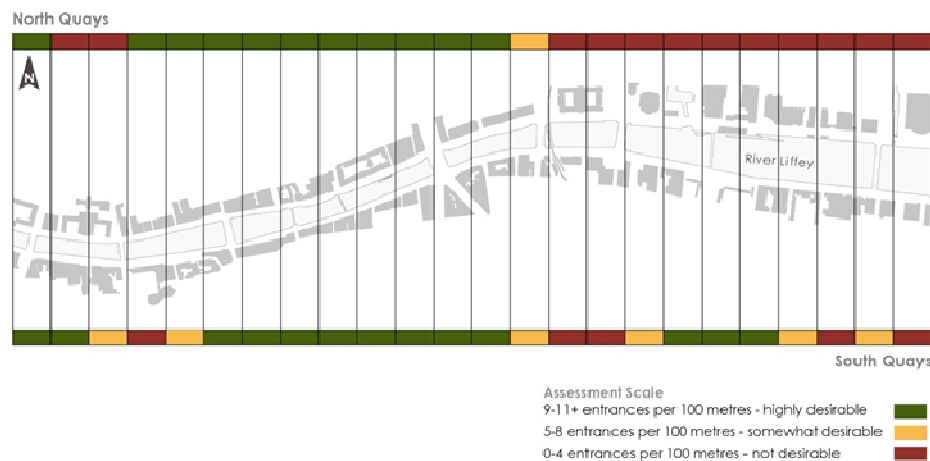
It can be seen from the study (see above) that the various concentrations of active and inactive frontages correlate strongly with the level of vibrancy in each street. For example, Wicklow St. and South William St. have a very high level of active frontages and are the most vibrant streets in the area. However, Drury St. and Clarendon St. have high levels of inactive frontages. This is evident from the back-land or service area character that they exude (Dublin Civic Trust, 2012). This situation has been noted in various patronage surveys carried out by the authors in the area. They found that pedestrian footfall on streets with higher levels of inactive frontages (Drury St. and Clarendon St.) is much lower than on adjacent streets with high levels of active frontages (Exchequer St. and South William St.). Thus it is evident that

cognitive perception of space and how a person interprets or reads an urban environment also relates to activity and vibrancy, aided by the presence of other people on the street. A solution to the problem of inactive streets, as witnessed in the present case study, could involve upgrading the public realm (pavements, street furniture and landscaping) in order to create a more inviting environment, which in turn would increase footfall and thus would kick-start the development of more activities along these streets. It is argued by the authors that the key to measuring and understanding the human experience is an acknowledgement of the interconnectivity of the various aspects of the public realm and how they appeal to the human sensory system.

The analysis below maps the intensity of entrances opening on to the Liffey Quays. It is seen that the more entrances present that open on to a particular street, the more vibrant and successful that urban space will be. In practice this would mean that the block should take on a so-called 'narrow units - many doors form', which is often cited to be effective in creating vibrant streets (Gehl et al., 2006). This exercise sought to find if the lack of entrances along the Quays corresponded with a lack of activity in these areas and vice versa. For the purposes of this study a 3-tiered assessment scale was devised (see below). According to Gehl, ideally there should be an entrance at least every 10 metres (10 per 100 metres). The results highlighted that the central quays on both sides of the River have many entrances thus increasing the possibility for activities. To the east and west of the City Centre Quays, the number of entrances decreases markedly as does activities and vibrancy. The reason for this is twofold: the change in the urban grain and a change in land use. It is noted that large-scale office uses rather than retail and service based activities are predominant in these areas with a lower number of street entrances. This is particularly evident in the east (the docklands)

where the Capital's new central business district has become established. The present situation along the Liffey Quays highlights a key challenge that is posed in the contemporary city; that is how can city planners and policymakers create activities in areas where employers demand built form with ever-larger footprints?

Figure 12: Street entrances analysis (Browne & Jordan, 2011)



While acknowledging the role of others in devising methodologies to survey the physical city (Lynch 1960; Cullen 1961; Bentley et al 1985), it is considered that the thinking of Jan Gehl best represents an understanding of the nexus between the physical and psychological cities; the tangible and intangible factors affecting pedestrian experience. This point is further reinforced by the fact that this eminent theorist is also an urban quality practitioner, where his observances on how both the physical and psychological conditions of a city impact people are crucial in informing the production of his design schemes. It is this explicit link between theory and practice that is demonstrative of a tailored approach that should be taken

when assessing urban spaces. Such a methodology is seen to produce design solutions that are not arbitrary but responsive and understanding of the local spatial dynamics at work.

4. Overview and Conclusion

The mix of theoretically founded experiments and studies as explored in section 3 can be seen to be an appropriate, relevant and timely approach in the pursuit of our common endeavour, that of achieving sustainable mobility in European cities and towns. This paper has sought to articulate an awareness of how the pedestrian experiences the urban environment through the process of exploration and walking, demonstrating the relevance of urban design theory in assisting in the development of a methodology through which experience can be measured. By presenting an overview of theories and their key principles which relate to how one experiences space and demonstrating how aspects of these theories were applied in practice by discussing specific urban design and planning studies conducted in Dublin, a compelling argument of the need to address the person in the street as the fundamental starting point to any policy, strategy, project or intervention was made.

4.1. Theoretical Discourse and Psychological Perception

The bifurcation of urban design theory into two distinct strands of the psychological and physical cities, has had the benefit of providing enhanced awareness and appreciation of the plethora of urbanism fields to which psychological perception and experience relates, while specifically addressing more abstract thinking not normally considered within practice. The realm of theory has enabled a link between the psychological and the tangible to be made in the study of human behaviour, enhancing how we understand barriers in the urban landscape, whether perceived or real. This

acknowledgement informed the development of a methodology, involving the extrapolation of theoretical principles and concepts as discussed in section 2, with the aim to measure and analyse pedestrian experience. Through the evocation of theory, various studies and experiments, some alternative and non-conventional, were developed and applied in a range of projects conducted in Dublin which served two purposes. Individually, they were designed to give specific information required as part of evaluating an urban space, such as the assessment of street clutter or pedestrian crossings, but collectively the studies provided a series of vital buildable layers offering an insight into how a person experiences and interacts with a city on a daily basis and providing an indicator of the physical catalysts which impact this relationship. In this way the themes of the psychological and physical cities are continued throughout the exploration of case studies in section 3.

4.2. Urban Design Praxis

The selection of case studies chosen to feature in this paper demonstrates how the authors converted theory into alternative and practical people-focused approaches to urban design analysis as part of their work. Barriers, whether perceived or physical, are frequently discussed throughout all the studies conducted and are found to have a detrimental impact on the pedestrian experience. Understanding exactly how a person navigates a public space should be a prerequisite to all future plans and proposals in order to ensure the creation of responsive and engaging spaces. Unfortunately, this is not always the case. For example, the street clutter study demonstrated the detrimental impact this has on the visual coherence of a district and the associated effect this can have on peoples' emotions by creating a divided and chaotic public realm. While the mapping of all street furniture provided an indication of clutter hotspots, it was found that the graphical depiction of clutter in a series of photographic installations titled

"painting the quays red", displayed in a public exhibition in Dublin, had the greatest effect on engaging with the public. Subsequent conversations conducted in the form of debates and seminars found that people had become disengaged with the public realm, where their experience of poor-quality space and cluttered streets, was considered to be the norm (Jordan & Browne, 2013). Thus these studies elicited a deeper understanding from people of the factors which impact on how they feel when walking through a space.

In order to enhance permeability and walkability throughout cities, an understanding of the factors which encourage or discourage the pedestrian is needed. Simply providing new routes or footpaths is not enough, but rather it is attention to detail within a design-led approach that is required. Psychogeographic analysis enabled a unique cognitive map of Dublin's City Centre to be prepared, which illustrated potential barriers and perceived distances between areas within the City. The River Liffey Quays were identified as a barrier between the north and south City Centres and a barrier was also identified between the contemporary docklands and the historic quays. The assessment of temporal perceptions of two time-comparable walking routes also provided an indication of barriers located along the River Liffey. On closer inspection, the assessment of pedestrian crossings proved to illustrate one of the most significant factors in impacting how a person experienced this space, where the lack of crossings, coupled with street clutter and a car-dominated environment created both physical and psychological barriers, which remained in a person's mind. Indeed, the experiments outlined within the Liffey Quays case study demonstrate that all of the characteristics and barriers identified interact and culminate to create an environment that not only fails to promote sustainable mobility, but also one that is actively hostile to pedestrian exploration.

In the case of the South William Street Area it was found that the link between the built environment, the public realm and pedestrian footfall was also a vital factor when considering experience. The assessment of inactive frontages in the South William Street Area project illustrated how this was perceived to be a barrier for pedestrians, who avoided certain streets.

4.3. A Template for Designing Responsive Public Space

In order to blend theory and practice and to develop methodologies which contribute towards the measurement of human experience, a practice template has been developed by the authors in terms of how they assess and conduct public space projects. Two distinct phases are involved: an urban evaluation and the preparation of a strategic vision. Public engagement exercises where people are shown the results of the initial urban quality survey, are a vital link between these two phases. The feedback received from such a public dialogue process is a critical element for informing the final ideas and designs of any vision, strategy or plan. What makes the approach distinctly different to conventional projects is the manner in which a people-focused approach, through pedestrian analysis and public engagement, is central from project inception through to completion. On commencement of a project the metaphor of the urban flâneur is invoked, where an initial assessment of a public space involves careful observation in the field, prior to the commencement of desk-based studies and research. The flâneur theme is continued implicitly throughout the various studies developed.

This paper has elucidated that the success of both existing public spaces and new spatial interventions in cities depends on how responsive they are to the needs of the pedestrian. It is not only by the adaption of alternative

theoretical approaches based on observations and analysis in the field that is crucial to understanding the dynamics of a space, but the fact that the data gathered needs to be corroborated and complimented by input from the public who use the space on a day-to-day basis. In progressing the *21st Century Liffey* project interaction and dialogue with the people who use the Liffey Quays formed a critical part of the project process which was enhanced by providing them a catalyst through which they could relate; through personal experience and perception. For example, interviews and surveys found that 86% of the users of the Liffey Quays had negative perceptions of the space (Jordan & Browne, 2016).

4.4. Beyond Current Practice: The Journey Towards Sustainable Mobility

In the absence of such a robust and inclusive template for studying and designing public space the potential for knee-jerk responses by policymakers based on initial reactions and intuitive responses is heightened. Such a scenario, as witnessed by the authors in Dublin extends to the ideas surrounding public space improvements where misconceptions include the notion that improving the public experience requires huge amounts of financial investment, and is often cited as an excuse for inaction. In such a paradigm policymakers think of spatial interventions solely in the context of creating grand public plazas and boulevards, whereas in fact the opposite is the case as experience shows that low cost solutions can be the most effective and most responsive. Examples of this include a basic de-cluttering and rationalisation of street furniture exercise or the widening of footpaths by simply roping-off and painting a section of a street, as was successfully carried-out along Broadway, New York City (Grynbaum, 2010).

Another popular misconception that exists is the thinking that promoting a pedestrian-centred approach means advocating full-scale pedestrianisation.

An extension of this is the idea that pedestrianisation is the magic weapon to solving the problems that an urban street or space may be experiencing. However, it was observed as early as the 1960s by Jane Jacobs that context is key to the success of pedestrianisation of a space. Pedestrianising a space that is not overly active can actually have a deadening effect, reducing an area's vibrancy (Jacobs, 1961). In carrying out the South William Street Area Study, pedestrianisation was a potential solution that was put forward to the authors.

However, based on the alternative studies conducted and engagement with the key stakeholders it was seen that an unconventional spatial solution was possible, one that was emblematic of a new and more responsive approach that needs to be taken. This solution was shared space. The idea of shared space, where all street users move and interact in their use of space on the basis of informal social protocols and negotiation (Hamilton-Baillie, 2008) can best be seen in practice along New Road, Brighton, England. Formerly congested with traffic, this route was blighted by on-street car parking and cluttered with signage. In devising a regeneration scheme for the area the local authority was persuaded by the design consultants (chiefly Gehl Architects) to create a pedestrian dominated street but one that is still open to traffic.

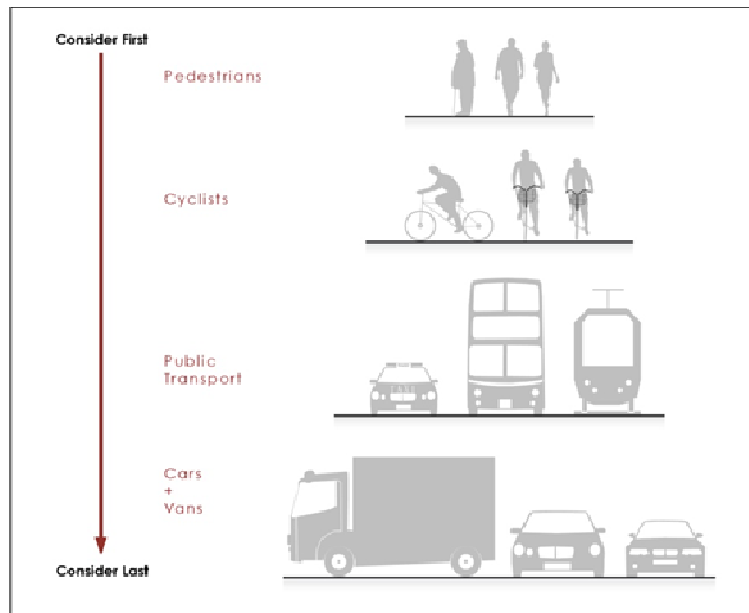
The resultant scheme has seen the street transformed from being a busy route to a space for recreation and amenity. The statistics are impressive; there has been a 62% increase in pedestrian footfall; a 600% increase in staying activities; and a 22% increase in cycling. Most importantly however is the fact that New Road become the fourth most popular destination in Brighton. In such a way sustainable mobility was realised while the street itself also became a major attraction.

Figure 13: New Road, Brighton (courtesy Gehl Architects)



The authors have presented a compelling argument for the implementation of a pedestrian-centred approach towards designing and managing public space. This is not a revolutionary concept; it is already within the purview of the built environment policies of several countries. For example, the sustainable movement/ user hierarchy (see below), where the pedestrian should be considered first and the private car last within urban spaces is central to both Ireland's Design Manual of Urban Roads and Streets (2013) and the UK's Manual for Streets (2007). If the sustainable movement hierarchy was truly embraced and implemented within European cities and towns it would however have radical consequences, not least the realisation of sustainable mobility, thus enabling a more enjoyable experience of space and an enhanced quality of life for the citizenry as a whole.

Figure 14: The Sustainable Movement Hierarchy (Jordan & Browne, 2013)



The most important aspect of this has been the focus on the person's journey through the urban sphere. This 'alternative approach' towards measuring and shining a spotlight on the pedestrian experience of space is actually based on common sense and observation something advocated by one of the early urbanists Jane Jacobs. In such a way the authors' work is also presented as a rebuttal to the established norm which does not consider that the sustainable movement hierarchy should be the instrumental factor in deciding the allocation of space within the public realm. Such a top-down managerial approach to public space is an anathema to the kind of 21st Century collaborative people-centred urbanist paradigm that the authors advocate is needed in order for sustainable mobility to be achieved.

Bibliography

- Arida, A. (2002) *Quantum City*. Oxford, The Architectural Press.
- Bentley, I. et al (1985) *Responsive Environments, A Manual for Designers*. London, The Architectural Press.
- Benjamin, W. (1939) *Paris, Capital of the Nineteenth Century: Exposé of 1939*. In: Gieseeking, J.J. et al. eds. *The People, Place, and Space Reader*. New York and London, Routledge, 2014.
- Bosselmann, P. (1998) *Representation of Places: Reality and Realism in City Design*. Berkeley & Los Angeles, California, University of California Press Ltd.
- Broadbent, G. (1990) *Emerging Concepts in Urban Design*. London, Van Nostrand Reinhold (International) Ltd.
- Browne, F. and Jordan, D. (2011) *The Liffey: Dublin's Connector, Evaluating the Liffey Quays*. Dublin.
- Browne, F. and Jordan, D. (2013) *Dublin's Connector: Re-visioning the Quays for the 21st Century in Architecture Ireland*, the Journal of the Royal Institute of Architects in Ireland, No. 267, pp. 24-25.
- Browne, F. and Jordan, D. (2014) *Reconnecting a Riverfront with its City in Urban Design*, the Urban Design Group Journal, No. 131, Summer 2014, pp.10-11.
- Carmona, M. et al (2003) *Public Places – Urban Spaces: The Dimensions of Urban Design*. London, The Architectural Press.
- Certeau, M. D. (1984) *The Practice of Everyday Life*. Translated by Rendall S., Berkeley, University of California Press.
- Cullen, G. (1961) *The Concise Townscape*. London, The Architectural Press.

- Debord, G. (1955) Introduction to a Critique of Urban Geography. In: Knabb, K. ed. Situationist International Anthology. Berkeley, Bureau of Public Secrets, 1981.
- Debord, G. (1956a) Theory of the Dérive. In: Knabb, K. ed. Situationist International Anthology. Berkeley, Bureau of Public Secrets, 1981.
- Debord, G. (1956b) Guide Psychogéographique de Paris: Discours sur les passion de l'amour. Copenhagen, Le Bauhaus Imaginiste.
- Debord, G. (1957) The Naked City: Illustration de L'Hypothèse des Plaques Tournantes en Psychogéographique. Paris, Internationale Situationniste.
- Debord, G. (1967) The Society of the Spectacle. Translated by Nicholson-Smith, D., New York, Zone, 1994.
- Department of Transport (2007) Manuel for Streets. London, HMSO.
- Department of Transport, Tourism and Sport and Department of Environment, Communities and Local Government (2013) Design Manuel for Urban Roads and Streets. Dublin, Stationary Office.
- Dublin City Council (2008) City Centre Transport Plan. Dublin, Dublin City Council.
- Gehl, J. (1987) Life Between Buildings, Using Public Space, Translated by Koch, J., New York, Van Nostrand Reinhold.
- Gehl, J. et al (2006) Close Encounters with Buildings. Urban Design International, 11(1), pp. 29-47.
- Gehl, J. (2010) Cities for People. Washington D.C., Island Press.
- Government of Ireland (2012) Census 2011, Profile 10, Door to Door Profile. [Online]. Available from: <http://www.cso.ie/en/media/csoie/census/documents/census2011/profile10/Profile_10_Full_Document.pdf> [Accessed 26 May 2016]
- Grynbaum, M. (2010) Broadway is Busy, With Pedestrians Not Cars. New York Times, 5 September.

- Hamilton-Ballie, B. (2008) Shared Space: Reconciling People, Places and Traffic, Built Environment, 34(2), pp. 166-181.
- Howley, P. & Clifford, B. (2009) The Transformation of Inner Dublin: Exploring New Residential Populations within the Inner City, Irish Geography, 42(2), pp.225-243.
- Jacobs, J. (1961) The Death and Life of Great American Cities. New York, Random House.
- Jordan, D. and Browne, F. (2013) A Boulevard of Rooms and Corridors: An Urban Design Vision for the Liffey Quays. Dublin.
- Jordan, D. and Browne, F. (2014) A Call for an Urban Design-led Approach to City Planning, the Case of Dublin's Liffey Quays in Architecture Ireland, the Journal of the Royal Institute of Architects in Ireland, No. 278, pp. 22-23
- Jordan, D. and Browne, F. (2016) Civic Engagement in Design-led Planning: Towards a Narrative for the Future City in EUROCITIES 30th Anniversary publication - Views on the Urban Future: Contributions from Young Professionals (Forthcoming).
- Lefebvre, H. (1991) The Production of Space. Translated by Nicholson-Smith D., Oxford, Basil Blackwell.
- Llewellyn Davies (2000) Urban Design Compendium. Great Britain, English Partnerships.
- Lynch, K. (1960) The Image of the City. The MIT Press, Cambridge, Massachusetts.
- Mitchell, P. (2012) Cartographic Strategies of Postmodernity: The Figure of the Map in Contemporary Theory and Fiction. New York and London, Routledge.
- Moughtin, C. (1992) Urban Design: Street and Square. Oxford, Butterworth Architecture.

- Sitte, C. (1889) City Planning According to Artistic Principles. Translated by Collins G. R. and Crasemann Collins C. in Camillo Sitte: The Birth of Modern City Planning. New York, Dover Publications, 2006.
- Ulman, S. (2013) Rightsizing Streets to Create Great Public Spaces. Project for Public Spaces 7 February. [Internet blog]. Available from: <<http://www.pps.org/blog/rightsizing-streets-to-create-great-public-spaces/>> [Accessed 7 March 2016]

Authors

David Jordan and Fergus Browne are both Chartered Town Planners and Urban Designers based in Dublin. They are founders and initiators of the 21st Century Liffey project (2010-2013), an urban design and people-focused initiative to re-vision Dublin's River Liffey Quays. Their research promotes a people-focused and urban design – led approach to the planning system, which has been the subject of a number of exhibitions in Dublin and in Columbia University's Studio-X gallery in New York. Regularly collaborating, their work has been published in national and international journals.

**ETHNIC DIVERSITY AND PUBLIC SPACES: A CRUCIAL
SYMBIOSIS**

BY DANIEL RADAI

Ethnic diversity and public spaces: A crucial symbiosis

By Daniel Radai (Hungary/Netherlands)

This paper is based on the author's wider Research & Development project, 'Towards a DiverCity', published at TU Delft in June 2015.

The 'Arrival City' (Saunders, 2010) describes a multicultural environment in Europe that creates opportunities and challenges at the same time (Wood, 2009). Sure enough, segregated, deprived neighbourhoods are a common outcome of this phenomenon. Often, unplanned and uncontrolled social expansion, characterised by primarily low-rent neighbourhoods, increases population density and simultaneously diminishes living conditions and spatial resources. In this incoherent social and urban space a vital community enhancing platform is the public domain (Amin 2002 & 2008; Carr et al, 1992; Hendricks, 2014; Németh and Langhorst, 2012; Ozola, 2011; Saunders, 2010). The key societal and spatial characteristics and challenges of Central Molenbeek (a geographic territory defined for the project) reveal a culturally diverse but socially and financially disadvantaged population with the signs of socio-spatial segregation and exclusion. Furthermore, among the degrading spatial qualities, unused or low-quality public spaces lacking vegetation where the car is the primary land user, add into a highly complex problem setup. Therefore, the body of knowledge of this paper – i.e. its theoretical research and practical proposals – explores how walkable, active public open spaces can contribute to environmental, social and economic sustainability in close interrelation to tackle socio-spatial inequalities.

Keywords

Multiculture, segregation, public space, resilience, participation, temporariness,



1. Introduction

About urban multicultural

During the second half of the 20th century globalisation and international immigration became significantly noticeable. Most migrants settle down in urban areas due to the economic, cultural and social opportunities that large cities have to offer (Bell et al, 2010). The industrialised countries acted as massive absorptive markets for inhabitants of less developed ones (Penninx et al, 2008). Concerning destination cities and urban territories, this process was particularly crucial in the shaping of societies, since migrant groups often inhabit different urban units clustered by countries or regions of origin respectively, resulting in an increase in heavily occupied residential areas; hence, densification. (Bell et al, 2010).

In his work 'Multiculture in the city', Capel quotes Kymlicka, stating that multiculturalism is 'the diverse ways minorities are incorporated in political communities' (Kymlicka, 1996 in Capel, 2003:3). Immigrants rather opt to be included in the major political, economic and community environment, as this sometimes is an influential motivation for migration as well. However in

the meantime, by often being open to cultural values of the welcoming area, they try to avoid or minimise losing their own identity (Capel, 2003). Furthermore, Quadeer highlights that 'Multiculturalism is primarily an urban phenomenon, because here different cultures coexist in a closely defined space' (2016:4). He acknowledges that cultural diversity already refers to the possibility of practicing different values by an ethnically diverse population. It is fair to assume that due to the versatile values of different communities, multicultural environments may hold policy and planning challenges. .

2. Problem setup

Trends around the city of diversity

The European city has been turning its face away from the state international migration processes created. By reaching the 21th century, this resulted in spatial and social segregation in the metropolitan areas. In some European areas, urban growth has been heavily affected by international migration, possibly even more than natural demographic growth. This also means that the rather unplanned and uncontrolled spatial expansion, characterised primarily by low-rent neighbourhoods and over-occupied residential blocks, significantly increase the population density of the corresponding areas and of cities overall (Bell et al, 2010). However, when this cluster is primarily characterised by disadvantaged migrants in already depriving neighbourhoods, problems may grow even further.

These still usually over-populated, deprived and often segregated neighbourhoods cannot access public services to their full capacity. The social interactions with native inhabitants are lower and social mobility is weakened. The higher the level of deprivation, the harder it is for the residents to relocate to new areas with better possibilities thus the localities

keep becoming vulnerable sometimes in a vicious circle. (Wood, 2009; Bell et al., 2010; Rea, 2013; Loopmans, 2006).

Social exclusion can often be tracked in neighbourhoods with high concentration of immigrants and ethnic minorities. 'It is frequently used to refer to dualities or divisions' (Murie & Musterd, 2004:1442). Literature claims that often spatially clustered exclusion and deprivation of certain social groups are rather marginalisation courses than end-results, since these negative processes mutually reinforce each other through time (Amin, 2002). As an outcome, 'fear of the others' grows within both external and internal population as a response to the disintegrative space and society (Covington & Taylor, 1991). This rather informal measuring factor of the well-being and cohesion of the urban society is heavily influenced by the experience of everyday life. However, as Sandercock (2000) believes, it is not possible to solve through objective measures. She relates the relationship between strangers in the urban realm as the point to focus on. What can complicate the issue is the contradictory viewpoint on certain aspects by different cultures, such as, public space behaviour or the value of private zones (Sandercock 2000). This lays the emphasis on the significance of smaller scale interventions and the diverse local community.

Among other solutions, citizen education is recommended by Amin (2002), thus aiming for equality standards for the public sector. As Quadeer (2009) explains, urban planning is responsible for environmental sustainability, energy efficiency and cultural diversity among many. He urges planners to work from societal and environmental perspectives simultaneously through raising concerns and providing new values. Thus, planning and decision making structures of spatial developments must have a focus on steps towards an absolutely inclusive democracy with the claims and characteristics of all disadvantaged, often politically and economically

vulnerable communities. This way a more inclusive city becomes a reality (Sandercock, 1998).

Research vehicle

But how local open space interventions in a degrading urban environment can be appropriately beneficial for a disadvantaged, ethnically diverse population? The paper's research question aims to establish science-based practical thoughts on possibilities and tools, urban designers and planners can utilise in segregated areas.

The goal is to present the findings of one aspect, regarding some open spaces, of a complex Research and Development project showcasing a set of spatial interventions and policy strategies that facilitate the empowerment of the local residents. At first, the social context, then the spatial problems will determine the current realities. A related theoretical review and short case study overview on the planning demands breed the scientific background of the proposals shown in the last part of the paper.

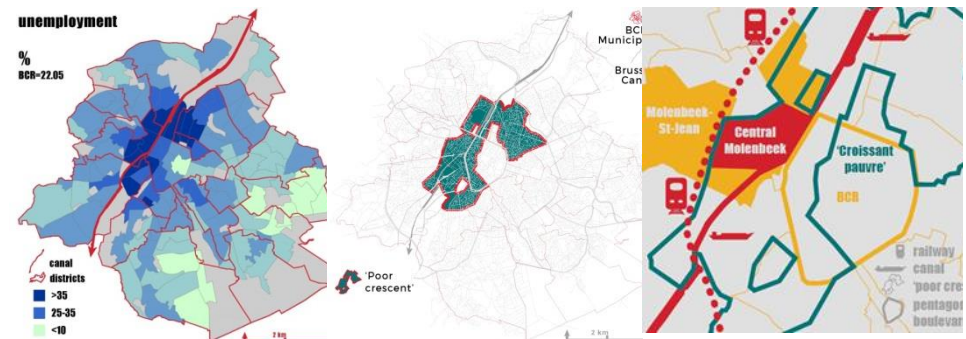
In Brussels

The Brussels Capital Region (BCR) offers a complex problem package. Its metropolitan area has 1.5 million inhabitants. In this city of domestic and international migration, 45 nationalities are represented with more than a 1,000 citizens each making it one of the most multicultural cities in Europe (Musterd et al., 1998). Consequently, migration is heavily influencing the social composition of the city (Deboosere et al, 2009).

Two major immigrant clusters (EU and Non-Western) coexist within the regional borders. Primarily, young and more affluent families tend to move



out to the surrounding suburbia. In the meantime, for the majority of the more disadvantaged immigrant population including individuals, or families with young children, staying in the city is the only feasible option due to travel costs, prices of accommodation etc. The amount of children being born into less prosperous families is increasing compared to the region as a result of increased birth-rate in the disadvantaged areas (Romainville, 2009; Van Crieelingen, 2006; Corijn & Vloberghs, 2013).



Socio-spatial aspects in Brussels / Molenbeek

The city has a spatial character where inhabitants of different social groups are separated. Deprived, rather mixed and affluent neighbourhoods are located next to each other through the entire territory of the region (Deboosere et al, 2009). This spatial and social fragmentation developed through the past century when many areas of the city offered completely different opportunities.

The unemployment map above gives an indication of the spatial distribution of the challenges of the BCR citizens. It is visible that the northern and western parts just outside the central pentagon (first ring) are clearly highlighted as the most disadvantaged areas especially in comparison to the outer areas (second ring). This area is often referred to as the 'Poor

Crescent'. In accordance, the map indicates that many neighbourhoods in the first ring, including Molenbeek, suffer from more than 35% unemployment rates.

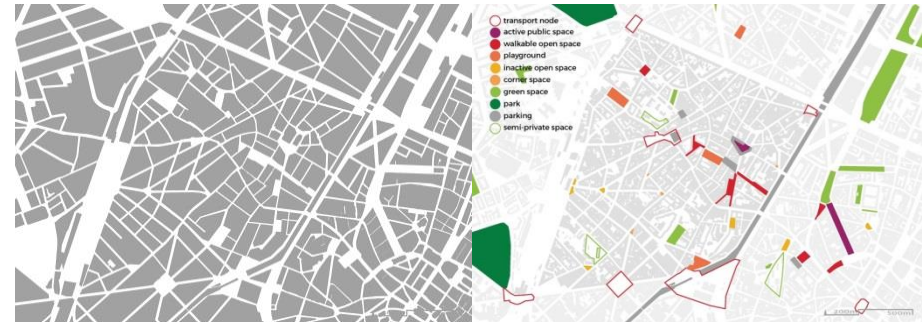
The western, historical districts of Molenbeek (referred to as Central Molenbeek in this paper) are some of the most multicultural parts of the Brussels Capital region. The street atmosphere has a large North-African impact, however, other Mediterranean, Asian and European influences can be traced as well (Corijn & Vermeulen, 2013; own observations).

Chasing the competitive economy in the region, growth and returns over all other goals kept the socio-spatial polarisation of the city out of view and interest, eventually further increasing it. The areas inhabited by the working class immigrants in the second half of the 20th century were lacking on maintenance investments by authorities and private owners, since focus was elsewhere and the probability of significant financial return was little. Alongside the industrial downfall, this contributed to a particular spatial degradation and deprivation of Central Molenbeek and the aforementioned areas in the region. However, the current problematic state was also catalysed through time by political neglect (Van Damme, 2013).

Spatial conflicts / public spaces

The region is rather 'green' due to the vast parks on the periphery and parks in the first crown. However, the south-western part of the *Poor Crescent* is excluded from an equal distribution. Here the area with the most pressing societal issues, population and building density, offer the

least permeable surface. In the case of Central Molenbeek, while open spaces are present, they do not match usability, and rarely provide green space as it will be indicated later on in the paper. This inaccessibility of green amenities in general creates a tenacious conflict in the area.



A wide variety of open space use can be found in the study area. The clusters are shown in the legend. In spite of the already perceptible lack of significant available public space, only one (Parvis Saint Jean Baptiste) attracts different users for staying activities alongside two playgrounds. On the contrary, there are numerous inactive spaces like corners and open spaces while some like Rue St. Marie, Place Communal only offer necessary activities (e.g. pedestrian access to the metro exits; Gehl, 2007). The main public garden of the area (la Fonderie Park) does not provide any meaningful attraction, hence, aside of its green quality, it does not serve as an asset. Furthermore, it is important to note that even after the transformation of Place Communal into a mixed zone, plenty of open spaces are occupied by parking cars.

In general, real public spaces that could facilitate social gatherings are missing or are of extremely low-quality. Furthermore, the previously mentioned lack of permeable surface, the frequent sidewalk floods and litter

on the street all contribute to generally negative perceptions of this urban environment. Conceivably, the daily traffic jams' impact on suffocating air quality is a causal factor as well (Corijn & Vermeulen, 2013; IBSA, 2011). Due to the mentioned open space characteristics and beside the housing issues, which are not elaborated in this paper, the physiologic terms of the spaces are unsatisfactory. It is crucial to notice that the residents of the densest environments and lowest housing quality are the most excluded from sufficient public green amenities (own observation).

Spatial conflicts/road structures

In de-industrialising era of the 20th century the city's fabric weakened by the linear infrastructure, such as urban highways that were to support the new service-based developments. The city's blooming, dense urban environment became highly scattered (Guérin et al, 2007; Declève et al, 2009; Lagrou, 2000; Doucet, 2013).



On the local scale in Central Molenbeek, there is a single-oriented street structure that shows some lack of coherence. Due to the dense, historical city fabric, the layout consists of fairly narrow street-profiles, while the main roads only border the study area.

This rather small-street layout facilitates regular traffic jams in rush hours. Combined with the parking cars alongside the traffic lines, this creates a rather unpleasant and often dangerous environment on slow mobility. Similarly, just as in many other areas of Brussels, the car is the main open

space occupier. Considering this in the previously highlighted societal environment, the complex problem setup is taking shape.

Conclusion

Central Molenbeek is a special area of the Brussels Capital Region with (the):

- *highest ratio of building footprint and lowest amount of permeable green surface and amenities on the open spaces;*
- *open spaces that do not meet public space demands (lack of activities at these places, lack of facilitating design, major user of space are parking cars);*
- *highest dissatisfaction of the local population towards the state of public spaces.*

These strong characteristics clearly showcase the importance of intervening in Central Molenbeek.

During my field visit discussions, there was not a clear spatial connection within the desires, however, in the south, the quality of space was more frequently and forcefully emphasised, while in the north (or central area), it was rather the community feeling. In the current situation, these places hold a desirable opportunity for development that could even affect local and regional scales at the same time. Considering a projected population growth for this segment of the capital region (over 20% until 2020, IBSA, 2011), it is immensely understandable what a massive pressure is settling on the area.

3. Discussion for a future outlook

Community-building

In areas affected by deprivation and high population or building density, public space is an addition of the living area to the private sphere due to the usually over-crowded dwellings. Here children can exist without 'parental control' (Malone, 2002:161). For many residents in deprived neighbourhoods this is the only place to 'get away'. A place so crucial for cities with ethnic

diversity, since, what is more, it is the public realm that primarily provides the space for meeting and social life (Burayidi, 2000; Madanipour, 2004; Montgomery, 1998; Malone, 2002; Marcuse, 2001). Local communities with empowered social-ties, frequent contact opportunities are in stronger position towards integration and, as such, enhance the community and reduce the occurrence of the 'fear of other' attitude (Glazer et al., 2012; Mincke et al., 2008; Ozola, 2011; Saunders, 2010; Schweitzer et al., 1999). Research also show that Belgians seem to be more tolerant if there is a chance of frequent interactions with different culture groups (Bijl & Verweij, 2012).

These regular encounters eventually lead to activities that bring together the residents. Strangers are no longer enemies but they are involved in new attachments (Loopmans et al., 2013). This create 'reciprocity', informal social networks for immaterial exchanges, such as, that of information, or favour reactions to very specific local demands (ibid.; Corijn & Vermeulen, 2013). After all, every community is strengthened if the residents feel connected to their environment and to each by the increased familiarity. In fact, discovering areas through walking enhances this familiarity (Hendricks, 2014). However it is important to consider that often some groups may show overrepresentation of the space (using open spaces as expanded playgrounds), hence, the feeling of exclusion by different groups can grow (Madanipour, 2004). Therefore, it is vital that the layout of places should be forming different groups and uses.

Democracy

The repetitive communal activities are referred to as public life which is essential in socially 'isolated' areas and also contributes to the communities' right to the city (Carr et al, 1992; Németh and Langhorst, 2012). The needs of

deprived immigrant groups in many ways correspond to the ones of the vulnerable groups of the native society (ibid). Therefore, the responsive acts of the native society can result in a positive effect for the ethnic minorities as well (Lerner, 2014:57). Ash Amin in his article 'The good city' (2006) pledges for camaraderie to have difference turned towards the common interests through a constant experimental approach.

Academics often stress that places of – minority-engaging – public encounters can act as platforms for participatory politics and representation. If groups are heard, they are more willing to share and intercultural understanding grows with the possibilities of interactions (Amin, 2008, Burayidi, 2000). However, Amin (2008) argues against these trends being indisputably straightforward, claiming that there are beliefs that public life is shrinking in the contemporary city of the privatising society (Amin, 2008; Glazer et al., 2012). Amin (2008) adds that the variety of cultures and personality will result in a mixed willingness towards participation as the 'dynamics of mingling with strangers in urban public space are far from predictable'. He disagrees that 'the *sociology of public gathering* can be read as a *politics of the public realm*' (ibid:7; highlighting by the author). Amin's practical example is that even though, strong attempts can be formed towards interactions; different individual reactions can vary in terms or perceiving other people and the urban environment. He eventually argues that 'sociality in urban public space is not a sufficient condition for civic and political citizenship. It is too heroic a leap to assume that making a city's public spaces more vibrant and inclusive will improve urban democracy' (ibid:7).

He does agree, nevertheless, that public spaces are still crucial contributors to urbanity, public behaviour and a connection to the urban civility and

common resources. (Amin, 2008; Saunders, 2010). Places of public encounters engaging minorities can act as a platform for participatory politics and representation. David Harvey states that the society's right to shape its environment to fulfil its needs should be one of the absolute human rights, which is still lacking in the general public, professional and political contexts (Radai & Wong, 2013).

Inclusion

By reacting to differentiated local demands, larger scale integration indeed becomes a possibility (Amin, 2002). Co-operation through the governmental levels is still necessary, and an actor-relational approach is the responsibility of the public authorities as well (EUKN, 2012). With the growth of the target groups' interest and involvement in the development process, the appreciation for the space is also larger resulting in the sense of ownership (Madanipour, 2004). This belonging will contribute to the maintenance and quality of the areas since the population will not expect solely external parties' help (ibid.). An increasing amount of evidence can be found how the inclusion of the locals in the design and implementation phases could reach an appreciation that further foster the preservation of spatial quality in deprived neighbourhoods.

Attachment can be enhanced by continuous events that bring together the users. This initiative will be further explored later. In conclusion, as Lerner (2007) suggests, the inclusion of people is always beneficiary because they can reveal the shortcomings and highlight if the process leaves the right track. No wonder Amin (2002) confirms that contemporary urban environments could be characterised much more by separation and incoherent social and urban space. Contrary to which, he favours actively distributed and 'renegotiated' democracy where immediate and continuous

social feedback opportunities are present in the system. Citizens could become co-producers and maintainers of the urban environment. This might also lead to professionals shifting to mediation-coordination of involvement and regulations (Loopmans, 2006). To conclude, I choose the remarks of Cassiers & Kesteloot on Brussels (2011), who claim that since they are the centralities where segregation and poverty occur, the city can either become an autocratic police state or become a city of democratic decisions involving all the socio-economic-spatial groups. This has been lagging for decades eventually resulting in events and a status receiving spotlight recently.

Further benefits

The living quality of the 'arrival neighbourhoods' can be improved by the availability and quality of public spaces. This means safety and walkability with reduced amount of cars, even if their use cannot be completely eliminated (cf. Lerner, 2007; Montgomery, 1998; Saunders, 2010). The walkable environment is also a tool for empowerment as ground level commercial activities increase in these areas further expanding vitality (Stipo, 2014). These conditions also contribute together to the enhancement of public life and security (Gehl, 2010; Van Nes & López, 2007).

Alongside with acting as social space, the public open realm is not only a contributor to social sustainability but shall be given a role to enhance the durability of the environment through green features. Consequently, this is a double weapon, since the inhabitants' well-being can grow alongside the natural effects, such as (1) water retention or (2) permeability (Geerts & Raeyenmaekers, 2013). Sufficiently green areas contribute to the inhabitants' recreational activities, health and aesthetical perceptions (Montgomery, 1998). Rogier Hendricks (2014:30) in his master thesis sums

up sharply the empowering values of green urban areas, mentioning (1) improved air quality, (2) indirect health benefits and (3) reducing stress.

On the other hand, green spaces are not enough by themselves to realise their potential, but the targeted users must be inspired at the same time (Hendricks, 2014). We see various examples of green spaces around diverse and deprived areas that lie unutilised due to the lack of activities or accessibility they offer, perhaps by lack of maintenance. This is where the functions and usability of space becomes a key determining factor.

Flexible future

In terms of realising community enhancing projects with long-term effects, one of the main obstacles is Brussels' complex and fragmented governance system (e.g. concerning language, political oppositions). Furthermore, a still market-oriented neoliberal post-Fordist planning directive still prevails, which allows profit-maximising real estate speculations flourish, as economic growth is the answer to socio-spatial challenges (Beatty, 2014) resulting in decades of stagnation in urban development. The often isolated private sector-oriented space creates fragmentation as it aims to tackle inequalities while frequently facilitating the creation of new ones (ibid.).

Today the regional government at least at the Capital Region's level realises the problem and tries to facilitate a new discussion. Plenty of academics and professionals continuously raise their voice but an appropriate solution is hard to be found. The new Canal Plan can hold an answer to coherent projects that connect the region but even that is confronted by regional politicians (Vermeulen, 2015). Projects are needed that insist on a new way of thinking, a newly connected stakeholder system that fits both top-down and bottom-up initiatives. The Sustainable District Contracts (Contrats des

Quartiers) are local municipal strategies that contain object-interventions, such as new dwellings and public spaces to improve the local living quality in the less affluent neighbourhoods. Alongside some successful examples, in the most vulnerable areas they often fail to hit target and become gentrifying post-modern interventions.

With so many empty plots and unfinished or slow implementations in Molenbeek, and similarly elsewhere, the Brussels Capital Region is also a fitting case study of Philip Oswalt and his colleagues' famous criticism of contemporary urban development as 'urban planning and urban reality are generally poles apart' (Oswalt et al., 2013:7). Glazer and his colleagues (2012:13) point out that for western economies, the reinvention of the existing becomes the leading force and 'being the city' instead of making it. Hence, civil society recognises its potential and social movements experiment with the possibilities of city making practices especially in marginalised areas which major economic forces neglect (Cassiers & Kesteloot, 2011). Nowadays, the different social processes are characterised by flexibility (Lehtovuori & Ruoppila, 2012; Oswalt et al., 2013). Therefore, temporary interventions are becoming appropriate not only by focusing on urban design but by emphasising urban use even more (Lerner, 2007; Oswalt et al., 2013:375). The goal is to change how a place operates and, eventually, to contribute to longer-term benefits towards permanent establishment (Berg, 2012; Urhahn Urban Design, 2010).

Through these approaches the usual gap between planning and local demands can be tackled (Pfeifer, 2013). The main goal shall be, however, an approach where the small scale issues are truly integrated into the planning framework. However, the possibilities are heavily determined by the

availability of local resources. As Arlt (2013) also emphasises, a strong cooperation between all the actors is a determining factor.

Some cases

Superkilen Park came to existence in order to revitalise the most multicultural area of Copenhagen and enhance its global identity. The space is divided into three main areas and facilitates plenty of outdoor activities from barbecue to football, from socialising to relaxing, uniting the inhabitants through spatial objects. There are specific elements on the square representing each culture in the area. The different spatial zones attract different use as well. An area for social gatherings, a dynamic square for sports amenities and a green zone for recreation and families vary each other. The concept behind the project was indeed to bring together the citizens, marginalise the cultural differences and aid civic life. (Superkilen celebrates diversity in Copenhagen, 2014; Superkilen Urban Park, 2014; image credit: <http://www.backpacksandbunkbeds.co.uk/wp-content/uploads/2014/10/Superkilen-park-2.jpg>)



Opnisjoren is a neighbourhood in Antwerp where residents are co-producers of their environment. They are actively maintaining their area in 'liveability' aspects, where top-down planning was failing before, resulting in street littering, intercultural conflicts, vandalism and petty crime. Today the locals also act as informal guardians of the neighbourhood, having an effect on

their everyday well-being. Personal rewards include having a chance to initiate the use of certain parts of the open spaces, as well as being guaranteed special access to local governance and decision making. (Loopmans et al, 2013). This shows that if citizens are given the chance to engage with their environment and neighbours, active citizenship eventually reinforces itself.

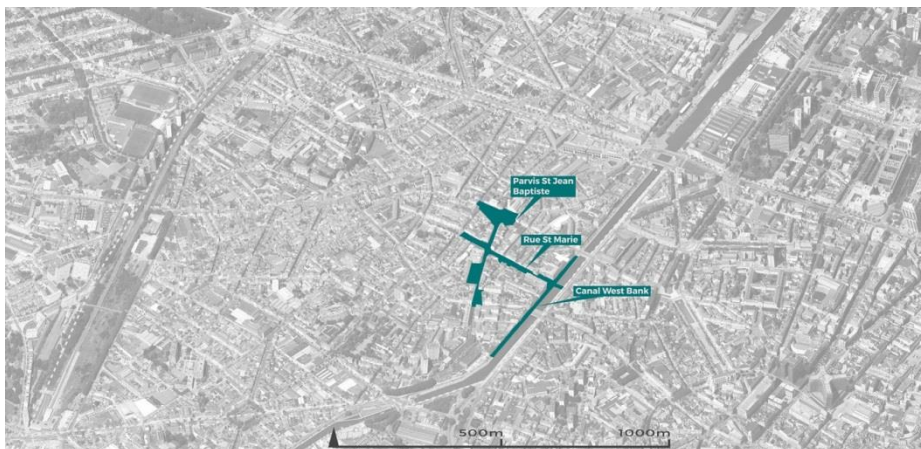
4. Discussing a response for Molenbeek

Regional framework

Many argue that sustainability concerns primarily the environment and the economy and that society is usually left out of the discussions (Woodcraft et al., 2011). This project aims to translate equality and justice into the practice of cities. The public space-oriented spatial interventions presented below are framed from a social perspective. The answer to the research question - on how local open space interventions in a degrading urban environment can be appropriately beneficial for a disadvantaged, ethnically diverse population - starts with acknowledging the problems and appreciating the societal contexts. Facilitating the involvement of the local population and stakeholders into development approaches will bring internal knowledge to the process while it also increases the viability of the changes. However, it is crucial that the adjustment of the problem areas into the spatial development policies enables and boosts the attention and possible financial promises for smaller scale use adjusted to the planning framework. Thus, the sites were chosen due to their spatial transformation opportunity (e.g. heavy car influence, lack of open space functions and use) and their connecting potential within the city.

Molenbeek

In contemporary discussions of public open spaces, the city at eye level is more and more emphasised. Walkability is seen as the key for sustainable local developments that could contribute to the perception and experience of the city as well through everyday life. The walkable environment is also a tool for empowerment as ground level commercial activities increase in these areas further expanding vitality and enhancing security. (Gehl, 2007 & 2010; Glazer et al., 2012; Stipo, 2014; Van Nes & López, 2007). 'Sometimes a simple, focused intervention can create new energy [...] that motivates others to engage with their community' (Lerner, 2014:4). Several authors define the best places as those that are diverse, improvised and somewhat lightly regulated. The best examples are flexible and offer a wide range of use (Amin, 2008; Madanipour, 2004; Saunders, 2010; Jacobs, 1961). As a result, cities of culturally diverse population certainly ought to seek for a public realm that would attract a vast range of 'optional' and as such 'social activities' (Gehl, 2007). One interesting note is that Gehl groups passive contacts, such as watching others into social activities. This rather passive behaviour is widely perceived in multicultural spaces.



This paper briefly shows three projects representing the values elaborated previously. These places hold the potential to create a network of open spaces with new functions and spatial amenities providing different opportunities for the neighbourhood, urban and regional scales.



The given purposes influence the areas' vitality differently. At some places, diverse social groups are attracted while diversity is also gained by allocating different places for different groups. The interventions are built up on the strategic zone-framework and phased appropriately based on the resources demanded, necessity of change and activating force.

Rue Sainte Marie between two metro station exits is currently a dead, under-used open space. In the proposal, it becomes a supra-local gathering area (benefitting a larger audience than just the surrounding neighbourhood) that holds activities such as sports, festivals, expositions among



others in order to bring vitality to the space. The design elements (sports features, benches, trees) are all temporary segments with which the behaviour of the users and future permanent layouts can be tested. Since the pavement is only a game of lines, the local market can be expanded here. At night, the cars keep on using the existing parking spots.



Parvis St. Jean Baptiste becomes a new local green public space as a local gathering and leisure zone, eventually. While the car accessibility on the street is generally preserved, by reducing the number of parking spaces (88 maximum) more than 2000 m² useable active space will be

gained. At the same time, new parking options are facilitated on the spot in the parking building realised on the square's vacant lot.

The public space is refurbished as the majority of the cars are removed from the place and the speed of mobility is slowed. The current usable space

expands to nearly twice its current size and a grass field that enhances the local physiology by permeability provides a comfortable space for activities, especially for youth. The other part in front of the church reflects more on an urban public space with sitting provisions and attractions.

Alongside the designing process, the spatial changes aim to encourage future users to participate in the implementation. To respond to 'what' and 'where' questions, the designers find the answers with the now engaged citizens. There are small areas that are entirely kept for residents' design, for instance flower beds. This way, an enhanced appreciation for the space can be gained that will contribute towards the perseverance of the improved quality



Next to the canal, a regional gathering and recreation zone is developed to connect the divided city. The road turns into a mixed-use public space. In the first stage the full accessibility of cars remains temporarily, but without parking places in the designated part. The plinths open for multicultural horeca businesses in a rather promenade-like feeling for the wharf. These



are expected to attract regional interests, activating a culturally mixed audience. Walkability is thus enhanced and in the first stages, the proximity of the water is facilitated by a wooden structure, while the passage along the water is also

reachable. Eventually, after experiencing citizen reaction and behaviour, the development can further grow towards lowered quays or further sophisticated structures for water accessibility.



Sustainability

The open spaces are aimed to be transformed into inclusive public spaces. But not only new functions are facilitated, which are targeting different social and cultural groups, but the design also seeks to ensure the maximisation of surface-permeability and green amenities for the city. This way, the cleanliness of the public spaces, as well as an enhanced approach to water management resulting in a higher environmental quality, is expected.

Furthermore, on a larger scale, by boosting vegetation alongside the canal and reducing the car-occupancy of the space, new adjustments to the city's (future) green corridors and infrastructure can be achieved. But most importantly, by adapting the design to the local population's needs, demands and land-use trends, the spaces are appropriate additions towards combatting the societal conflicts of the area (ie. via the establishment of new interaction zones).

5. Conclusion and further remarks

The paper aims to shortly present the relevance and some findings of a graduation project thesis seeking developing spatial interventions for a deprived, multicultural community in a degrading, segregated urban environment.

In order to showcase the project context, a brief overview of the spatial problems was given showing heavy car influence and lack of spatial design and of the societal aspects of the local and regional scale. A theoretical review targeted a practice-oriented study seeking support to tackle the shortcomings of the city and the area, and even more, to initiate new directions currently not applied within the society and in the urban environment in Brussels.

The paper briefly presents spatial interventions, which can enhance the position of residents in a particular urban area, Central Molenbeek by enhancing the urban environment that is based on the opportunities the local inhabitants and urban configuration offer. The projects are part of a wider multiscalar vision. According to the author's practical hypothesis, developing the disadvantaged areas in the larger scale context can contribute to the liveability of the entire region, and in fact, the principles behind interventions can be applicable in similarly deprived areas elsewhere, too.

The intention is to show that a clear evaluation of the demands can lead to appropriate projects, even in pressing circumstances. Unfortunately, the constraints of this paper did not allow the involvement of participatory aspects in the entire project. Nevertheless, inspired by Ash Amin's (2006) previously included remarks, I want to stress that the path to an equal city is not a project but rather the gathering of small societal and spatial steps. We must involve quantifiable and abstract targets at the same time and I continue to believe, that with this mind-set and a well-coordinated involvement of actors, it is possible to enhance the position of the intervention zone and its inhabitants in both local and larger scales combining environmental, social and economic sustainability. The project proposal seeks a set of transformations resulting in a new network of different spatial entities, assisting different functions and a place to interact, recreate and offer a new urban life well connected to the core of the city.

In summary, in the planning approaches, it is vital in any city to recognise the importance of the deprived areas and what space could offer for them. These areas and populations have to be awarded a place in the relevant discussions in order to enable and facilitate better financial support and an overall attention to the often neglected problems, thus, creating a more cohesive society. An unfortunate aspect of the project is that about half year after the completion of this study, in which the problems were identified and presented together with the proposals, the "role" of Molenbeek in the 2015 terrorist attacks in Western-Europe was revealed. However, this only further increases the relevance of the urbanist discussions in the matter or about areas facing similar challenges elsewhere.

Bibliography

- Amin, A. (2002) Ethnicity and the multicultural city. Report for the Department of Transport, Local Government and the Regions and

the ESRC Cities Initiative. Retrieved January 13, 2014, from http://storage.globalcitizen.net/data/topic/knowledge/uploads/20121009135144462048_amin_ethnicity-2.pdf.

- Amin, A. (2006) The Good City. *Urban Studies*, 43:5/6, 1009-1023
- Amin, A. (2008) Collective culture and urban public space. *City*, 12:1, 5-24
- Arlt, P. (2013) What city planners can learn from temporary users. In Oswalt P., Overmeyer, K. & Misselwitz, P. (eds.) *Urban Catalyst: The Power of Temporary Use*. Berlin: DOM Publishers.
- Beatty, R. (2014) Neoliberal Urbanism: Socio-spatial fragmentation & exclusion. *New Visions for Public Affairs*, 6, 41-51
- Bell S., Alves S., Silveirinha, E. & Zuin, A. (2010) Migration and Land Use Change in Europe: A Review, *Living Rev. Landscape Res*, 4.2
- Bijl, R. & Verweij, A. (eds.) (2012) *Measuring and monitoring immigrant integration in Europe*. The Hague: The Netherlands Institute for Social Research.
- Burayidi, M. A. (2000) Tracking the Planning Profession: From Monistic Planning to Holistic Planning for a Multicultural Society. In Burayidi, M. A. (ed.), *Urban Planning in a Multicultural Society*. Westport: Praeger Publishers, 1-14
- Burayidi, M. A. (2000) Urban Planning as a Multicultural Canon. In Burayidi, M. A. (ed.), *Urban Planning in a Multicultural Society*. Westport: Praeger Publishers, 37-52
- Capel, L. (2003). Multiculturalism in the city: managing diversity. ESRA 2003 Congress. Retrieved January 12, 2014, from <http://www-sre.wu-wien.ac.at/ersa/ersaconfs/ersa03/cdrom/papers/488.pdf>.
- Carr, S., Francis, M., Rivlin, R. G. & Stone, A. M. (1992) Needs in public space. In Carmona, M., Tiesdell, S. (2007) *Urban design reader*. Oxford: Elsevier.

- Cassiers, T. & Kesteloot, C. (2011) Socio-spatial Inequalities and Social Cohesion in European Cities. *Urban Studies*, 49:9, 1909-1924
- Corijn, E. & Vermeulen, S. (2013) Gentrification or upward social mobility: The Canal Zone. In: Corijn, E., & Van De Ven, J. (eds.) *The Brussels reader: a small world city to become the capital of Europe*. Brussels: VUBPRESS, 150-186
- Corijn, E. & Vloberghs, E. (2009) *Bruxelles! Brussels*: VUBPRESS.
- Corijn, E. & Vloberghs, E. (2013) Brussels, a small world city. In: Corijn, E., & Van De Ven, J. (eds.) *The Brussels reader: a small world city to become the capital of Europe*. Brussels: VUBPRESS, 13-28
- Covington, J. & Taylor, R. B. (1991) Fear of Crime in Urban Residential Neighborhoods. *The Sociological Quarterly*, 32:2, 231-249
- Deboosere, P., Eggerickx, T., Van Hecke, E. & Wayens, B. (2009) The population of Brussels: a demographic overview. *Brussels Studies*, Synopsis nr. 3.
- Declève, B., Ananian, P., Anaya, M., Lescieux A. (2009) *Densités bruxelloises et formes d'habiter*. Direction Etudes et Planification-Bruxelles Développement
- Doucet, I. (2013) Making a city with words: Understanding Brussels through its urban heroes and villains. *City, Culture and Society* 3 (2012) 105-116
- EUKN (2012) Immigrant integration in European Cities. Discussion Paper, Directors General Meeting, Nicosia. Retrieved 28 October, 2014, from www.eukn.org/Dossiers/EU_presidencies/Cyprus_Presidency.
- Geerts, P. & Raeyenmaekers, K. (2013) *Park for the future. A best practice guide for the 21st century*. Ostend: Kristof Beuren. Retrieved February, 2015, from http://issuu.com/lucifer/docs/parkvoordetekomst_eng_.

- Gehl, J. (2007) Three types of outdoor activities; Outdoor activities and quality of outdoor space. In Carmona, M. & Tiesdell, S. (eds.) *Urban Design Reader*. Oxford: Architectural Press.
- Gehl, J. (2010) *Cities for people*. Washington DC: Island Press.
- Glazer, M. et al (2012) *The city at eye level*. Delft: Eburon Academic Publishers.
- Guérin, A., Maufroy, L., Raynaud, F. (eds.) (2007) *Brussels is changing. 10 years of urban policy in the Brussels Capital Region*. Brussels: Regional secretariat for urban development
- Hendricks, R. (2014) *Regreenation*. Master thesis. Delft: TU Delft.
- Jacobs, J. (1969) *The Death and life of American cities*. London: Vintage Books.
- Lagrou, E. (2000) Brussels: Five capitals in search of a place. The citizens, the planners and the functions. *GeoJournal*, 51, 99-112
- Lehtovuori, P & Ruoppila, S. (2012) Temporary uses as means of experimental urban planning. *SAJ*, 2012:4
- Lerner, J. (2014) *Urban acupuncture. Celebrating Pinpricks of change that enrich city life*. Washington DC: Island Press.
- Loopmans, M. (2006) From residents to neighbours: The making of active citizens in Antwerp, Belgium. In: Duyvendak, J., Knijn, T. & Kremer, M. (eds.) *Policy, People and the New Professional*. Amsterdam: Amsterdam University Press, 109-121
- Loopmans, M., Schuermans, N. & Spijkers, F. (2013) Solidarity in Human Geography: Responsibility, care, place and encounter. *DieGem working paper* (24/04/2013).
- Madanipour, A. (2004) Marginal public spaces in European cities. *Journal of Urban Design*, 9:3, 267-286
- Malone, K. (2002) Street life: youth, culture and competing uses of public space. *Environment and Urbanization*, 14, 157-168

- Marcuse, P. (2001) Enclaves Yes, Ghettoes, No: Segregation and the State. Conference Paper, Lincoln Institute of Land Policy.
- Mincke, C., Smeets, S., Enhus, E. (2008) Citizens' forum of Brussels. Security and prevention in Brussels. Brussels Studies, Synopsis nr. 2.
- Montgomery, J. (1998) Making a city: Urbanity, vitality and urban design. Journal of Urban Design, 3, 93-116
- Murie, A. & Musterd, S. (2004) Social Exclusion and Opportunity Structures in European Cities and Neighbourhoods. Urban Studies, 41:8, 1441-1459
- Musterd, S., Ostendorf, W. & Breebart, M. (1998) Multi-Ethnic Metropolis: Patterns and Policies. Dordrecht: Springer-Science+Business Media
- Németh, J. & Langhorst, J. (2013) Rethinking urban transformation: Temporary uses for vacant land. J. Cities 2013. Retrieved September 24, 2014, from <http://dx.doi.org/10.1016/j.cities.2013.04.007>.
- Oswalt P., Overmeyer, K. & Misselwitz, P. (2013) Urban Catalyst: The Power of Temporary Use. Berlin: DOM Publishers.
- Ozola, E. (2011) Setting up public domain. In: Ozola, E., Rethinking Brussels Midi station area. Master thesis. Delft: TU Delft.
- Penninx, R., Spencer, D. & Van Hear, N. (2008) Migration and Integration in Europe: The State of Research. Oxford: University of Oxford.
- Pfeifer, L. (2013) The Planner's Guide to Tactical Urbanism. Montreal: McGill School of Urban Planning.
- Qadeer, M. A. (2009) What is This Thing Called Multicultural Planning? The Bridge, 2:9. Retrieved October 10, 2014, from http://canada.metropolis.net/pdfs/qadeer_extracted_plan_canada_e.pdf. Socio-spatial Inequalities and Social

- Qadeer, M. A. (2016) Multicultural Cities. Toronto: University of Toronto Press
- Radaï, D. & Wong, J. (2013) Collaborating Disciplines. Observing participatory planning through European context and possible benefits of interdisciplinary approaches. Methodology for Urbanism. Delft: TU Delft.
- Rea, A. (2013) Immigration and diversity. In: Corijn, E., & Van De Ven, J. (eds.) The Brussels reader: a small world city to become the capital of Europe. Brussels: VUBPRESS, 244-267
- Romainville, A. (2009) Home ownership Programmes and Gentrification in Brussels. Conference paper (Departement of Urban Studies: Housing Assets, Housing People)
- Sandercock, L. (2000) When strangers become neighbours: managing cities of difference. Planning Theory & Practice, 1:1, 13-30
- Saunders, D. (2010) Arrival City: How the Largest Migration in History is Reshaping our World. New York: Pantheon Books.
- Schweitzer, J. H., Woo Kim, J. & Macklin, J. R. (1999) The Impact of the Built Environment on Crime and Fear of Crime in Urban Neighborhoods. Journal of Urban Technology, 6:3, 59-73
- Urhahn Urban Design (2010) The Spontaneous City. Amsterdam: BIS Publishers.
- Van Criekingen, M. (2006) What is happening to Brussels' inner-city neighbourhoods? Brussels Studies, 1.
- Van Damme, J. (2013) Brussels' canal district: Belgium's social escalator. <http://www.xpats.com/brussels-canal-district-belgiums-social-escalator> [accessed: 24.09.2014]
- Van Nes, A. & López, M. J. J. (2007) Space and Crime in Dutch Built Environments: Macro and Micro Scale Spatial Conditions for

Residential Burglaries and Thefts from Cars. Proceedings, 6th International Space Syntax Symposium, Istanbul, 2007.

- Vermeulen, S. (2015) The roles of spatial visions and visioning in urban development projects. A case of post-industrial reconversion. The Brussels Canal Zone. (unpublished dissertation). VUB (Ciosmopolis) Brussels.
- Wood, P. (2009) Intercultural Cities. Strasbourg: Council of Europe Publishing.
- Woodcraft, S., Hackett, T. & Caistor-Arendar, L. (2011) Design for social sustainability. The Young Foundation Publication.
- Berg, N. (2012) The Official Guide to Tactical Urbanism. The Atlantic City Lab. Retrieved February 18, 2015, from <http://www.citylab.com/design/2012/03/guide-tactical-urbanism/1387/>.
- Lerner, J. (2007) A song of the city. TED. Gare de l'Ouest (2008) Retrieved January, 2014, from http://www.ted.com/talks/jaime_lerner_sings_of_the_city?language=en#t-53982
- Stipo (2014) Placemaking - The secret of places with energy. Retrieved December, 22, 2014 from <http://www.stipo.nl/english/placemaking-the-secret-of-places-with-energy>.
- Superkilen celebrates diversity in Copenhagen. Retrieved March 21, 2014, from <http://denmark.dk/en/lifestyle/architecture/superkilen-celebrates-diversity-in-copenhagen/>.
- Superkilen Urban Park. Retrieved March 21, 2014, from <http://centerforactivedesign.org/superkilen/>.

Authors

Daniel Radai is originally from Budapest, an international oriented professional with a Landscape Architecture degree and an MSc in Urbanism (TU Delft, 2015). While a student in Delft, he was committee member of Polis; Platform for Urbanism organising smaller events, Project Urban Planner of the award-winning Solar Decathlon Europe 2014 entry, Pret-a-Logger; and was coordinating the committee that brought together the 1st Confronting Informality international symposium. For Graduation, his eventual drive to contribute to sustainable and resilient communities especially in vulnerable contexts got him engaged with Molenbeek, Brussels, long before it was heavily featured in international media. Among others he has experience in Argentinian, Bangladeshi, Belgian, Dutch, French and Hungarian contexts. Currently he works for ISOCARP dedicated to Knowledge for Better Cities.

**MOBILITY: AN OUTCOME OF COMPREHENSIVE
PLANNING AND INTEGRATED URBAN DESIGN
SOLUTIONS**

***BY ALLIE BIGGS, TOMÁS BRADLEY, HANNAH
BRESHEARS, SEAMUS DONOHOE & RACHEL IVERS***

Mobility: An Outcome of Comprehensive Planning and Integrated Urban Design Solutions

By Allie Biggs, Tomás Bradley, Hannah Breshears, Seamus Donohoe & Rachel Ivers

Abstract

This paper focuses on mobility within urban environments and explores the implications of planning and urban design in relation to walking and cycling infrastructure through case study research in the Republic of Ireland. Based on site surveys and policy review, the paper firstly reviews “best practice” policy for mobility as implemented in cycle-centric city of Amsterdam and Copenhagen, before focusing on two case studies in the Irish capital city of Dublin: the proposed pedestrianisation of College Green and the lauded suburban development of Adamstown. The paper seeks to identify the key planning and urban design principles behind the allocation of space for alternative modes, especially facilitating non-motorized means such as walking or cycling within both ‘new build’ and ‘retrofitted’ urban environments. The paper concludes that enhanced mobility within urban environments is not an objective but rather an outcome of comprehensive planning and integrated urban design solutions. It is suggested that mobility cannot be considered in isolation and that a greater awareness and understanding of the relationship between spatial dynamics and mobility is crucial for planners and other professions alike.

1. Introduction

“Spatial policy plays an important part in tackling the issues of mobility” (Meurs and Haaijer, 2001). In fact, it is striking how little importance public authorities attach to the interaction between spatial dynamics and mobility (Priemus, Nijkamp and Bannister, 2001). By spatial dynamics we understand

changes in the actual use of space and the changes in spatial policies. When we consider the relationship between mobility and spatial dynamics, we have to take account of path dependencies and a great variety of contextual factors, such as form and interconnectivity of infrastructure networks, the relationship between transport infrastructures and the location of land uses, and the quality and cost associated with various transport modes.

Bannister, 2008, argues that in order to achieve sustainable mobility in cities, land use policy and the reduction of distance between activities must be addressed. It is suggested that more sustainable modes of transport, such as cycling and walking, can be promoted by intervention in planning policy to increase densities, promote mixed-use development and through measures relating to the design of buildings, space and route layouts. However, it is argued that in order for policy change to occur, there needs to be public acceptability of sustainable mobility, or the benefits of alternative modes of transport such as walking and cycling. Public acceptability drives political acceptability and potentially leads to governance and policy change.

Indeed, there is evidence of policy change in relation to mobility within a European context. In the 2011 EU White Paper on Transport, the European Council established that “mobility is vital for the internal market and for the quality of life of citizens as they enjoy their freedom to travel” (p. 3). Later studies from the UN build on this principle, stating that streets designed for all, particularly for pedestrians, cycling and public transport, are “driving the wheel of urban prosperity toward prosperous streets, streets that promote infrastructure development, enhance environmental sustainability, support higher productivity, and promote quality of life, equity and social inclusion” (UNHABITAT 2013b, p. ix). This idea that enhanced mobility can in turn

generate positive economic, environmental and social outcomes is justificaron in itself for the promotion of equitable infrastructure, such that liveable streets might in fact be the first act toward liveable cities.

The principle of equitable access in transport is founded on the idea that “each person has equal moral value, and therefore that governance and policy should be designed to show equal concern for each person” (Mullen 2013, p. 239). This is particularly important in that the allocation of space for transport is directly linked to the costs and desirability of different modes, and the health of a city's greater mobility system (Gossling 2013, p.16). The absence of equitable transport infrastructures in a society can be hugely detrimental to a population by limiting access to “basic needs of food, shelter, healthcare and security” (Mullen 2013, p. 241).

To this end, walking and cycling modes are the most rapidly adopted modes of transport when adequately accounted for in civic infrastructure, with the potential to greatly improve the quality of life for the urban poor and other historically isolated groups. Cycling in particular has enormous advantages for the user and greater city, as a “low-cost, low-polluting, health-improving way to travel” (Handy 2014, p.1). However, non-motorized modes, primarily pedestrians and cyclists, are “often overlooked in the design and modernization of transportation infrastructure” (UNHABITAT 2013a, p.103).

As urban transport space has been historically contested and often depends on the prevailing political agenda, issues in allocation for alternative modes, especially non-motorized means such as walking or cycling, are longstanding (Gossling 2016). Cities in the developed world face two substantial challenges their efforts to promote cycling as transport: “identifying the most effective ways to spend the limited resources that have been allocated to cycling, and

justifying the allocation of a greater share of their limited transport resources to cycling” (Handy 2014, p. 5).

Policy design and approaches to transport governance then “appear central to mitigating inequalities in safety and accessibility...as barriers to walking and cycling can involve infrastructure problems as well as behaviour such as pavement parking and inappropriate driving speed.” (Mullen 2013, p.246). To incorporate new or expanded infrastructure, especially cycle lanes, can be difficult as “transport space is limited, particularly in the dense urban designs of cities in Europe” (Gossling 2013, p.16). Safety is a key consideration for pedestrians and cyclists in an urban environment and adequate space and protection must be provided in order to encourage use of sustainable modes.

Incentives for non-motorized transport are most effectively implemented as a policy package of “investments in facilities, improved transportation networks, awareness campaigns, as well as disincentives for the use of private motorized vehicles” (UNHABITAT 2013a, p. 111). The successful and sustainable application of these measures, however, depends on widespread government support and institutional cooperation.

Considering this, the paper examines levels of mobility offered by new build and retrofit case study environments in Dublin, Ireland. Specific regard is given to the governance structures at play in the case study cities and the key challenges faced in each design scenario. The outputs of this study demonstrate that a more comprehensive approach to planning is needed in Dublin, especially in relation to the level of mobility provided to pedestrians and cyclists. Rather than simply zoning areas of land, urban design solutions are required along with creative transport design in order to ensure the

established city core can provide a safe and attractive environment for cycling and walking.

2. Theory and Best Practice

It is suggested that, the role and value of alternative modes has been acknowledged in the many European Countries, such as Copenhagen and Amsterdam, for many years. “The importance of promoting pedestrian and bicycle traffic has gradually been acknowledged, while better understanding of the nature and causes of traffic accidents has produced a considerably wider variety of planning tools”. (Gehl, 2010, p. 93) However, relatively little attention has been paid to their role within urban environments in Ireland, until recently. This section demonstrates that relatively comprehensive governance and policy measures are established in the Netherlands and Denmark to promote equitable transport systems, highlighting the lack of a collective approach towards walking and cycling infrastructure is evident in Ireland, that is further exacerbated by its governance structures.

In summary, enhanced mobility is not a requisite, rather it is an outcome of comprehensive planning and integrated urban design solutions at various levels including regional, city and local. As Le Clerq and Bertolini (2003, p.37) note, “often the success of a policy depends not so much on its analytical strength, but on problems and shifts in policy in a real planning case”. It is then necessary to understand how the mobility theory is being implemented across the globe and to assess the resulting contemporary urban experience. To address this, a number of “best practice” examples for mobility issues were identified from literature reviewed in order to understand key application issues in advance of Irish case study analysis. The “best practice” cities include Amsterdam and Copenhagen, whose attributes can be summarized as follows:

Amsterdam, The Netherlands

The Netherlands, and the city of Amsterdam in particular, have been upheld in the modern period as an exemplar implementation of theory in practice for pedestrian and cyclist-centric urban design.

Comprehensive Planning

Since the 1980s, the Dutch government has “initiated policies aimed at sustainable urban development” (Le Clerq and Bertolini 2003, p.36), namely compact city policies and strict development control, in an effort to improve environmental outcomes for Amsterdam. At the national level, central government decides on land use in general terms (where main through roads and railway lines pass, which green areas should be protected); the provincial government translates these guidelines into a regional context. The cities then translate these sensitively into local policy eventually reserving ground



Museumplein Transformation (Schlijper 2014)



area for these purpose through zoning designations. City Councils must create zoning plans for their entire domain and update them regularly. Importantly, in contrast to the

Irish Planning System, local roads, however small, are included in this process

in order to ensure the effective flow of traffic. This includes pedestrians and cyclists, often the most vulnerable in a car-dominated environment.

These measures were applied to concentrate activity levels and reduce trip lengths for the urban population, in order to create a larger market for public services and amenities. Bruheze (1999) states that the “issue-chemistry” of traffic safety, energy supply (the oil crises), environmental pollution, urban liveability, economic recession and car congestion raised and connected by local neighbourhood groups resulted in increased policy attention at the local level. The articulation of traffic circulation plans, bicycle plans and bicycle policies were the result. The bicycle as a preferred mode has been “reinforcing and gaining, respectively, a dominant position in total trips at the expense both of public transport and of the car,” particularly in the inner city, (Bertolini 2003, 585). Local initiatives to improve mobility outcomes were then diffused to the national level, where budget deficiencies and societal debates on energy and environment stimulated reconsideration of previous traffic policies. In summary, national spatial planning is broadly responsible for the transformation of urban form in Amsterdam from a car-based to cycle-based city, but was spurred initially by unrest at the local level (Schwanen, et al 2004).

Urban Design

Urban design has played a key role in the retrofitting of Amsterdam in the last few decades, particularly in the selection of street furniture and specification of outdoor materials. The use of coloured red bricks as surfacing for the road and paths, and the separation of pedestrians with cars and cyclists is present through the use of kerbing and bollards. Street clutter is limited with minimal signposts, bins and lamp posts. By freeing the streetscape for pedestrian and cycle-based movements, the Dutch

government has given a sense of ownership back to its residents. This is particularly important as the city has many residents living above shops and in apartments with minimal outdoor space. The redistribution of modal hierarchy and road space has given residents control of the kerbside and created a new multi-functional spaces in the street.

In the late 1970's to early 1980's the Dutch citizenry demanded that the primacy of the streetscape be returned to the bicycle over private motor transport. In an effort to accommodate this, a series of transformations took place in the city of Amsterdam, street by street, beginning with Sint-Antoniesbreestraat. Public protest prevented Sint-Antoniesbreestraat from being remade as a four-lane highway and marked the beginning of a new approach to city-making that put people and bicycles ahead of the car.

Since Sint-Antoniesbreestraat was completed in the late 1980s, similar measures have been applied at Meester Visserplein, Haarlmeesterplein, Plantage Middenlaan, and the cultural heart of Amsterdam, Museumplein, amongst other sites. In the case of Meester Visserplein, cycleways were given primacy in the renovated square alongside updated greenscaping and street furniture. Equity for more sustainable transport modes is provided, without completely removing the private car from the streetscape.

In the redesign of Plantage Middenlaan, however, cars were completely banned in order to make way for pedestrian and cycle paths. In this case, the resurfacing of the space serves a dual purpose where permeable materials help combat climate change by capturing stormwater.

The redesign of Museumplein in the 1990s, transformed the former multi-lane motorway into a true urban “living room.” Beneath the green space of Museumplein lies a parking garage for 600 cars, illustrating Amsterdam’s commitment to allowing cars in the city, but not at the expense of more sustainable, and livable, modes of transport.



These examples illustrate the attempt in Amsterdam to restrict private car use and thereby equalize or otherwise balance its share of the city with other modes. This has the effect of making cycling and walking more attractive as there is more freedom of movement with these modes and usually a faster travel time. Consequently these users can enjoy the environment in which they are moving through more as it has been created for walking and cycling and not car use.

Copenhagen, Denmark

Copenhagen is Denmark’s capital with a population of 1.8 million in the Greater Copenhagen region. In terms of structure, Copenhagen is a typical European city, which grew within shifting fortifications surrounding its harbour.

After the Second World War car use was high and a large amount of space on the City’s streets and squares was used intensively for car traffic and parking. Pedestrianisation began with the city’s main street, Straget, which was converted in 1962 as an experiment. Straget proved to be a huge success as a pedestrian street, in both popular and commercial terms. More conversions of streets and squares followed in subsequent years. Gradually a cohesive network of pedestrian streets was developed, creating, what is now, a coherent network for people on foot. It is easy to walk around in Copenhagen from one end of the city to the other, and today foot traffic represents about 80% of the movements in the inner city. (Gehl Architects (Not dated)).

Over the years, gradual investments were also made in bicycle infrastructure resulting in an increase in the number of bicyclists since the 1970’s these curves have gone up steadily. Street space has been dedicated to bicycle paths resulting in 37 % of people cycling to and from work or school (Gehl, 2010).

Importantly, the City of Copenhagen records and analyses use of public space so that public realm and mobility can be further improved. Since 1968, researchers from the Centre for Public Space Research at the School of Architecture in Copenhagen have regularly recorded how public space is utilised and what changes and developments have occurred with respect to life in public spaces. A number of comprehensive studies of urban life throughout central Copenhagen in 1968, 1986, 1995 and 2005, supplemented with many smaller studies of individual locations, have made it possible to follow the development of urban life in step with the many improvements made since 1962.

The pedestrianisation of Strøget in 1962 marked the beginning a major change in the approach of Copenhagen to urban life; following the success of the initiative the city moved to place a much greater emphasis on pedestrian and bicycle access to the city at the expense of cars. This approach has in turn become internationally influential.

Strødet

Strødet is a street in central Copenhagen that mixes motorized traffic with cyclists and pedestrians. The street is what is known as a 'Shared Space', where cars, bicycles and mopeds can travel at reduced speeds (normally below 15 km/h), adjusting to the characteristics of the pedestrians.

Strødet runs through a well-preserved historical district of Copenhagen. In 1989 Strødet was, as an experiment, regraded to a mixed pedestrian and vehicle street. As it was a success, the street was reconstructed in 1992 to be a 'shared space' by integrating the pedestrian paths with the carriageway.

The renovation of Strødet is a good example of drastically changing people's street behaviour to promote equitable access and facilitate motorists, pedestrians and cyclists.

3. Key Planning and Urban Design Principles

Mobility and Spatial Dynamics

Having regard to relevant literature and best practice, this section identifies a number of key planning and urban design principles to be considered in relation to mobility and in particular providing for walking and cycling in urban environments. More sustainable modes of transport can be promoted by intervention in planning policy to increase densities, promote mixed-use

development and through measures relating to the design of buildings, space and route layouts (Banister, 2008). The relationship between mobility and spatial dynamics is also important, taking account of path dependencies and a great variety of contextual factors, such as urban form and interconnectivity of infrastructure networks (Priemus, Nijkamp and Banister, 2001).

Land Use Planning

Location of Land Uses

In most analysis and evaluation studies associated with transport planning, it is accepted that travel is a derived demand and not an activity and that it is only the value of the activity at the destination that results in travel (Banister, 2008). However, the theory that all travel is derived demand may become less relevant as incomes rise and leisure time becomes more valuable (Mokhtarian and Salomon, 2001).

Considering travel as a derived demand, the need to travel or move is generated the physical separation of activities. With respect to the work journey, travel time is important (Loo and Chow, 2006). The distance between certain activities is a factor that affects not only travel time but also modal choice. In order to encourage modal shift planning authorities must consider the location of various land uses and the distances between them.

Connecting up large-scale new housing locations to road, rail and cycle networks often appears to take place quite independently from the spatial design of these locations, with a low cost recovery level and a shortfall in the quality of mobility as a consequence.

Reducing Distances between Activities

Banister, 2008, argues that in order to achieve sustainable mobility in cities, land use policy and the reduction of distance between activities must be

addressed. The Irish Planning System and other factors such as building space requirements and the emergence of the car have resulted in larger distances between different land uses thus exacerbating the distances people travel. Greater distances between activities, or nodes, usually results in alternative modes being less viable.

Furthermore, it can be argued that there is a relationship amongst distance between different activities and density. By increasing densities and concentration, the distance between nodes is reduced. This in turn affects modal choice and, in theory, increases the viability of alternative modes such as walking and cycling as distances are reduced as well as travel times.

Use Mix and Zoning

Although a fundamental part of modernist urban design, functional zoning approaches have been much criticised Leon Krier and others such as Jane Jacobs argue that zoning results in 'mono-use' areas as it attempts to separate rather than blend land uses. Krier suggests, if zoning or policies were more flexible that it may result in a smaller distance between various land uses thus reducing the distances people need to travel but also increasing the viability of alternative modes, including walking and cycling.

Urban Design

Urban Morphology

Urban morphology is the study of form and shape of settlements. Morphologists have shown that settlements could be seen in terms of several key elements, of which Conzen (1960) considered land uses, building structures, plot pattern and street pattern to be the most important. He emphasised the difference in stability of these elements. Buildings and particularly the land uses they accommodate, are usually the least resilient

elements. Although more enduring, the plot pattern changes over time as individual plots are subdivided or amalgamated. "The street plan tends to be the most enduring element. Its stability derives from it being a capital asset not lightly set aside; from ownership structures; and, in particular, from the difficulties of organising and implementing large scale change" (Carmona, Heath, Oc, and Tiesdell, 2003, p.61).

The cadastral system is the layout of urban blocks and, between them, the public space/movement channels or 'public space network'. The blocks define space, or the spaces define the blocks. Patterns of streets and spaces have often developed over many hundreds of years. The street and the street pattern is of key importance when considering mobility. Importantly, it is also the morphological element that is most resistant to change. Therefore, it is suggested that the public space/ movement channels or 'public space network must be adequately considered in planning urban environments. Notably, the Irish Planning System generally relies on zoning and indicative objectives, when planning roads or streets in contrast to practice in the Netherlands that considers the streetspace itself and the associated spatial implications at the outset.

Space for Walking, Space for Cycling

Urban morphology and particularly the spaces between buildings (streets and squares etc.) have a direct effect on the level of mobility achievable in urban environments. As demonstrated, streets or public space, tend to be the morphological element that is most resistant to change (Conzen, 1960). However, it is within this limited space that so many different modes must move between different activities. Additionally, a wider notion of the street is now being considered as it is no longer defined as a road but also a space

for people, alternative modes and public transport (Marshall and Banister, 2000).

Gehl (2010) argues that pedestrian and bicycle traffic does not crowd city space stating “pedestrians and cyclists make very modest demands. For example, two sidewalks 3.5 metres wide or a pedestrian street 7 metres wide can handle 20,000 people per hour. Two bicycle paths 2 metres wide are sufficient for 10,000 bikes per hour. Furthermore a typical bicycle path can transport five times as many people as a car lane.”

Therefore, although, in theory, it should be possible to cater for all or most transport modes within new developments beginning with a ‘blank canvas’, a unique challenge exists for planners and urban designers working within constrained existing urban areas or historic city cores to provide adequate environments for cycling and walking. Within existing environments, designers must work within established building lines and plots and therefore a limited amount of space is available to provide for a multitude of transport modes. This issue is critical as most urban areas have been in existence for some time meaning that spaces must be redesigned and altered to accommodate various modes, when required.

“The integration of mobility and spatial dynamics sets public authorities a major challenge of governance. The integration of spatial planning, real estate development, infrastructure planning and transport policy must take place within and between public bodies. In addition vertical coordination between national, regional and local policies, as well as guidelines, must be guaranteed to ensure enhanced levels of mobility for pedestrians and cyclists in urban areas” (Priemus, Nijkamp, and Banister, 2001).

4. Case Studies

Dublin is the capital city of Ireland and has a population of approximately 1.3 million (CSO, 2015). The topography of the city is relatively flat which makes it an ideal candidate city for cycling. Dublin has a mild climate with on average 61 mm of rain per month. This compares with 64 mm in Amsterdam, 44 mm in Copenhagen and 78 mm in Freiburg, all cities with a traditional reputation of being the most cycle friendly cities in the world (World.Climate.com, 2012). Given the climate and topography of Dublin it is an ideal candidate for improving growth in cycling rates. (Caulfield, 2014)

Since 2008, there has been a concerted effort in Dublin to improve the image of cycling in the city and to increase the modal share of cycling. In 2009, the Irish Department of Transport set out ambitious targets for increasing cycling from a base of less than 2% in 2009 to 10% of all trips by 2020 (Department of Transport, 2009a). It has still yet to be seen if these targets can be realised. Policymakers have also sought to support the design of cycling lanes, junctions and other facilities by publishing the first design standards document for cycling in Ireland (National Transport Authority, 2011). This document is seen as a large step forward in the design of coherent and continuous cycle lanes in Ireland.

One of the barriers to cycling is a perceived poor safety record. Cycling in Dublin is generally perceived as unsafe by both experienced cyclist and non-cyclists, but the increased provision cycle lanes may change this perception (Lawson, et al., 2013b). To improve the safety of cyclists and the attractiveness of the mode, over 120 km of cycle lanes have been constructed in Dublin since 1990, 25 km of which are off-road cycle tracks (Dublin City Cycling, 2012). In tandem with the introduction of this new

cycling infrastructure, Dublin City Council has introduced traffic calming measures by introducing 30 km speed limits in the city centre.

Furthermore, the capital city is also attempting to improve the experience of pedestrians, providing additional space for walking and using vacant space temporarily to enhance its public realm.

Whilst Dublin is beginning to recognise the importance of providing for alternative modes it needs to increase the capacity and efficiency of transport systems and put in place the planning policy and measures necessary to provide more comprehensive solutions. Two case studies are included which analyse a new development (Adamstown) and a retrofitted urban environment (College Green) having regard to the key planning and urban design principles identified to facilitate alternative modes such as walking and cycling and provide equitable access.

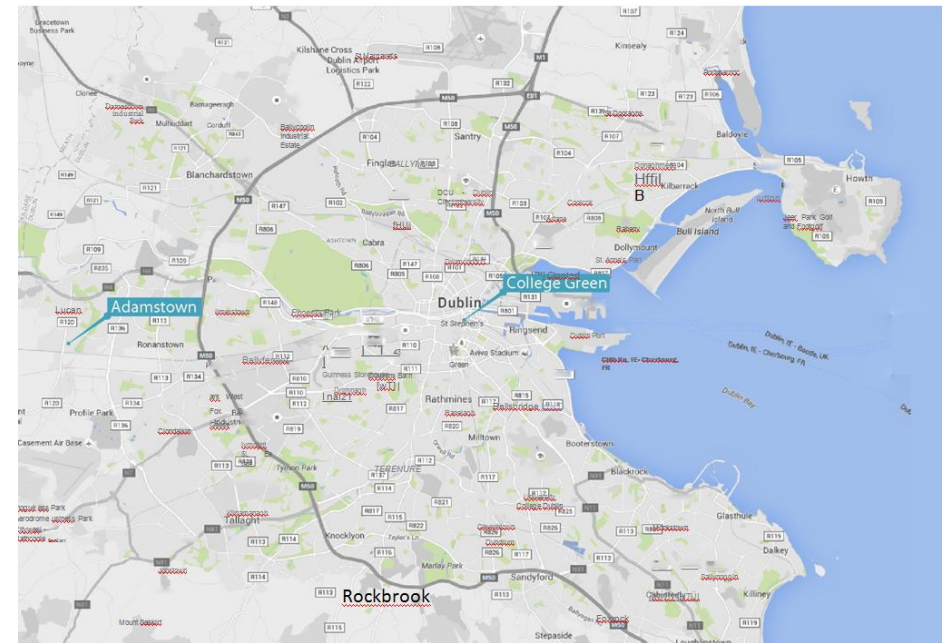
College Green

College Green is a central and historic north-south thoroughfare through Dublin City Centre used by 90,000 pedestrians per day as well as hosting public transport bus routes, taxis and private vehicles. It fronts onto the main entrance of Trinity College Dublin as well as numerous banking institutions and commercial premises. It is under the control of Dublin City Council (DCC) planning authority.

Following an extended economic downturn, Dublin City is experiencing a rapid economic recovery. There are 15,000 new residents expected in the city centre, and an additional 42,000 commuter trips are expected to be made into Dublin each day by 2023, an increase of 20% over 2011 levels

(NTA, 2015). Consequently, current provisions for all transport modes at College Green are nearing the limits of their capacity.

Dublin City Council and the National Transport Authority have realised the necessity of introducing changes to the public realm at College Green, with all modes restricted in terms of space. The necessity to address the restrictions in spaces has been hastened by the construction of Luas CrossCity, a new light rail line which will traverse College Green and reduce road capacity for other modes on the main north-south corridor through the City Centre



Map showing location of Case Studies within Dublin. (Source: Google Maps, 2016, cropped and annotated by S. Donohoe.)

The confluence of these factors requires a major reconfiguration of several major streets in the City Centre in order to not only allow for efficient operation of public transport alongside private vehicles, cyclists and pedestrians, but also to provide room for the expected growth in trips over

the next several years. Two new proposals have recently been released that will address the growing congestion of the city centre: the Dublin City Centre Transport Study (2015) and the College Green Consultation Document (2016).

The Dublin City Centre Transport Study, released in June 2015 and drafted jointly by Dublin City Council and the National Transport Authority (NTA), outlines a variety of strategies to address growing congestion in Dublin and achieve the objectives set out in the Dublin City Development Plan 2011-2017 and the Dublin City Public Realm Strategy (2011). One of the key transport goals identified in the Development Plan is to achieve a mode share (for travellers entering the city centre) of 55% for public transport, 15% for cycling, 10% for walking and 20% for private car use by 2017 (NTA, 2015). In 2015, the mode share was 50% for public transport, 5% for cycling, 9% for walking and 32% for private car use (Cordon Count Report, 2015). This is a challenging goal, but a significant shift in modal share is necessary in order to result in an increase of overall transport capacity in the city centre.

The proposed plans comprise measures to improve cycling infrastructure, the pedestrian environment and public realm, as well as increase the capacity and efficiency of public transport and reduce through-traffic in the city centre. This plan shares many similarities with the case study of Amsterdam with the typical conflicts arising in Dublin such as maintaining the free flow of motor vehicles, accommodating cyclists and pedestrians and conserving the built heritage of the area.

College Green is located at the east end of Dame Street, terminating at Trinity College, and is the nexus of the key north-south transport route through the city for pedestrians, cyclists, public transport and private vehicles alike. It also forms the heart of the 'Civic Spine', the city's processional route that links Parnell Square with City Hall and Dublin Castle.

In this way, it is an important public space, and is often used for major public events, including New Years' Eve celebrations and political rallies. Historically, the use of College Green as a place of assembly can be traced back to the original Viking settlement (DCC, 2015). The present layout of College Green was designed by the Wide Streets Commission in 1782, providing a grand route between Dublin Castle and the Parliament House and Trinity College (NTA, 2015). Throughout the 19th and 20th centuries, the space was continually adapted to meet the needs of a growing and changing society, including the introduction and expansion of the private vehicle.



Proposed Pedestrianisation of College Green, Dublin. (DCC, 2015.)

It is clear that the City of Dublin has a significant conflict in the space which has two objectives: of recreating the historic civic plaza for the citizens of the city; and maintain mobility through the space. From recent events hosted on the space its current day-to-day function as a major traffic corridor must be suspended in order to be utilised for civic functions.

The Consultation Document proposes to close College Green to all forms of traffic in the east-west direction, while buses, trams and taxis will run in the north- south direction in front of Trinity College, connecting Lower Grafton Street and Westmoreland Street. This allows the majority of College Green to be converted to a civic plaza area.

This would have a significant impact on cycling mobility. While the merits of a civic space in this location are acknowledged, the focus of this study is mobility and to this end, the values and vision of increased mobility, particularly for cycling are being developed in isolation with no contiguous master planning of the same nature in neighbouring streets to maintain continuous network of walking and cycling links.

As previous studies have shown direct routes with short journey times were found to be the most important variable for existing cyclists and non-cyclists in determining route choice. It is considered a significant conflict will arise between cyclist and pedestrians in this space should the bicycle not be facilitate through the space. Given the flexibility of the mode to avoid barriers to its mobility, cyclists approaching from Dame Street will seek to use the space to connect to Westmoreland Street or vice versa. The land use and cycling network at College Green, as planned currently, are not being integrated.

A detailed plan for the plaza will be the subject of an architectural-led process. Current illustrations fail to provide sufficient details on movement of cyclist and links from Dame Street to Westmoreland Street and vice versa. Ideally cycle track would be provided which would allow for cyclist to continue their journey and not force cyclists to dismount. This will allow for the avoidance of potentially dangerous conflicts between cyclists, buses and trams (NTA, 2015).

The Dublin City Centre Transport Study and College Green Traffic Management Consultation Document introduce ambitious plans to reduce traffic volume in the city centre in favour of prioritising cyclists, pedestrians and public transport. The rerouting of many bus routes through the city centre will be challenging, but the lack of access for private vehicles to many roads will be a high deterrent for many motorists against entering the city centre. Further details need to be provided in able to allow a proper examination of mobility for walking and cycling.

If implemented correctly, Dublin could find itself being recognised as an exemplar of urban sustainability. However, these interventions alone are not enough to achieve a major modal shift in the city; a contiguous network of cycling and pedestrian infrastructure beyond the city centre is necessary to encourage people to change their modal choices.

Adamstown

Adamstown is a planned urban development of 10,000 residential units with associated transport and community infrastructure some 10 km west of Dublin City. It is under the control of South Dublin County Council (SDCC) planning authority. Adamstown is based around walkable and bikeable neighbourhoods located in close proximity to high quality public transport linkages (SDCC, 2003).

Part IX of the Planning and Development Act 2000, as amended introduced Strategic Development Zones (SDZ's) to facilitate specified development of economic or social importance to the State. Adamstown is a Strategic Development Zone (SDZ), for which a Planning Scheme or Masterplan was prepared in 2003. The Planning Scheme provides a legal framework for phased development of residential and infrastructural works. Adamstown is the first SDZ under the Planning and Development Act 2000, as amended

(SDCC, 2003). The Planning Scheme saw revisions in 2014 which primarily resulted in a reduction in the residential density of approximately 20%. This was a result of poor economic conditions in housing market at this time, however, by and large this revision to scheme did not alter the infrastructural provisions, rather the number and size and residential units and their phasing (SDCC, 2014).



A typical street in Adamstown, Dublin. (2016.)

The existing area is essentially peri-urban and on the fringe of the Dublin Metropolitan Area. To the east, toward Dublin City, lies low density and predominantly developer led housing estates consisting of semi-detached units. To the west lies lands zoned as agricultural to protect and improve rural amenity. To this end, the values and vision of the planned scheme at Adamstown are being developed in isolation with no contiguous master

planning of the same nature in neighbouring areas. This is reflected in the provisions for mobility with no contiguous planning for cycling.

The primary 'philosophy' or policy which is adopted to influence mobility in the planning scheme states to provide alternatives to the private car in the form of a new railway station and transport interchange, additional rail capacity, dedicated bus routes and a continuous network of walking and cycling links.

The land use and transportation system at Adamstown have been integrated in order to maximise use of public transport, walking and cycling, and to minimise car use. To ensure consideration is given to walking and cycling the scheme designers prepared the Adamstown Street Design Guide (SDCC, 2003), with an objective to establish a network of walkable streets that provide direct links between communities, public transport, shops and other local facilities and recognise streets are social spaces in which people live and interact and a renewed approach to street design is encouraged using more traditional place based values. The document was widely esteemed with much of the document becoming transposed into for national use in the Design Manual for Urban Roads & Streets (DMURS) prepared for the Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government (2014).

In assessing Adamstown, over a decade from the establishment of the scheme, it is clear, physically, that much of the Adamstown Street Design Guide was implemented. The cycling user feels safe with passively managed vehicular behaviour through a holistic design approach and 'shared space' philosophy - reflected in the entire street hierarchy. There is ability for cyclists to make free movements, unconstrained by the hard engineers for motor vehicles yet legible for all users to avoid potential conflicts. Importantly the streets feel attractive and inviting for the cycling user navigating around the neighbourhood (SDCC, 2010).

To bolster the physical infrastructure, the designers of Adamstown also worked to ensure that there was a shift in behaviour toward walking and cycling - highlighting it as a viable alternative. The Dublin Transportation Office, now the National Transport Authority, developed a sustainable travel programme for the residents of the scheme, entitled Smarter Travel Adamstown (DTO, 2006). This was launched in 2006 providing information on travels options, with emphasis on walking and cycling. In Ireland, it was the first residential travel scheme (DTO, 2006).

Despite all these measures, a 2008 survey was carried out on the residents of the scheme which reported a surprisingly high level of private car usage among residents in Adamstown. It reported the majority of respondents (57%) used car as the primary mode of transportation, a further 26% of respondents used bus services and 17% used the train service and 8% walked or cycled (NTA, 2010). When the planning scheme was being considered in 2003 by the planning authorities, residents in the neighbouring community's raised significant concern regarding the increase in traffic levels on the local road network as a result of such an expansive planning scheme. At this time, the designers of the scheme emphasised the good public transport that could be provided at this location. While the aims and objectives of the planning scheme were clear, there is an obvious divergence from policy and practice, and how users of the scheme move with very low levels of public transport use and even lower levels for walking and cycling.

In a further survey in 2010, it report that there is an average of 1.43 cars per household with over 62% of participants use the car as the main mode of travel for work/school/college. This is on par with the national figure of 63%. However, it pales in comparison the figures for the Greater Dublin Area which reports a 34% use the car as the main mode of travel for work/school/college. It is difficult to reconcile the difference between

Adamstown and the Greater Dublin Area figure, given the infrastructure provided and public transport linkages available (CSO, 2006). Getting residents to make the modal shift from car use to walking and cycling, is difficult however, with the study also reporting that the percentage of bicycle ownership per household is surprisingly low, with 56% of households not owning an adult bicycle.

When examining the study further, it becomes apparent why walking and cycling may not be the modal choice of many the daily destination variable for a significant portion of participants (13%) and a high portion of participants (38%) travel to destinations that are dispersed throughout Dublin City and neighbouring counties. Approximately 20% of residents travel to the City Centre for work/school/ college (NTA, 2010). These distances are often too great to be completed by bicycle and are only reached by negotiating unclear paths through a peri-urban, low density environment.

It can be maintained that the infrastructure and incentives for behaviour for cycling is available through the planning scheme at the neighbourhood level, however, there remains gross deficits in infrastructure at a wider city level. The principles of the Adamstown Street Design Guide are not implemented outside of the SDZ. This has a direct impact on the attractiveness of walking and cycling as a mode of travel, for Adamstown given the scheme is still at an early stage in its development and many services, such as employment centres and comparison shopping do not exist, convenience shopping is limited and public transport services are slow and often indirect for most users. The essential mono-use, of residential units at Adamstown will not promote culture of cycling.

By all standards, as shown in the other international case studies, Adamstown SDZ has made every effort to realise the potential of walking and cycling in the neighbourhood through careful thought on densities and

distances to travel within the SDZ. However, it cannot reach a critical mass yet due to the size of the SDZ. That said, Adamstown has not been developed to its full extent, much of the scheme lies undeveloped. The highways have not yet seen its capacity filled where cycling might be seen as the better alternative. It would not be fair to say cycling infrastructure and incentives have failed at Adamstown, urban planning has been forward thinking in this scheme and in time a shift toward the bike will occur. However, cycling outside the neighbourhood level may remain low unless infrastructure is further improved in the wider city scale to make the prospect of cycling attractive at Adamstown. A new review and study of walking and cycling is required for Adamstown to build on previous reports and surveys undertaken.

5. Conclusion

In summary, a more comprehensive approach to planning is needed in Dublin, especially in relation to the level of mobility provided to pedestrians and cyclists. Planning Authorities and Transport Authorities too often work in isolation, providing limited opportunities for the 'joined-up' thinking and comprehensive planning required to produce functional and sustainable streets and open spaces. In contrast to the Irish Planning System, Planning Authorities in Amsterdam create zoning plans for their domain and consider all roads, streets and open spaces, however small, in order to ensure adequate levels of mobility for all modes. This proactive approach and inclusive planning appears to bear positive results.

Public authorities in the Irish context must recognise the importance of the interaction between spatial dynamics and mobility. Rather than simply zoning areas of land, integrated urban design solutions are required along with creative transport design in order to ensure the established city core and new developments can provide a safe and attractive environment for cycling and walking. Furthermore, an evaluation of planning and urban

design objectives must be undertaken regularly to provide guidance for the development of livable cities and equitable transport modes.

Mobility in an urban context cannot be considered in isolation. It has been proven that the morphology of our towns and cities has a profound impact on the way in which people move within and use public space. A greater awareness and understanding of the relationship between spatial dynamics and mobility is crucial for planners and other professions in providing enhanced mobility within urban environments.

Bibliography

- Banister, D. (2008) The sustainable mobility paradigm. *Transport Policy*. 15, 73-80.
- Bertolini, L., and Clerq, F L. (2003). Urban development without more mobility by car? Lessons from Amsterdam, a multimodal urban region. *Environment and Planning A*. 35, 575-589.
- de la Bruheze, A. (1999). Bicycle traffic in practice and policy in the twentieth century.
- Carmona, M., Heath, T, Oc, T, & Tiesdell, S. (2010). *Public Places Urban Spaces the Dimensions of Urban Design*. Burlington, Elsevier Science.
- Caulfield, B., Brick, E., and McCarthy, O. T. (2012). Determining bicycle infrastructure preferences - A case study of Dublin. *Transportation Research Part D*. 17, 413-417.
- Caulfield, B. (2014) Re-cycling a city - Examining the growth of cycling in Dublin. *Transportation Research Part A: Policy and Practice*, 61, 216-226.
- Central Statistics Office (2006) *Census 2006*. Cork: CSO.
- Conzen, M. R. G. (1960). *Alnwick, Northumberland: a study in town-plan analysis*. London, George Philip.

- Department of Transport, 2009a. Smarter Travel: A New Transport Policy for Ireland 2009-2020, DoT, Dublin.
- Department of Transport 2009b. Ireland's First National Cycle Policy Framework, DoT, Dublin.
- Department of Transport, Tourism and Sport and the Department of Environment, Community and Local Government (2014). Design Manual for Urban Roads and Streets. Dublin: DoTTS & DoECLG
- Dublin Bikes, 2012. <<http://www.dublinbikes.ie/>> Accessed 28.04.2016.
- Dublin City Council and National Transport Authority (2015). Dublin City Centre Transport Study. Dublin: DCC & NTA.
- Dublin City Council and National Transport Authority (2016). College Green Traffic Management Measures, Public Consultation Document. Dublin: DCC & NTA.
- Dublin City Council and National Transport Authority (2015). Canal Cordon Report 2015. Dublin: DCC & NTA.
- Dublin City Cycling, 2012. <<http://www.dublincitycycling.ie/cycling-facilities/cycle-lanes-and-facilities>> Accessed 28.04.2016..
- Dublin Transportation Office (2006). Smarter Travel Adamstown. Dublin: DTO.
- European Commission - EC. (2011). White paper on transport: roadmap to a single European transport area : towards a competitive and resource-efficient transport system. Luxembourg, Publications Office of the European Union.
- Gehl, J. (2010). Cities for people. Washington, DC, Island Press.
- Gossling, S., Schroder, M., Spath, P and Freytag, T. (2013). "Urban Space Distribution and Sustainable Transport", Transport Reviews.

- Handy, S., van Wee, B. and Kroesen, M. (2014). "Promoting Cycling for Transport: Research Needs and Challenges", Transport Reviews, 34(1), 4-24.
- Lawson, A. R., Pakrashil, V, Ghosh, B., & Szeto, W. (2013). Perception of safety of cyclists in Dublin City. Accident Analysis and Prevention. 50, 499-511.
- Le Clerq, F. and Bertolini, L. (2003). "Achieving Sustainable Accessibility: An Evaluation of Policy Measures in the Amsterdam Area," Built Environment, 29(1), 36-47.
- Loo, B. and Chow, S., (2006). Sustainable urban transportation: concepts, policies, and methodologies. Journal of Urban Planning and Development, 132 (2), 76-79.
- Marshall, S., & Banister, D. (2000). Travel reduction strategies: intentions and outcomes. Transportation Research. Part A, Policy and Practice. 34A.
- Meurs, H., & Haaijer, R. (2001). Spatial structure and mobility. Transportation Research. Part D, Transport and Environment. 6D.
- Mokhtarian, P. L., & Salomon, I. (2001). How derived is the demand for travel? Some conceptual and measurement considerations. Transportation Research Part A.35, 695-719.
- Mullen, C. et al., (2014). "Knowing their place on the roads: What would equality mean for walking and cycling?", Transportation Research Part A: Policy and Practice, 61, 238-248.
- National Transport Authority (2010). Smarter Travel Adamstown Personalised Travel Planning Pilot Project. Dublin: NTA.
- National Transport Authority (2011). National Cycle Manual, Dublin.
- National Transport Authority (2015). Dublin City Centre Transport Study. Dublin: DCC & NTA.

- O'Mahony Pike Architects (2016). ADAMSTOWN SDZ MASTERPLAN. <http://omparchitects.com/en/projects/adamstown-masterplan/>. Accessed 05 May 2016.
- Preimus, H., Nijkamp, P., & Banister, D. (2001). Mobility and spatial dynamics: an uneasy relationship. *Journal of Transport Geography*. 9, 167-171.
- Schlipjer, T. (2014). <http://sustainableamsterdam.com/2015/12/livable-cities-campaign/>. Accessed 03 May 2016.
- Schwanen, T., Dijst, M., & Dieleman, F M. (2004). Policies for urban form and their impact on travel: the Netherlands experience. *Urban Studies*. 413, 579-603.
- South Dublin County Council (2003). Adamstown Strategic Development Zone (SDZ) Planning Scheme 2003. Dublin: SDCC.
- South Dublin County Council (2010). Adamstown Street Design Guide. Dublin: SDCC.
- South Dublin County Council (2013). Adamstown Annual Report 2013. Dublin: SDCC
- South Dublin County Council (2003). Adamstown Strategic Development Zone (SDZ) Planning Scheme 2003. Dublin: SDCC.
- South Dublin County Council (2014). Adamstown Strategic Development Zone (SDZ) Planning Scheme 2014. Dublin: SDCC.
- United Nations Human Settlements Programme - UNHABITAT (2013a) Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013. Oxon: Routledge.
- United Nations Human Settlements Programme - UNHABITAT (2013b) Streets as Public Spaces and Drivers of Urban Prosperity. Nairobi: UNHABITAT.
- Worldclimate.com. <<http://www.worldclimate.com>> Accessed 26.04.2016.

Authors

Seamus is a Town Planner and a Landscape Architect, being a graduate of the BAgrSc in Landscape Architecture and the Masters in Regional and Urban Planning at University College Dublin. He is currently employed at Tom Phillips + Associates, a Dublin-based Planning Consultancy, primarily operating as a planning consultant to a wide range of projects for public and private sector clients.

Hannah Breshears is finishing a Masters degree in Regional and Urban Planning from University College Dublin this summer, having previously completed degrees in Architecture and History at the Fay Jones School of Architecture in the United States. Hannah was recently awarded the Student Prize for 2014-2015 by the Royal Town Planning Institute, and is currently employed by the American design firm, Modus Studio.

Tomás Bradley graduated from the School of Geography, Planning & Environmental Policy, University College Dublin with an undergraduate degree in Planning & Environmental Policy and a first class honours master's degree in Regional and Urban Planning. He is a member of the Irish Planning Institute and a chartered member of the Royal Town Planning Institute. Previously Tomás has worked for An Taisce, the National Trust for Ireland as a Planning & Environmental Policy Officer. He currently works in the renewable energy industry for ABO Wind AG, advising on planning and environmental related issues.

Rachel Ivers is a Transport Planner having graduated from Dublin Institute of Technology with a BSc in Spatial Planning and from Delft University of Technology with an MSc in Transport, Infrastructure and Logistics. She is currently working with Arup, an international engineering consultancy in the transportation team. . She is a Chartered Member of the Chartered Institute of Logistics and Transport (CILT), graduate member of the Irish Planning Institute (IPI), and an affiliate member of Engineers Ireland.

**CREATING AND MAINTAINING ACCESS ROUTES INTO
CITY CENTRES TO FACILITATE GREATER PEDESTRIAN
PERMEABILITY: A CASE STUDY OF CORK CITY**

BY SHAUNA MC GETTIGAN & MATTHEW COX

Creating and Maintaining Access Routes into City Centres to Facilitate Greater Pedestrian Permeability: A case study of Cork City

By Shauna Mc Gettigan & Matthew Cox



1. Introduction

Current trends in urban planning and transportation planning have seen a shift away from facilitating modes of transport dominated by automobiles towards assisting alternative sustainable modes such as cycling and walking. The previous approach in the early 20th century was to aid as much vehicular traffic as possible, building huge infrastructure with wide lanes and narrow footpaths to increase capacity, and this easy access has left us with a culture where the vast majority of people travel by car. However, planners and transport engineers are now seeking to discourage people driving to work and seek to encourage means such as cycling and walking which are more

environmentally friendly and ultimately a more sustainable means of transportation.

For our paper we wanted to look at how people would access city centres and downtowns as pedestrianisation continues to grow. While there has been much made of the benefits of pedestrianisation of main shopping thoroughfares and the removal of vehicular traffic from city centres, we wanted to look at how people get to these more pedestrian friendly areas from the start of their journey. The predominant mode of transport remains the car (as seen in the census figures for modes of transport in Ireland in Figure 1 below), with the majority of commuters being the sole occupant of their car. A likely outcome of proposals to remove cars from city centres is that instead of reducing the amount of people driving to work on a daily basis significantly, the drivers will instead be moved to the periphery of urban centres and will have to park their vehicles there and make the final part of their journey either by foot, bicycle or public transport.

To look at how this final leg of commuting journeys can be provided for, we constructed a hypothetical scenario for 10 years from now where pedestrianisation of Cork's city centre has continued and the city centre has created an infrastructure for the minimal use of cars on the city centre island. We then chose four sites at the four corners of Cork city centre, which would be suitable for multi-storey car parks to replace the current car parks, which are currently situated in the city centre. We examined the current pedestrian access routes for people travelling by foot into Cork city centre from these four sites along designated key pedestrian routes, in an attempt to analyse what kind of pedestrian improvements need to be made in cities in the future to facilitate walkability and make pedestrian-friendly city centres. We

then evaluated our findings to arrive at a set of principles for facilitating pedestrian movement into city centres from peripheral areas.

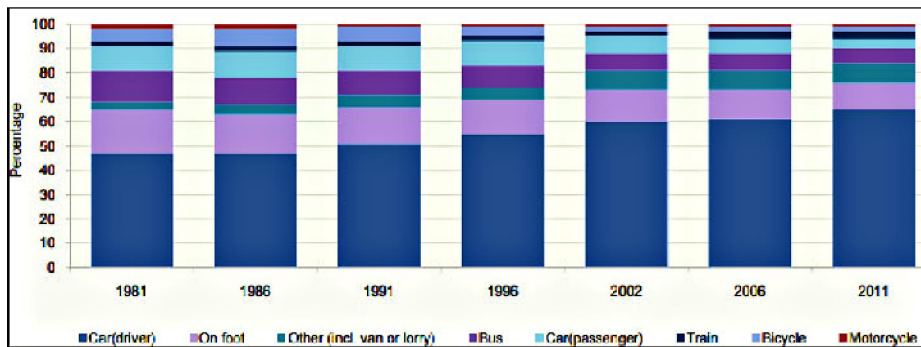


Figure 1: Census figures for modes of transport in Ireland (CSO). Cars are the predominant mode and this is still growing.

2. Context

Cork City is the second largest city in Ireland and is the regional hub for the southern Munster region, which also includes Limerick and Waterford, two other cities within the top five largest populations in Ireland. In the 2011 Census, Cork City was made up of 119,230 people, while the county and surrounding areas had a population of 399,802. Cork is the shopping capital of Munster. Visitors and locals alike make long journeys to the city, especially around Christmas time, to take advantage of the huge number of big name high street brands and department stores (Cork Co. Council). Cork City centre is focused on an island that is separated by the River Lee. Cork City is approximately 37.3 km², while the city centre island only makes up about 1.1 km² of the total area. This small area with the large density of development on the island creates a perfect walking haven, allowing the average pedestrian to cross all of city centre in under an hour. This separation from the rest of the land creates a sense of location and identity, where people understand that they have entered the City Centre when

crossing the River Lee. This identity is shown by the crossing of the river, but also by building height and the change of building use. As shown on the map below (Figure 2), the island is outlined in red with larger scale maps of Cork City and surrounding towns on the bottom left and Cork City's context in the Munster Region on the bottom right. Determined from the census's small area statistics, in the city centre retail area, there are approximately 1,300 residents. This low density is due to zoning, vacant and derelict buildings.

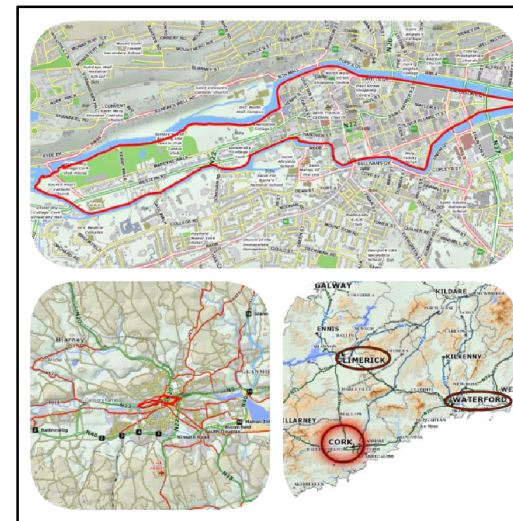


Figure 2: Shows Cork City's centre context within Cork City and the Munster Region

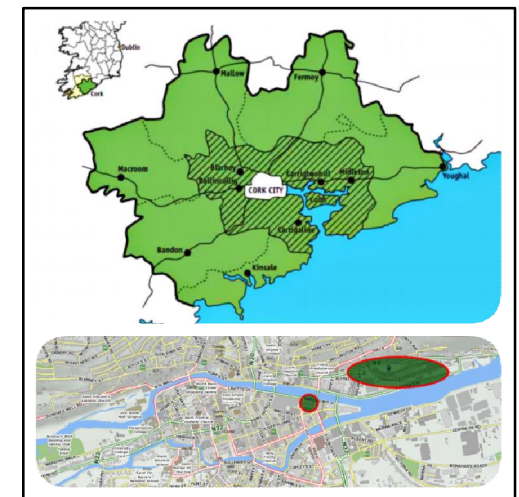


Figure 3: Cork City's regional stretch and location of bus and train station

Major towns in Cork City's periphery create a large population in very close proximity to Cork City, in which many of the residents of these towns use and identify with Cork City as the city centre that they associate with or use most often. Some of these towns are connected by rail, but many have daily bus routes that bring people right into the city. The train station is just off the island in the northeast corner, while the bus station is located directly on the island on the northeast area as well. The location of these major public transportation nodes allows for easy access to the city, letting many people from these surrounding towns' easy commutes into town for work or entertainment. The picture above (Figure 3) shows Cork City's reach in surrounding areas as well as the location of the train and bus station in the city.

3. Cork City Council Policies

Several policies have been or are currently in the process of being implemented in Cork City centre through Cork City Council. We selected the key strategies and plans which will have or have had a key focus on our selected city areas, and are strongly connected to the objectives and goals of this project.

Cork City Walking Strategy (2013-2018)

The Cork Walking Strategy (2013 – 2018), prepared by Brady Shipman Martin on behalf of the Cork City Council and National Transport Authority, aimed to highlight and strengthen a culture of walking and 'the pedestrian' beyond the core City Centre island through pedestrian connectivity improvements between residential settlements, employment areas, educational institutions and public transport services.

In order to achieve this aim, the strategy firstly had to examine the quality, character and nature of the existing network of streets and neighbourhoods; as well as examine and analyse the Central Statistics Office (Census) data of the modal choice for individual journeys to particular areas (i.e. workplaces and educational facilities). Through this examination of data, the analysis showed a clear pattern of areas, routes and demographic profiles within the city where there is a high uptake of walking, as well as those where either the infrastructure or other factors appear to present barriers to walking.

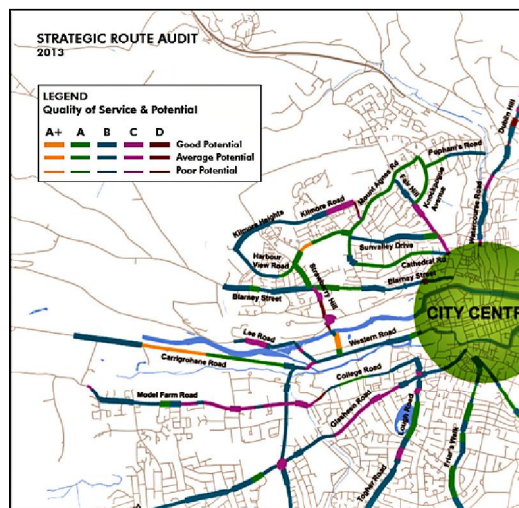
The walking strategy also addressed the barriers to walking, four focus areas were identified and considered. These focus areas were:

- Network – which took into consideration the physical aspects of the connections
- Neighbourhood Infrastructure – the quality and safety of the pedestrian routes for walking
- Behavioural Characteristics – of the residents at both the city and neighbourhood levels
- Collaboration – the importance of interaction and collaboration between the local communities, the Local Authority Departments and other Statutory Bodies in working together to deliver walking infrastructure and to promote walking.

This strategy strongly promoted the benefits of the 'walkable city' beyond the scope of simply walking. It highlights that the 'walkable city' enjoys an improved economy through infrastructure and health care costs, as well as benefiting local businesses through the increased footfall. There are also other perceived benefits, such as personal health (such as a reduction in type 2 diabetes), environmental benefits (for example, reduced emissions), and communities are also seen to benefit with the stronger social connections through safer, dynamic and approachable neighbourhoods and streets.

Similar to the primary research conducted in this project, the Cork Walking Strategy 2013-2018 acknowledged and analysed Cork City through its physical characteristics, Cork's walking culture, as well as commuting destinations and routes. The strategy also highlighted the vulnerability of pedestrians, especially in regard to excessive vehicle speeds. The strategy proposed tackling such inappropriate speeds through the introduction of low speed and pedestrianised zones; an issue also acknowledged in this project. Additionally, similar to the research carried out in this project, the walking strategy also commented on the street infrastructure and design (such as footpath width and pedestrian/vehicular traffic segregation); and the impact of design and infrastructure on the pedestrian and their journey through a strategic route audit (carried out in 2013 and pictured in Figure 4).

**Figure 4 Strategic Route Audit
2013 – Cork Walking Strategy
2013 - 2018 (Page 42)**



The walking strategy also considers the opportunities to improve the walkability of Cork City, similar to the original primary analysis that is also carried out in this project. Such

opportunities may include re-balancing the road space, enhancing signage and extending amenity routes to connect the streetscape network.

Delivering Strategies: Cork Area Transit System Study (April 2009)

This transit system study's key objective was to develop the public transport network in Metropolitan Cork so as to create a more sustainable and networked pattern of development, with an emphasis on Cork to be seen as a place to live and work. This study highlighted that it is important to note that public transport has a major role to play in Cork City, and that it is not solely the private car that should be seen as the only viable option of transport. This statement is relatable to the project currently being carried out as a key objective of this project is to focus on the alternative transport and accessibility into Cork City, mostly by foot.

Similar to the Walking Study aforementioned, the Cork Area Transit System (CATS) Study highlights the need for a City Centre Traffic Management Plan, which would increase the overall levels of accessibility to the Core City Centre area; yet for such a plan, it would be necessary to re-allocate road space and to remove through traffic from Core City Centre streets (especially the City Centre island), which would lead to an improvement in the environment for public transport vehicles, pedestrians and cyclists (page 1.6). This is what is suggested in this overall project as there are numerous benefits to such a scheme, such as increased levels of accessibility for all modes of transport and would contribute to the retail, commercial and residential growth of the city centre area.

Cork City Development Plan 2015-2021

As stated in Chapter 5 of the Cork City Development Plan (2015-2021), car parking is a fundamental issue, both to the health of the city's economy and its influence on the choices made amongst modes of transport. It is strongly

City Centre Movement Strategy (2012)

Pedestrian Movement

The Movement Strategy plan also acknowledges the overall traffic management plan, where identifying the key areas of the city centre could encourage pedestrian priority and help ensure the vehicular environment is secondary to the pedestrian culture and environment. The strategy also highlights the importance of a high quality environment, including dedicated pedestrian crossing points. This entire criterion is acknowledged in this overall project through the primary research and methodology.

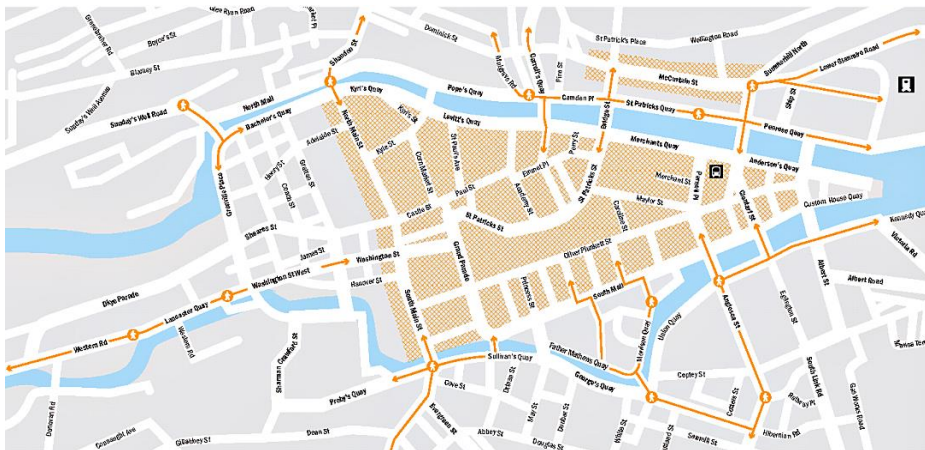


Figure 6: Cork City Centre Movement Strategy - Key Pedestrian Connections (Cork City Movement Strategy)

The Key Pedestrian Connections figure (shown above in Figure 6) identifies the key pedestrian priority areas and the key strategic pedestrian links serving the city centre. They have been based on current pedestrian desire lines and have included for the City Centre Development Objectives as identified in the Cork City Development Plan 2009-2015. This is important so as to help define a core pedestrian priority zone within the city centre where

the environment will encourage the ease of pedestrian movement and accessibility, as well as pedestrian links into the city centre which will be provided with high quality footpath provision and crossing facilities. This creates a positive pedestrian travel experience and easier accessibility.

Vehicular Traffic

The key objectives in regards to vehicular traffic include identifying the key strategic through-routes within the city centre, and helping to implement an overall traffic management plan which will aim to route the strategic traffic around the central areas which will facilitate an improved environment for public transport vehicles, pedestrians and cyclists in the central retail area.

In relation to this current project, it is also important that this strategy identifies secondary traffic routes which will supplement the strategic orbital route and will ensure access to the parking and loading and unloading facilities in the city centre are maintained. The figure below illustrates the key strategic orbital route around the city centre (Figure 7).

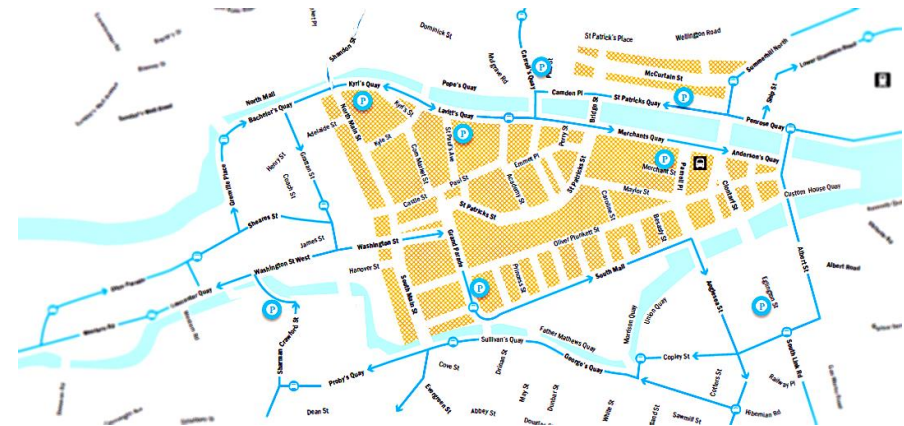


Figure 7: Cork City Management Plan - Primary Orbital Routes (Cork City Movement Strategy)

4. Survey results

We did a quantitative analysis of the proposed routes to gather data in terms of walking distances, total journey times, and how much that journey was made longer by delays caused by traffic signals along the walk. This highlighted a number of inefficiencies in the existing pedestrian provision, which made walking an unattractive option.

Green times

The most striking thing to emerge from the survey was the very short amount of time allotted to the pedestrian in each cycle of the traffic signals at junctions. While the crossings were generally kept very short and followed pedestrian desire lines, there simply wasn't enough time to cross them before the light turns red. While the average green time recorded was 20 seconds for a pedestrian to cross, followed by 8 seconds of a blinking green light, this number is skewed by a small number of junctions with very long green times due to very small numbers of vehicular traffic using the road. When you ignore these outliers, the number drops to 7.5 seconds green with 8 seconds flashing, with some junctions allowing less than 4 seconds for pedestrian crossings. This is to cross junctions which vary from 7.5 metres to 21 metres in length.

We used a widely accepted formula for determining the length of pedestrian green times in traffic engineering to assess whether the green times we measured were adequate for pedestrians to use the junction, the formula is given below highlighted in blue. This uses the crossing distance and an average figure for pedestrian walking speeds to determine the necessary crossing time.

$$2 \times \text{Crossing Distances} \times 1.3\text{m/sec} + 1 + 3s + 1s$$

When we applied this formula to the 15 pedestrian crossings that we surveyed we found that 10 of these crossings failed to meet this standard. While most of these crossings fell short of the desired time by 5-7 seconds, there were also 4 crossings which were much further off the standard and would need to almost double their allotted pedestrian time to meet this standard.

Inefficiencies in pedestrian routes

Another issue we found was that the routes ended up taking a long time to walk for reasons other than the distance of the routes. We found that on average 14% of the time spent walking along these routes was spent standing still waiting for the pedestrian phase on traffic signals, this figure was as high as 28% for one route – the Merchant's Quay section of the northeast route. There were a number of problems that led to this inefficiency. The main problem was that when traveling on these routes you would hit multiple red lights, and the junctions were poorly coordinated with each other. When a route required crossing multiple traffic signals, sometimes even at the same junction, we found that the signals were not coordinated so as to ensure that pedestrians would not have to stop so frequently.

This happened in two main ways when there were two crossings in close proximity, in some cases where two arms of a junction had to be crossed the two arms went green simultaneously and also went red at the same time. However, the timing seemed to still be based on a single arm crossing which meant there wasn't enough time to complete the desired pedestrian movement in the pedestrian phase, as people would have to wait for another pedestrian phase to cross legitimately. This led to frequent illegal crossings

which could cause accidents as pedestrians try to hurry and rush across the road. The other frequently seen approach was that closely located crossings were not coordinated at all, which meant that pedestrians could face very long wait times as they hit a red light at every turn, which frequently means a wait of over 90 seconds added to their journey. This means that pedestrians find it very difficult to make desired, and sometimes necessary, diagonal movements across junctions to get towards their destination.

5. Qualitative Analysis

Determining the quality of each route at its current status was done through walking the route and grading it based off of 6 different factors, including pedestrian safety, efficiency and wayfinding.

- 1) *Pedestrian Safety* - looked at details such as path width, pedestrian relation to motorists, traffic calming measures and frequency of illegal crossings.
- 2) *Comfort* dealt with streetscape, sense of enclosure, space, design focus on pedestrian orientation and occupancy.
- 3) *Interesting* looked mostly at landmarks and usage through the route and if the pedestrian could be entertained without ever needing to leave the path.
- 4) *Efficiency* looked at waiting times, patterned intervals, walking time, distance and how it does or does not compliment residents.
- 5) *Bridges* are the gateway into the city centre and each route but one uses one at some point. For bridges we graded them based off of the other five factors.
- 6) *Wayfinding* is looking at how easy a pedestrian can find their way to the final destination through signage, sight lines and specific urban designs.

All of these factors intersect in some way but have very specific details that create an importance in each. Through the routes we found many improved aspects of design that we weren't expecting but each route still had issues

that could be improved upon. The map on the next page (Figure 8) shows all of the routes and locations of good and bad qualities.

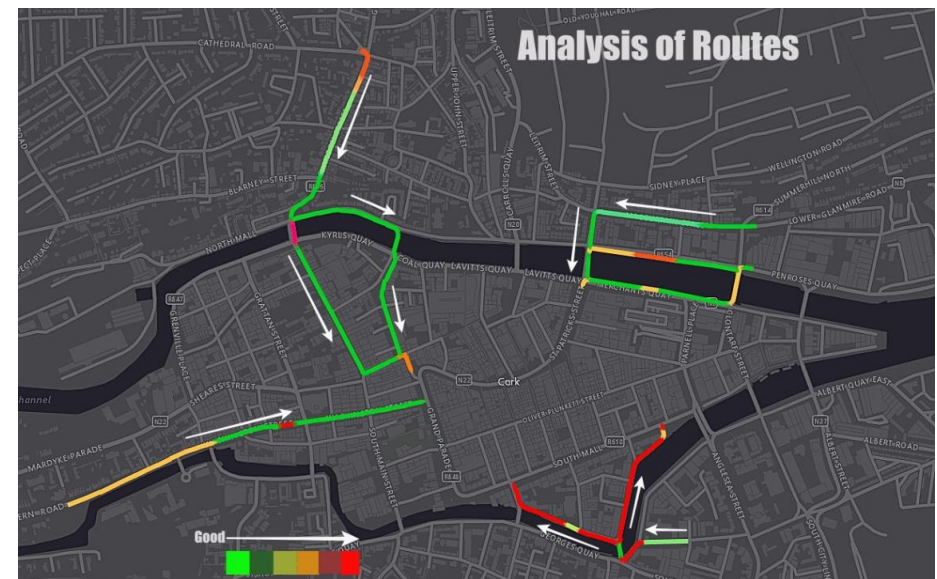


Figure 8: Current quality of routes determined by color gradient from green to red (Matthew Cox, photoshop)

One main issue we found with each route was its lack of signage pointing pedestrians in the right direction into city centre. Signage is very important especially at the beginning of the routes when sight lines aren't so prevalent. Signage also creates comfort in pedestrians as well as ensuring better safety so that people will not get lost and be able to find their way. While signs may clutter streets when applied to motorists, signage or maps help navigate pedestrians in the right direction, although there is no substitution for a self-regulating city where the buildings and surrounding landmarks guide foot traffic without the presence of signs.

On the idea of comfort, there was very little landscaping along the routes. Landscaping allows for a feeling of enclosure as well as creating space in which pedestrians can stop and relax for a bit instead of a route that seems to insist that foot traffic does not stop. The lack of landscaping and different materials doesn't let the pedestrian escape from the traffic. These aspects will create their own type of entertainment so that the pedestrian can enjoy the walk into town rather than walking as quickly to get through it. Landscaping and space creates a characteristic that also reflects the city as a whole. A city that seems more comfortable will attract people rather than pushing people in and out once they've finished their task.

When walking the route, the surface material rarely changes when crossing a junction, even some of the paths use asphalt as their surface. When crossing a junction, on top of the lack of differing surface material, there weren't always pedestrian guidelines. Having no differing characteristics between the road and pedestrian crossing does not offer comfort to the pedestrian and creates a sense of encapsulation from the traffic. A change in surface material and guidelines separate pedestrians from traffic as well as inform and alert the motorists of the presence of the pedestrians.

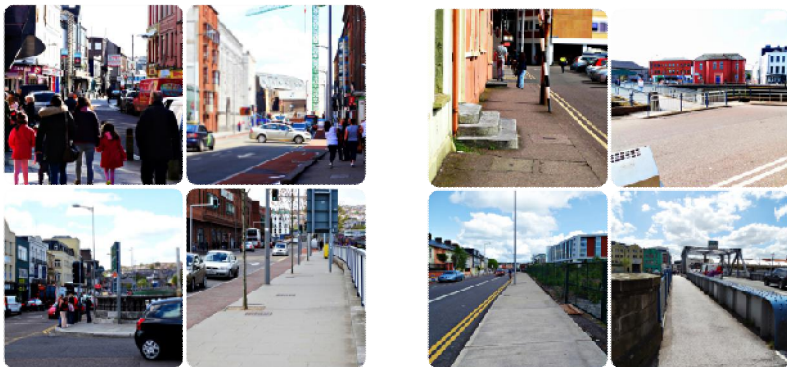


Figure 9: Photos taken by Matthew Cox

Another issue is the width of paths along parts of the routes. Many paths people are forced off to walk on the road because of heavy foot traffic or the width is infringed upon by bus stops and the bad placement of poles. This is very unsafe and walking along paths on the road has become a common occurrence in Cork. Along with it being unsafe, it is also very uncomfortable and inefficient, having to constantly wait on people to pass rather than a constant flow. In association with the width of the path, the proximity of many residential and shop front's entrances on the path create an obstacle when people exit from these. As seen on the top left picture in figure 9, many of these entrances have stairs or other structures that infringe upon the paths.

The main issue, which Cork has become famous for, is illegally crossing junctions. Cork is known as the jaywalking capital of Ireland with the citizens even priding themselves on it, but it is all due to Cork's junctions. At many junctions the waiting time is unbelievably long, testing pedestrians' patience and pushing them to cross illegally. On top of the waiting time, many of the junctions give very little time for the pedestrian to actually making it across. At some of the major junctions, crossing some of the largest streets in City Centre, we could not make it to the other side without the walking sign turning red. This timing issue shows the favorability of the motorists in Cork, while Cork City Centre has the highest density of foot traffic in the city. This bias towards motorists in waiting time has also affected the mindset of the people with even the pedestrians giving way to motorists in pedestrian zones.

Overall, each route has good aspects but in total, there are many areas to improve on, especially with the city hoping to attract more visitors to the

city. Our recommendations will focus around these six factors and how to build upon what already exists on these routes.

Bruges and Cork City

As a European comparison, the urban fabric and design of the Belgian city of Bruges was explored. There are several reasons as to why the city of Bruges was chosen as a comparison to Cork City - these reasons include similar population sizes, the key role that water plays in the urban landscape, and the historic characteristics of both cities. Yet, whilst both cities have similar approaches in regards to policies, Bruges appears to have had a more successful and sustainable outcome than its Cork counterpart.

Context

Bruges is the capital, and largest city, of West Flanders in the northwest Flemish region of Belgium. It is a unique city, with its historic city core listed on the UNESCO World Heritage Site list due to its authentic and well-preserved architectural heritage. The city of Bruges covers an area of around 138km² with a population of around 117,886 (Population Statistics). The city centre itself is egg-shaped due to the city being enclosed by canals, and is sometimes referred to as the 'Venice of the North'. This enclosure by the canals results in the key city centre covering around 430 hectares in size.

Similarities

As mentioned above, Bruges and Cork have several similarities in regards to their urban landscape. Whilst Cork city covers an area of around 37km², Bruges is over three times the size at 138km² - yet, both cities have a similar population size with Bruges containing 117, 886, and Cork slightly more populated at 119, 230 (Census, 2011).

The role of water in both of these city landscapes also allows them to be compared and explored. Whilst, Bruges' city centre is enclosed by canals, Cork's city centre is surrounded by the River Lee. The importance of these marine enclosures is the policies that have been implemented by each of these cities in regards to their city centre islands and the promotion of sustainable lifestyles, and this will be explored further later in this project.

Both of these cities are also well-known for their historic architectural heritage, with tourists worldwide visiting to appreciate the culture, architecture and urban fabric of each of these two cities. Whilst their policies may differ, both of these cities have cherished and protected their architectural heritage.

Policies

According to its government, Bruges is a 'sustainable city' due to the green character of its UNESCO World Heritage City. The cultural monuments, location and tourist attractions are all closely located to each other and are enclosed by the green city ramparts, and so the mind-set is that travel can be achieved through walking, cycling or using public transport if deemed necessary. Bruges also enjoys a good air quality, which its environmental policy reflects and promotes. Bruges' policies are also influenced by the 'Green Meeting Industry Council' – which aims to advance sustainable practices in the meetings, events and tradeshow industries through education, research and innovation; and the 'UNEP's Green Meeting Guide', which aims to create and promote greener and cleaner environmental footprints of large-scale and small-scale meetings worldwide.

Unlike Cork, Bruges followed a 'Masterplan' which was first implemented in 1972. This masterplan aimed to provide a harmony between the differing urban functions – a goal in which Bruges spatial planning is still based on

today. After the publication of the Master Plan in 1976, Bruges' spatial planning was based on seven fundamentals that were to add to the city centre's livability:

- Improvement of the liveability and the quality of the houses. In 1979 the city introduced a functional home improvement grant and bought vacant and decayed buildings to restore and give new uses to;
- Preservation of the architectural heritage by drawing up a heritage evaluation map, additional protection and a revision of the grant for unprotected, valuable heritage.
- Starting up social housing, with amongst other things the restoration of the alms houses by the Social Services Department [OCMW] into homes for the elderly and socially vulnerable;
- Strengthening multi-day tourism;
- Improvement of the mobility and quality of the urban space;
- Cleaning the moats, ponds and water drainage;
- Active green management for the preservation of the open, green space in the city centre.

(Bruges, UNESCO World Heritage Property: Management Plan Synopsis, 2012)

To allow Bruges to become more accessible, several transport policies have been implemented in the city. After the development of a large-scale car park at the edge of the city, as of 1978 the primary changes in traffic circulation were carried out and policy objectives were achieved. Between 1978 and 1992, demographic developments (such as changes in family sizes), the increase in leisure time and tourism, and more developments in the city centre each lead to an increase in mobility in the city centre. Such an issue is still problematic in a city like Cork, where there are considerably limited transport policies tackling the major problems, such as congested through-traffic and limited pedestrian mobility.

In order to reduce the issue of through-traffic through the city centre, Bruges' ring road was completed between the Katelijne bridge and the station and construction started on a tunnel under het Zand (Bruges, UNESCO World Heritage Property: Management Plan Synopsis, 2012). Unfortunately, Cork city does not have such a relief road and so, the city centre is often congested and unsustainable. Bruges' renovated streets and squares introduced a new mobility philosophy and contributed to the character of the city centre. However the central problem, the high intensity of traffic in the city centre, remained unresolved until 1992.

In 1992, the Traffic Circulation Plan for the city centre followed as well as a Public Transport Plan (embedded in a plan for Greater Bruges). The main objective remained to keep through-traffic out of the city centre from driving across the Markt through a strategy of discouragement and optimisation of public transport and bicycle traffic (Bruges, UNESCO World Heritage Property: Management Plan Synopsis, 2012). Various traffic interventions were proposed: the creation of traffic barriers and a loop system, priority for cyclists, improved public transport in the shape of a star with direct connections from the agglomeration to the centre, the introduction of a maximum speed limit of 30 kilometres per hour (kph) throughout city centre, as well as a ban on touring coaches. The results were very positive. The Traffic Circulation Plan of Bruges is similar to the goal set out by this project's authors – to create a more 'walkable' and sustainable Cork city centre.

Car ownership increased substantially since 1972. However, Bruges is above all promoted as a city of bicycles. Both for leisure time and for travelling to and from work, the share in cyclists in Bruges is the largest of all the Flemish central cities. Since 1972, the city squares were converted from car parks

into pleasant public spaces. Around 4,000 underground parking spaces were added (and in the future the number will be increased further) as well as a number of private local car parks for local residents (Bruges, UNESCO World Heritage Property: Management Plan Synopsis, 2012). The Public Transport Plan resulted in the number of passengers increasing explosively between 1991 and 2011. This is what the aim should be for Cork City – a more livable city centre, where more people are using sustainable modes of travel. Whilst underground car-parking is unlikely in Cork due to the city core being constructed above water; Cork still has the opportunity to landscape its city centre island more positively through redesigning public spaces and reducing vehicular movement across its centre area. Cork has the opportunity to follow in Bruges' footsteps and to become a more sustainable and accessible city.

The Success of Freiburg, Germany

During WWII Freiburg was heavily bombed and all that was left standing was the historic cathedral. The city decided that this gave them a blank slate to create a better infrastructure, one that was not reliant on cars. The redesign made the footpaths wider, while also making the streets wider, but instead of the width increasing for traffic flow they were increased for an eventual tram system. "In 1969 Freiburg devised its first integrated traffic management plan and cycle path network. The plan, which aims to improve mobility while reducing traffic and benefitting the environment, is updated every 10 years. It prioritizes traffic avoidance and gives preference to environment-friendly modes of transport such as walking, cycling and public transit. Traffic avoidance is achieved in conjunction with urban planning that makes Freiburg a city of "short distances" – a compact city with strong neighborhood centers where people's needs are within walking distances" (Gregory, 2011). When hearing the plan, it sounds very simple in today's

standards, but what's amazing is that Freiburg has been successful in sticking to historical planning methods while implementing modern transportation modes. In 1973, Freiburg's city centre was deemed a pedestrian zone. 70% of the city's population lives within 500 meters of a tram stop and the trains appear every 7.5 minutes. Along with the improvement of their public transportation, Freiburg has also created 400 km of cycle paths, along with 9,000 bike parking places. The growth and decline in the different modes of transportation can be seen below in Figure 10. Freiburg is a perfect example for Cork citizens to look at. A success story that has been developed from nothing since WWII, showing that positive change does take time.

Modal-Split in Freiburg 1982 / 1999 / prognosis

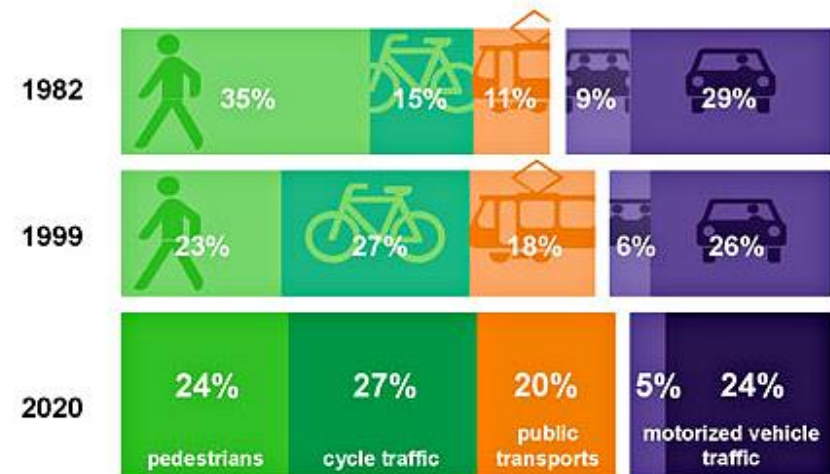


Figure 10 Change in percentage of users for the varied transportation modes

Redevelopment of St. Patrick's Street

St. Patrick's Street is known to be the hub of the retail district in the Munster region, but before this title was given to it, a large overhaul of the street was undertaken. Before this redesign of St. Patrick's Quay it was designed in the same way as every other medieval city in Europe. It had a paved base and a monument or structure that identified its centrality and importance. Today, the designing of public space has become much more complex and is required to be much more detailed. "The project thus opts for a construction system that allows the urban space to be designed in terms of categories (as regards their width, significance and position structure of the city) while preserving the architectural constants which, by ensuring continuity, make the historic city centre recognizable.

These constants, which we might call the 'skeleton' of the urban space, are the constituent elements of the general construction system" (Services, Cork City). Through this project, the urban 'skeleton' was only enhanced on St. Patrick's Street as to preserve the historic feel of the city with the increase of motorist's traffic.

The four lanes were minimized to two, the footpaths were widened and a crescent shape was implemented to create large public areas in a few locations along the road as seen in the picture on the bottom left of figure 11. St. Patrick's street is a tremendous success, but has created an identity as being the only retail street in Cork, taking away business from other historic retail districts. Our proposals will hopefully spread foot traffic out around the city centre rather than having people directly targeting St. Patrick's Street, spreading out the economic worth of the city, in turn creating a more valuable city centre.



Figure 11 Before and after photos of St. Patrick's Street

6. Route Proposals

Since coming to Cork and being involved in multiple city projects, we have realized (as any planner does) that changing the public's mindset in accordance with lifestyle changes through time is a planner's main challenge. Cork has a very historic population with many generational businesses, where retailers and their ancestors have owned the same shop for many generations. Planning ethics and theory come into play significantly in the 'planning world' and it changes through every generation of planner as to what is right. While the whole population will inevitably not accept our design, we feel that we have designed these routes (as seen in Figure 12) in accordance with the 'common good'. We have taken into account our personal experience on these streets, observations of other pedestrians, the natural surrounding and design ideas that have proven to work in other cities and areas of Cork. With these new design proposals, our goal is to have the

pedestrian forget about their final destination and think about and enjoy their current position through every step.

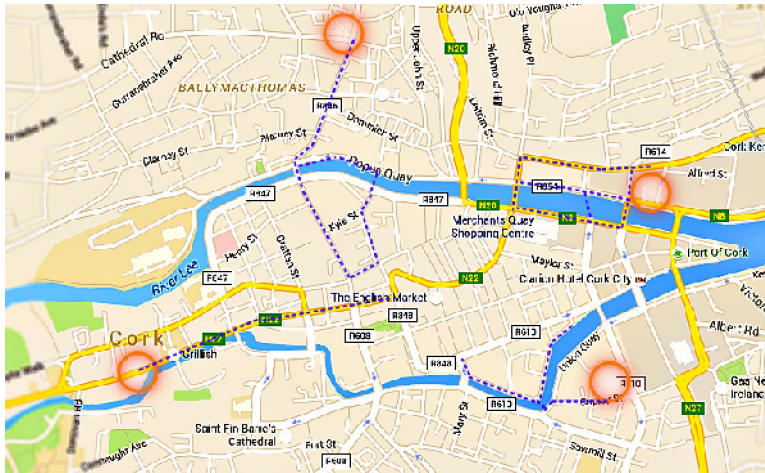


Figure 12 Proposed Routes

Shandon Area Route

The northwest proposed car-park gives the pedestrian the option of two routes. The route along the river on Pope's Quay is positive through its mixture of land-uses, such as restaurants, offices and bars. However, landscaping could be improved along this route as car-parking spaces block the pedestrian's view of the river and the city island.

Positively, these routes have a solid urban foundation based on the streets of Shandon and North Main, as both of these streets are great pedestrian areas with a high level of vibrancy and mixed uses (as seen in Figure 13). However, the key issue with these routes is the reputation of the streets that the pedestrian has to travel through to get from the proposed car park to the city centre island. These streets are hindered with the perceived reputations of high rates of anti-social behavior and the view that these areas are generally unsafe and dangerous. In order to improve these routes, it is necessary to

address the perceived reputations of these streets and what is currently being done by the City Council to tackle and solve these issues. Additionally, whilst these streets are some of the oldest architecturally historic streets in Cork with strong neighborhood groups, they also contain some of Cork's oldest generational population. Whilst this is not a significant issue, plans and incentives could be implemented so as to attract the younger population groups (0-65 years old).

In order to improve the junctions along this route, especially the junction at Kryl's Quay and North Main Street (as highlighted in the map), it is necessary to improve the pedestrian path painting and surface material as these are of a very poor quality currently. Additionally, the key issue to be addressed at this junction is the significantly short crossing time allowed for the pedestrian. To improve this, it is important to make the crossing times more equal between the pedestrian and the motorist.

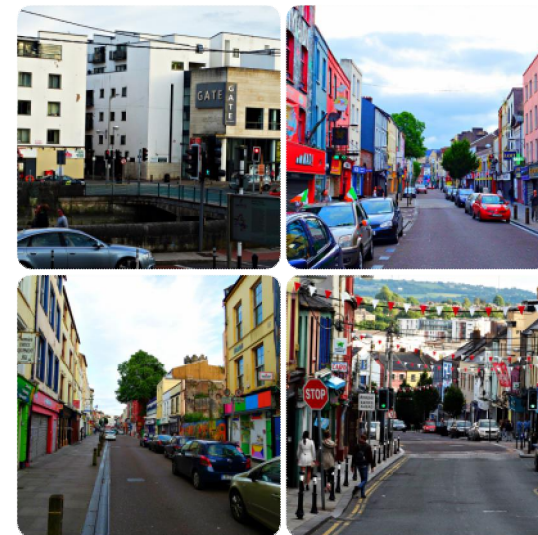


Figure 13 Images of Shandon Street and North Main (Matthew Cox)

In terms of urban landscaping, the North Main Street route could be improved in several ways. Firstly, it is necessary to create a better gateway onto the street as the current gateway buildings overshadow and darken the street, as seen in the top left picture of Figure 13. Perhaps the inclusion of more ground-floor uses at the gateway and along the street would benefit this route, as it would allow the street to become more vibrant and dynamic. To achieve this and to tackle the issue of empty looking storefronts, specific land-uses needed and Cork City Council must decide what type of land-use will be the most productive in this area, and which will help bring in increased foot traffic.

Also, the creation of more visible frontages, perhaps through the use of glass, would hugely benefit this street, as it would attract people to the area. Another potential benefit to this area would be the promotion of outdoor uses, such as outdoor seating and redesigning the courtyard along North Main Street, as it would create urban life and a vibrancy currently missing from this area. Positively, local artwork has been implemented along this route on the walls of buildings, and on singular facilities (such as phone-boxes and electrical stations). This has created a more vibrant and lively space, which is more interesting and comfortable for the pedestrian.

Similarly to other routes, there is limited or no signage along these routes into the city centre which needs to be improved greatly not only in this area but across Cork city to help in terms of wayfinding.

Maccurtain Street, Patricks Quay and Merchants Quay Route

The northeast route from Penrose's Quay to Patrick Street gives pedestrians a choice of three different routes. Two of these routes will take the pedestrian down the Lee River and another will bring the pedestrian down

the growing retail and restaurant district that is Maccurtain Street. The major issues with this route were wayfinding and keeping the walk interesting. Minor issues that can be addressed easily include a broken pedestrian walking light and bridge surface material. Our proposal brings in a new design for the water front routes but keeps many things exactly the same for the Maccurtain route.

Patricks Quay is used as the private bus company's dropoff and pick up points. This makes the pedestrian path feel very enclosed, loud, full of fumes and crowded. These buses also take away a large amount of parking for motorists trying to reach the city.

Our proposal for this route is to move the buses to the vacant space behind the Cork bus station so that all the buses in Cork will be clustered together in one specific location. With the space of the bus parking opened, we propose to take all the parking away and introduce a two way bike lane system down Patricks Quay. This will create a buffer for pedestrians as well as opening up the view across the river to the shops along Patricks Quay. Although this is outside the border of the city centre, we are proposing a complete pedestrian priority street since currently, it is a very low motorists travelled street.

When looking at both of these sites, there was originally an extension farther out over the river that pedestrians are refused access to by gates and fences. We propose to build upon these extensions and stretch them the full length of these quay sides. With this extension, the pedestrian will have a private space to walk along the river, with a large buffer between them and the traffic. Within Cork, other areas have used these extensions and created pedestrian zones and uses a light, recycled plastic surface that is weather

resistant and creates a comfortable mentality. Below is a picture that is a rendering of what this design may possibly look like when implemented (Figure 14).

Maccurtain street is already a very pedestrian friendly area. Although it is a one way street, the traffic is spaced out and stretched between 2 lanes with vertical parking on each side as to separate the pedestrian from the road. It is full of shops with outdoor seating, creating a lively ground floor and keeps the pedestrian interested. The main issue we found with this route was the wayfinding. For this route signage is needed to direct the pedestrian to Patricks Street, where the city centre comes into view and a site line is created that directs the pedestrian into the heart of the city.

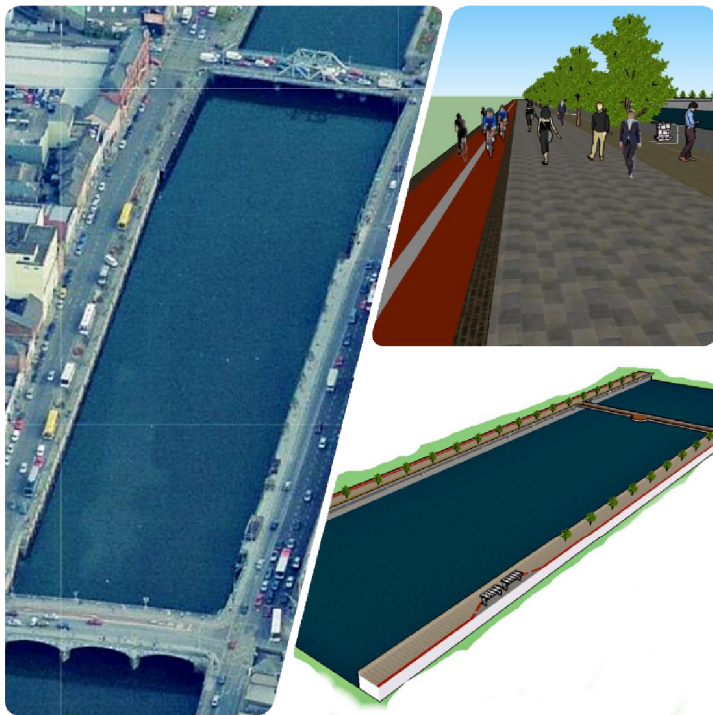


Figure 14 Patricks and Merchants Quay design

The Patricks Street bridge has wide foot paths, but once the corners are reached, the path becomes narrow and people are crowded tightly together in very close proximity to the passing traffic. Our only proposal for this is to increase the width of the corners and decrease the radii to slow traffic when turning. With this increase, it is hoped that the pedestrian will feel more comfortable while waiting and will not cross illegally.

The Penrose bridge already has a pedestrian path separated from traffic by an iron wall. The only change proposed for this bridge is the surfacing of the bridge. Currently, the surface of the bridge is of the same material as the road, plain asphalt. If changed to stone or some other more coarse material, the pedestrian may feel even more removed from traffic. Each of the sidewalks on either side of the bridge are made of stone, so at least the bridge path should be kept in accordance to the foot paths.

The Parnell Place bridge does not currently exist but is proposed by the city council under their pedestrian priority projects. This would connect these two key quay sides to each other and increase foot fall on each while also increasing the foot fall along Parnell Place, a road that is looked at as an area of important pedestrian activity in the near future.

College of Commerce Route

The southeast route from Copley Street to South Mall is the shortest route but is also the route in most need for change. There is only one junction but is one of the more dangerous junctions because of blind spots and long waiting times. With the two different routes that can be taken, each goes along a narrow foot path with residential and office entrances encroaching upon the path. Although the routes follow the Lee River, no part of the routes takes advantage of this natural landmark. This route needs a

complete overhaul, but a lot of the design is similar to the Merchants and Patricks Quay design.

The only junction on this route crosses Union Quay and brings the pedestrian to the corner of Sullivans and Union Quay. Because the junction brings the pedestrian to the corner this means that the pedestrian does not cross right at the pedestrian bridge forcing the pedestrian to back track back towards the bridge. Since this route forces the pedestrian to back track many walkers will cross Union Quay illegally.

We propose to add another pedestrian crossing at the corner of Copley St. and Union Quay. This junction would only require striped pedestrian crossing lines and possibly the addition of warning lights for motorists. With this additional junction, pedestrians would be able to cross straight across Union Quay onto the pedestrian bridge erasing the unnecessary extra walking distance and illegal crossing.

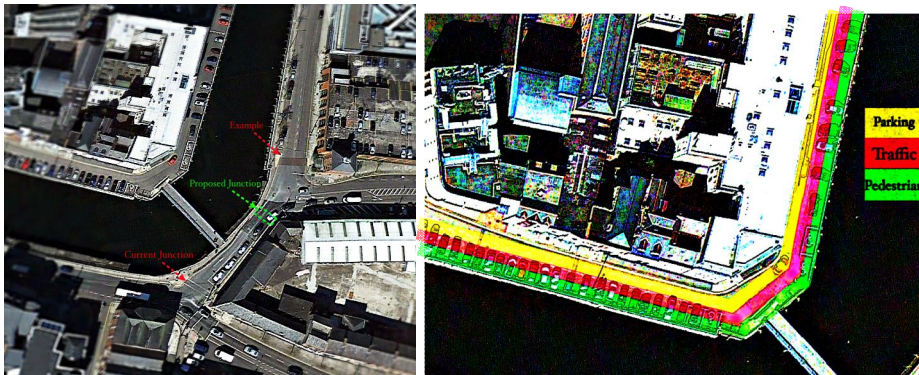


Figure 15 On left: proposal for new junction. Photo on right: Design for Quay sides

Friar Matthews and Morrisons Quay have very narrow footpaths and in a lot of instances have been intruded upon by entrances to businesses or residential. Our design goal here is to separate the residence, students and employees that reside on this block and the average pedestrian by creating a comfortable design. Currently there is vertical parking all along the river bank, taking away the natural path that the river creates.

We propose to convert this parking into a wide footpath with a pedestrian friendly surface. Since the College of Commerce is located at this corner, employees of the school need to park in close proximity, but with the new multi-storey car park located across the river, we believe that we can decrease the amount of car spaces along the river. By putting the parking spaces parallel with the already existing narrow foot path, it will allow the pedestrian to have a wider footpath along the river while keeping a lane for through traffic. A one way system will need to be implemented, especially since, currently there is only room for one car to narrowly drive through this street. Figure 15 shows an amateur sketch of what this design could be.

Western Road Route

The main motto in regards to redesigning this route is that 'if there is nothing, create something'. This idea comes from the multiple designers around the world that have created art out of their urban design in places that have formerly had nothing. Examples of this are seen below as well as our idea to enhance one blank section of the route (Figure 16).



Figure 16 : From left to right, top to bottom, four photos on left (1: High Line, New York 2: Glowing trees, Fort Lauderdale 3: Glowing trees, Sydney, Australia 4: Coleman's Lane, Cork) Photos on right (Blank space of Western Road and design of garden to implement)

This route is currently barren and monotonous, with limited street furniture and somewhat boring sidewalk/crosswalk surfaces. In order to achieve more of this route, it is recommended that the aesthetics be improved. The implementation of landscaping along the route would be greatly beneficial. One landscaping idea includes an overhanging garden from the car park to the road entrance of the River Lee Hotel (as seen in the figure above); as well as hanging planters on the light poles above the cycle lanes so as to achieve a more beautified landscape setting. In addition to improved landscaping, improving the bus stop's appearance would benefit the route greatly so as to create a unique feature that would brighten the area. Another small-scale implementation would be to improve the crosswalk and footpath surfaces so as to allow them to be distinct and aesthetically pleasing. Cleaner streets and improved signage into the city would be a great benefit to this route, so as to

improve the pedestrian experience and to create a more livable area. The development of the Capitol Cinema site, which is situated to the east of the car park, would provide a great gateway and landmark for pedestrians along this route.

7. Conclusion

While Cork City Council has not put this exact proposal into their development plans, many of their goals look towards the improvement of pedestrian access and retention, within the City Centre. Major forms of this vision have been implemented in multiple cities around Europe including Freiburg, Germany; Ile d'Yeu, France; Bruges, Belgium and many others, with many cities going towards the way of car independency. While this study is hypothetical, we believe it plays a very important role in Cork's future growth and identity. We have used this project to understand traffic calming, urban design and permeability as it relates to pedestrians. As mentioned before, proposals are never 100% accepted by the public, and it always differs with culture, but these proposals benefit retailers, pedestrians and motorists by providing an economical and sustainable way of reaching city centre.

One issue that we have assumed people would be against, are the lack of parking spaces in front of the retailers. Our response to this is that these proposals are not meant to hinder the retailer but rather benefit them by bringing in more foot fall through their area. Retailers must evolve with the changing times and understand that the pedestrian is more prolific in a city centre than motorists. The two most successful streets in Cork, St. Patrick's Street and Oliver Plunkett (Voted Best Street in Ireland and UK 2015), are predominately pedestrian with minimal parking along the streets. Planners must plan for the common good, our biggest ethical dilemma. We understand that the public's reliance on cars will not be changed overnight,

but these proposals create better equality between the motorists and pedestrians while not taking much away from them. The proposals will create a more efficient access time to the city while also letting the pedestrian enjoy their journey to their destination. After these changes have been implemented, the city should focus on new modes of transportation to compliment our route proposals,

Bibliography

- Brady Shipman Martin, (2016). Cork City Walking Strategy 2013 - 2018. [Online] Cork City: Cork City Council and the National Transport Authority. Available at: [http://www.corkcity.ie/services/roadtransportation/transportation division/walking_strategy2013-2018.pdf](http://www.corkcity.ie/services/roadtransportation/transportation%20division/walking_strategy2013-2018.pdf) [Accessed 14 Mar. 2016].
- Bruges, UNESCO World Heritage Property: Management Plan Synopsis. (2012). 1st ed. [eBook] Bruges: urban planning department sector UNESCO, christus-koning & lissewege department for heritage conservation & heritage management, pp.3-88. Available at: https://www.brugge.be/files/uploads/document/management-plan-summary_engels.pdf [Accessed 14 Mar. 2016].
- Cork City Council and Partners, (2009). Delivering Strategies: Cork Area Transit System Study. [Online] Cork City: MVA Consultancy. Available at: [http://www.corkcity.ie/services/roadtransportation/transportation division/corkareatransitsystemstudy/CATS%20Study%20Final%20Report%20Feb%202010_opt1.pdf](http://www.corkcity.ie/services/roadtransportation/transportation%20division/corkareatransitsystemstudy/CATS%20Study%20Final%20Report%20Feb%202010_opt1.pdf) [Accessed 14 Mar. 2016].
- Cork City Development Plan, (2015). Home - Cork City Development Plan 2015-2021. [Online] [Corkcitydevelopmentplan.ie](http://www.corkcitydevelopmentplan.ie). Available at: <http://www.corkcitydevelopmentplan.ie/> [Accessed 12 Mar. 2016].

- [Corkcity.ie](http://www.corkcity.ie). (2012). *Cork City Centre Revitalisation > Services > - CorkCity.ie - Cork City Centre Movement Strategy 2012*. [Online] Available at: <http://www.corkcity.ie/services/strategicplanningeconomicdevelopment/corkcitycentrerevitalisation/> [Accessed 25 May 2016].
- [Corkcity.ie](http://www.corkcity.ie). (n.d.). Strategic Plan > Cork Area Strategic Plan. [Online] Available at: <http://www.corkcity.ie/casp/strategicplan/> [Accessed 13 Mar. 2016].
- Department of Transport, Tourism and Sport and Department of Environment, Community and Local Government, (2013). *Design Manual for Urban Roads and Streets*. [Online] Available at: <http://www.environ.ie/sites/default/files/migrated-files/en/Publications/DevelopmentandHousing/Planning/FileDownload,32669,en.pdf>. [Accessed May 28, 2016].
- Greene, S. (2015). April 2015 - June 2015. Cork City Pedestrian Counter Report. [Online] Cork City: Cork City Council. Available at: [http://www.corkcity.ie/services/roadtransportation/transportation division/pedestriancounterreports/Pedestrian%20Count%20Report%20-%20Q2%202015.pdf](http://www.corkcity.ie/services/roadtransportation/transportation%20division/pedestriancounterreports/Pedestrian%20Count%20Report%20-%20Q2%202015.pdf) [Accessed 14 Mar. 2016].
- Greene, S. (2015). January 2014 - March 2015. Cork City Pedestrian Counter Report. [Online] Cork City: Cork City Council. Available at: [http://www.corkcity.ie/services/roadtransportation/transportation division/pedestriancounterreports/Pedestrian%20Count%20Report%20-%20Q1%202015.pdf](http://www.corkcity.ie/services/roadtransportation/transportation%20division/pedestriancounterreports/Pedestrian%20Count%20Report%20-%20Q1%202015.pdf) [Accessed 15 Mar. 2016].
- "Designing At Ground Level". *SPUR*. N.p., 2014. Web. 2 July 2016.
- "Germany - Freiburg - Green City | The Ecotipping Points Project". *Ecotippingpoints.org*. N.p., 2016. Web. 2 July 2016.
- "St. Patrick's Street Project > Roads & Transportation > Services > - [Corkcity.ie](http://www.corkcity.ie)". *Corkcity.ie*. N.p., 2016. Web. 2 July 2016

Authors.

Matthew Cox is originally from Memphis, Tennessee. He studied Geography at the University of Wyoming and spent some time working with the development company Surbana Jurong in Singapore. He is now studying planning and sustainable development in University College Cork

Shauna McGettigan is from Strabane in County Tyrone, and is currently studying a Masters (MPlan) in Planning and Sustainable Development in University College Cork. Prior to that, Shauna obtained a Bachelor of Science (BSc) degree from Queen's University Belfast in Geography. She is seeking to pursue a career in the planning field after she graduates.

**INTERACTION BETWEEN DESIGN OF PUBLIC SPACES
AND PEDESTRIAN MOBILITY IN CITY BRANDING EFFORT
OF NOVI SAD (SERBIA)**

***BY STEFAN ŠKORIĆ, DIJANA BRKLJAČ, ALEKSANDRA
MILINKOVIĆ, MILENA KRKLJEŠ***

Interaction between design of public spaces and pedestrian mobility in city branding effort of Novi Sad (Serbia)

By Stefan Škorić, Dijana Brkljač, Aleksandra Milinković, Milena Krklješ

Abstract: The distinctiveness of Novi Sad (Serbia) is based on its geographic location, numerous cultural and educational institutions, multicultural character, and position as administrative, economic, and cultural centre of the region. Lack of strategic planning and designing of public spaces, infrequent investments in walking and cycling infrastructure, irresponsible behaviour of people and depraved financial situation have led to a series of transformations that have left serious consequences on public spaces of Novi Sad. A distinctive urban matrix of the city is punctured with network of open public spaces – squares, streets and concealed micro environments, with evident loss of pedestrians as the main users. Protected old town centre has given away the impression of negligence towards the most precious urban space as a key fragment of the pedestrian zone of Novi Sad, and an important ambient entity of the city with numerous historical and cultural monuments. Public spaces can play a crucial role as non-verbal advertisement of urban marketing and city branding efforts in Novi Sad's competition for the title of the *European Youth Capital 2019* and *European Capital of Culture 2021*. In this competitive game, potential advantages of the public spaces, and their alteration in the line with the needs of city's inhabitants, can become the 'selling point' in creation of the new image of the city. Revitalization of the central pedestrian zone of Novi Sad would offer an articulated and meaningful network of ambiances adapted to the pedestrian communication, and suitable for public contents and events. The research is exploring relationship between the design of public spaces and

walking capacities, which can be used for the reconstruction of the existing, or for the planning and design of new public spaces of the city. The aim of the research is to propose possible directions for revitalization of analysed urban components, in order to create a comfortable, liveable and 'pedestrian friendly' network of public spaces within the acceptable walking distances.

Key words: *public space, pedestrians, walking, city branding, Novi Sad*

1. Introduction: The complex transformations of public spaces of Novi Sad at the turn of XX and XXI century

The open public spaces of the city were the very basis of urban lifecycle for centuries, and therefore, Gordon Cullen have indicated that 'space created between buildings is seen as something that has its own life beside buildings that create it' (Kalen 2007, p. 5). Nonetheless, recent years have introduced ongoing deconstruction of urban tissue by constant alterations of its structure and identity, and visible loss of meaningful places for the public life of a city. Traditional concept of the urban space has disappeared in modern cities, where the public space of the city has become 'canvas on which the political and social changes are painted on' (Kostof 1992, p.124), resulting that alteration of social framework has correspondingly caused functional transformations of open public spaces. Correspondingly, Novi Sad (Serbia) claims a large number of public spaces, as the places of important social and historical moments in the development of the city, most of which have long been neglected, devastated, and highly contested spaces.

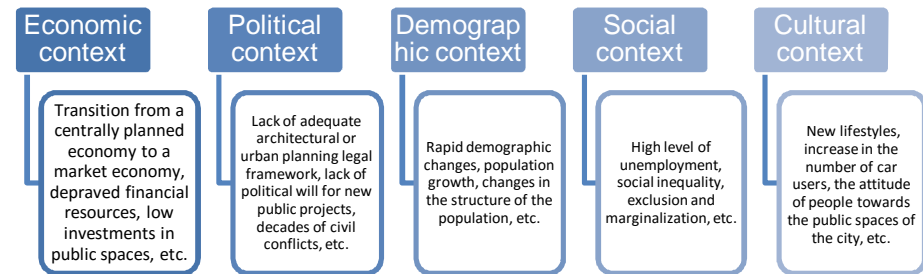
Novi Sad is situated on the right bank of the River Danube (Figure 1), and it was founded in XVII century when Serb merchants formed a colony across the Danube from the Petrovaradin fortress, a Habsburg strategic military post. The city has withstood turbulent changes in state framework from Habsburg Monarchy (1694-1804), Austrian Empire (1804-1867), Austro-

Hungarian Empire (1867–1918), Kingdom of Yugoslavia (1918–1941), Kingdom of Hungary (1941–1944), SFR Yugoslavia (1944–1992), Federal Republic of Yugoslavia (1992–2003), State Union of Serbia and Montenegro (2003–2006), and finally Serbia (2006–). During the history, it became an important industrial, economic, administrative, and cultural centre of the region of Autonomous Province of Vojvodina, and the second largest city in the Republic of Serbia.



Figure 1. Geographical position of Serbia and Novi Sad (left and middle), satellite footage of Novi Sad with marked central pedestrian zone of the city (right)

Existence of public spaces, both within urban core and in its wider surroundings, has contributed to Novi Sad's position and importance in gravitating urban area. Its characteristic urban matrix is punctured with open public spaces - squares, streets, and concealed micro environments, all standing out as public spaces intended for bustling public life. Historically, the prevailing feature of public spaces in Vojvodina region were the numerous forms of socialization and currency exchange, but over the time due to economic, social and historical changes, they have received another functions and connotations. Complex factors that have influenced alterations of public spaces of Novi Sad during the last decades, as presumably in other cities of south-eastern Europe, can be perceived as:



The most significant transformations of the urban matrix of Novi Sad were carried out under the influence of a change in the mind-set in the post-World War II era of the XX century, which had led to radical changes in society and reorganization of the way in which cities in former Yugoslavia are being build and rebuild. This period was characterized with the rapid industrialization of society, the concentration of population in urban areas, growth of the cities, and a strong welfare state, whereas urbanization has served as a key mean of absorbing surplus capital and labour. The city has been treated as an exceptional medium for political messages, and urban planning has been seen as 'an extended arm of the state, a means of social control and manipulation' (Petrović 2009, p. 21). Since the mid-twentieth century, reconstruction of Novi Sad was characterised with the strict implementation of the Master Plan of 1950, until its replacement with a new plan in 1963, which bears all the characteristics of socialist construction, such as building materials, rationality expressed in the facades, strong pedestrian connections between the housing and civic institutions, but also in lack of public spaces in newly built areas of the city.

Novi Sad had been radically transformed and adapted to the needs for the new urban organization, necessities of life and lifestyles, resulting in a change in the physical and functional structure of the public spaces of the city.

According to the 2011 census of population, households and dwellings in the Republic of Serbia (Statistical Office of the Republic of Serbia 2014, p.36), the population of Novi Sad has progressively increased from 69,407 (1948), 76,818 (1953), 103,448 (1961), 144,774 (1971), 178,487 (1981), 189,234 (1991), 210,238 (2002), to 250,439 (2011), within the urban area of 307,760 inhabitants, and the administrative area of the city with 341,625 inhabitants. Unlike certain successful instances of European cities, the infrastructure and public spaces of Novi Sad were not able to cope with such dramatic demographic changes and spatial development in co-option with various political, economic and social transformations (Figure 2).

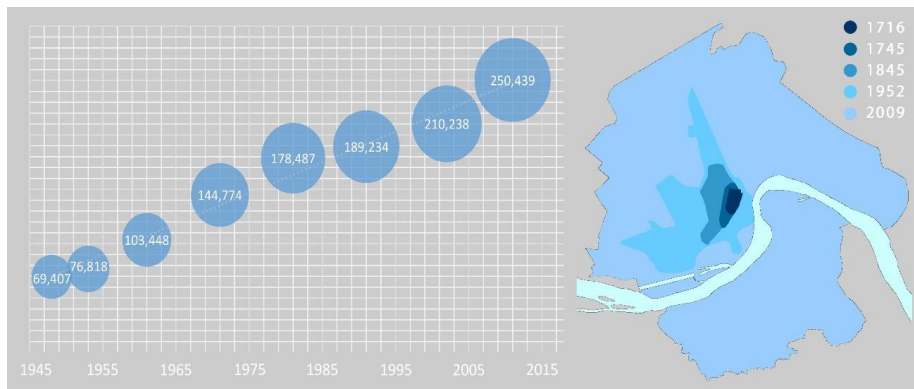


Figure 2. Historical population growth (left) and spatial development of Novi Sad (right)

Since the beginning of the XX century, the open public spaces of the city experienced functional modification by introduction of vehicular traffic as its integral part, which had a drastic impact on their character and functional processes. The city of the XIX and earlier XX century was designed more specifically for pedestrians, rather than other means of transport, and therefore it was more permeable for pedestrians. Consequently, public space of the Novi Sad as a centre of urban life, has become contested space of the city which is constantly undergoing various changes (Figure 3).

Ever since the gradual introduction of car-free pedestrian zone in 1970s, many of the public spaces have been transformed into the parking lots, traffic roads or bus roundabouts, with significant overlapping between pedestrian and vehicular traffic. Structure of urban matrix as the most important determinant of urban mobility shows significant alterations of the city, which verbalized the development of urban image that the city has today. Expansion of car traffic in the city caused the introduction of new traffic routes, while irregular street network of old city centre was shattered with progressive construction of new boulevards, outlining the period between 1960s and 1980s when the most important part of the urban transport infrastructure was built.

A large number of vehicles per capita have empowered a significant percentage of the urban fabric to the traffic network, while a lack of parking spaces have led to the conversion of potentially valuable places of socialization into the spaces primarily reserved for the cars.



Figure 3. Historical transformations of public spaces in central pedestrian zone of Novi Sad

XXI century has presented different technological changes in new ways of interaction, dismissing direct meetings in public spaces in favour of indirect electronic communication, resulting that 'what is missing in contemporary city is not a matter of any particular building or place, it is the spaces in between, the connections that make sense of forms' (Sorkin 1992, p. xii). The development of new technologies, and in particular the expansion of new communication technologies, have changed the perception and understanding of the open public spaces, consequently creating a new ways of socialization and usage of public spaces within the contemporary cities. Public space as a public good is losing its importance, and during that process there is evident 'growth of public space exclusivity with the processes of privatization and deregulation of urban policy, especially in the neo-liberal or residual welfare states' (Petrović 2009, p. 109).

The characteristics of the urban public spaces is most clearly read in the nature and purpose of space, as well as the perception of space by its users, which points out the importance of linking and networking of public spaces in order to build the city's image of identity. Revitalization of public spaces in the central zone would offer an articulated network of ambiances by interconnecting squares with pedestrian streets and various public micro locations, which altogether can be used as starting points for creation of a permeable urban environment that allows people to move around with greater ease and with more alternative choices of routes. The possibility of creating a network of public spaces throughout the physical structure of the city can be analysed through the mapping of public places, and the ways in which the urban permeability can be used as the link between design of public spaces and pedestrian mobility. The aim of this paper is to analyse how public spaces can be used in branding of the city as walkable city, and

how cities can reach a variety of cultural, economic and social objectives by appropriate urban design of its public spaces.

2. The physical structure, functional characteristics and elements of the identity of the public spaces in the central zone of Novi Sad

Monocentricity of towns in Vojvodina region, in the spatial-morphological sense, is reflected in their positioning around the buildings of the city administration or other institutions, whereas public spaces typically tend to be clustered in and around the urban core with the exception of some public parks scattered towards the urban periphery. The positioning of the public spaces in the oldest urban centre, and not at the geometric centre of the settlement, is resulting in arrival of citizens from other different parts of the city in the central pedestrian zone in order to perform the necessary activities. Therefore, the old core of Novi Sad has a large number of environments, through which an active social life can take place. Central zone of Novi Sad is a compact historical core of the city, connected with various historical and cultural monuments, and numerous institutional, functional and other facilities necessary for daily functioning. The relatively flat terrain of the city and its moderate climate allow the presence of pedestrians and growing presence of cyclists in its central zone, which represents a place where something is always 'going on'. This part of the city is not densely populated, although it contains multi-family housing, and on the other hand, it is the part of the city that attracts large number of people from other parts of the city who come to perform various activities, as well as tourists and other visitors of the city. Central zone of the city consists out of pedestrian zone (with numerous pedestrian streets and squares) and a mix of surrounding shared vehicular/pedestrian streets that vary in pedestrian 'friendliness' (Figure 4). Car access is enabled to the outskirts of car-free pedestrian zone, and car access inside pedestrian zone is allowed only with

special permission and to the local residents. Most of the parking for the residents is located inside urban blocks of central zone of the city. Visitors' parking is resolved on surrounding streets and public parking lots.

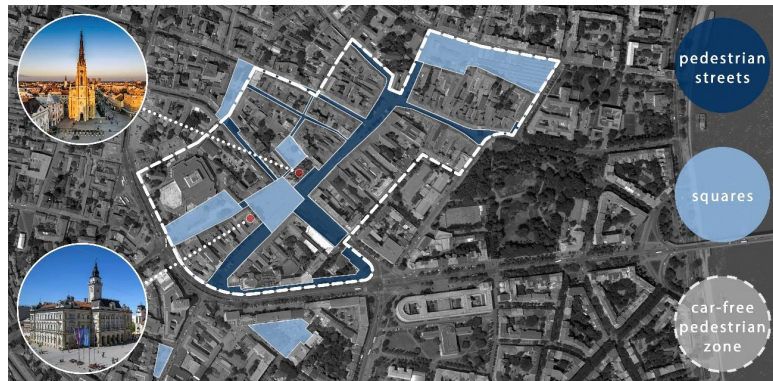


Figure 4. Fragmented network of pedestrian streets and squares clustered around The Name of Mary Church and City Hall (with marked car-free pedestrian zone of the city)

Central zone of the city is intertwined a multitude of open public spaces intended for the public life (Figure 5), which can be divided into:

- Pedestrian streets - Zmaj Jovina Street, Dunavska Street, Laze Teleckog Street, Svetozara Miletica Street, etc.;
- Squares - Liberty Square, Theatre Square, Catholic Port Square, Trifkovic Square, Republic Square, Gallery Square, Newlyweds Square, etc.;
- Urban micro-locations - various passages, inner courtyards, 'pocket' parks, etc.



Figure 5. Diversity of public spaces in central zone of Novi Sad

The structure of the human eye and the human sensory apparatus are designed to perceive and process sensory impressions while moving at about 5 km/h, underlining the importance of physical structure, functional characteristics and elements of the identity of streets and squares within which people move through. Streets are old as civilization, and 'more than any other human artefact, have some to symbolize public life, with all its human contact, conflict and tolerance' (Boddy 1992, p. 123), and it is why the most important pedestrian routes are pedestrian streets such as Zmaj Jovina Street, Dunavska Street, Laze Teleckog Street, and Svetozara Miletica Street, branching out in all directions from the central square of the city - Liberty Square. The study includes the composition of squares in the central zone of Novi Sad - Liberty Square, Theatre Square, Catholic Port Square,

Trifkovic Square, Republic Square, Gallery Square, and Newlyweds Square, all high frequency squares which form the pedestrian zone. Rob Krier points out that 'only clear recognition of basic geometric properties and aesthetic qualities allows us to consciously experience outer space as a city space' (Krier, 2007: 2), and therefore the basic characteristics of the physical structure of the square - the shape, size, the way of street inflow, the composition of the facade canvas, all create a framework for the development of public life and affect the constancy and the frequency of different user groups and public activities that take place on them.

On the other hand, the second half of XX century has introduced separation of pedestrian movement from traffic streets, creating confusion between automobile and pedestrian city scale, and resulting that the most of the pedestrian streets lack in clear structure and identity needed by people.

The emergence of squares in towns in Vojvodina region is linked to the architectural object for which the free space of the square represents the observing public space. It is most commonly the dominant vertical tower of the church or Town Hall, as is the case with Novi Sad with its City Hall and The Name of Mary Church.

Such organization has conditioned short mutual distances between the squares and other public spaces of central pedestrian zone of Novi Sad, highlighting walkability as its main characteristic (Figure 6).

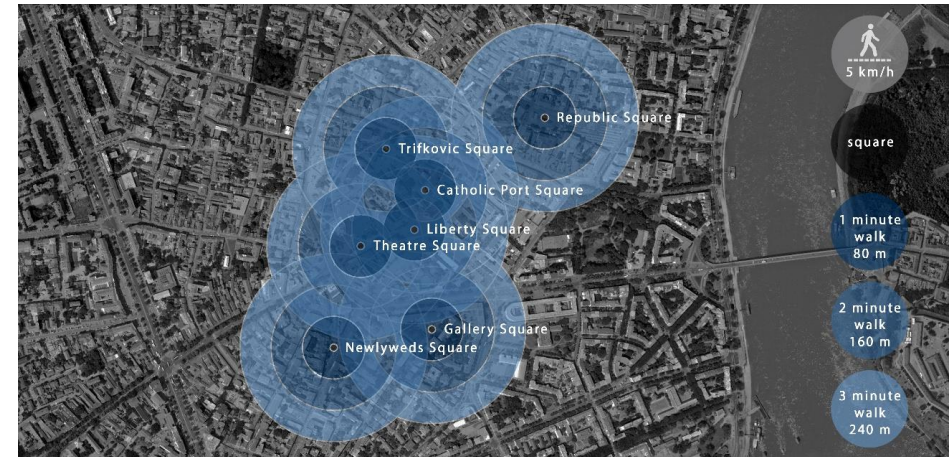


Figure 6. Mutual distances between the squares of central pedestrian zone of Novi Sad

Various influences, that shaped their structure and the users, are reflected through the change of their function from the church square or the market place square, park area, social and administrative centre, traffic junction, to multifunctional space intended for different events and happenings in the everyday life of the citizens. The large area of the Liberty Square allows the organization of various events in the open (music and film festivals, open-air exhibitions, fairs, promotions, etc.), as well as the gatherings of a large number of people (demonstrations, organized New Year's Eve celebration, music concerts, etc.). Catholic Port Square is the main social 'stage' of the city, available for daily/weekly/annual public events, such are meetings of youth, music/film/theatre festivals, workshops for young people and children, open-air exhibitions, organized exchange of self-adhesive stickers, etc. The old structure of squares has generated a favourable environment for pedestrians as the main users of the space, however, the changes that occurred in the second half of XX century have converted some of the

squares into the bus station (Republic Square), and the others into parking lots (Gallery Square, Trifkovic Square), giving them exclusively traffic function which has retained to this day.

The disappearance of traditional urbanity of the city was accompanied by the withdrawal of public life and people from public spaces of the city. Numerous micro urban sites took advantage of this emerging gap, taking over part of the public activities of the city. The central core of the city is punctured with numerous micro-locations such as various passages, inner courtyards, or green 'ambiances' that are different in their contents, design and atmosphere, all together generating its character and identity within the local community. The set of all public spaces in the city is riddled with connections and pedestrian routes in the physical structure, and those 'in-between' spaces are transformed into to a scene of everyday life, and often used even more frequently than the other public spaces to which they are leading to. The passages and courtyards, as a sort of intermediate spaces of the city, were used on one hand due to the shortening of the distance that leads to a recognized public spaces, and on the other because they connect spaces of different purposes and characters in one unit, made up of a variety of ambients in the tissue of the city. Such spaces, as gaps in the centre of the city, have a very important urban position by connecting major routes and public spaces, and allowing greater utilization of inter block spaces. Both types have some important characteristics and the potential for development into attractive micro environments, because pedestrian zone of Novi Sad permeate numerous public communications, which are creating high quality micro ambiances in accordance with the needs for variety of this unique urban structures.

3. The impact of urban design parameters on walking capacities, constancy of different user groups and public activities in the public space

Throughout its history, the urban space has functioned as a place of exchange of information and goods, as place of important social and historical events, place intended for making of important political decisions, but also as a significant meeting place of city residents. The social life of the city consists of the entire spectrum of human activities that make public spaces meaningful and attractive, and therefore 'the movable elements of the city, especially the people and their activities, as important as the stationary physical parts' (Lynch 1960, p. 2). However, public space has changed its original role in the social life of the city as a meeting place during the XXI century, as it was indicated in the introduction. The impact of the physical structure and identity of the public space has a great importance in creation of conditions for the existence of various public activities and user groups in public spaces of the city. When evaluating the public space, it is very important to observe the physical qualities of the space, but also the presence of the people and their public activities, and the ways in which people use the open spaces of the city.

A concept of 'life between buildings' includes all of the very different activities people engage in when they use common city space: purposeful walks from place to place, promenades, short stops, longer stays, window shopping, conversations and meetings, exercise, dancing, recreation, street trade, children's play, begging and street entertainment (Gehl 2010, p. 19). Such a notion highlights the importance of walkability as 'both an end and a means, as well as a measure' (Speck 2013, p.4), whereas such a 'walk' through city has to satisfy four main conditions: it must be useful, safe, comfortable, and interesting (Speck 2013, p.11). That is why a variety of important social opportunities occurs when the pedestrian life is

strengthened, because when conditions for pedestrians are improved, the extent of walking capacities and pedestrian activity significantly increases. The quality of public space depends on the design of urban space, and whether it provides its users with protection against motor traffic and unfriendly weather conditions in order to provide a possibility of using public spaces throughout the year. Life of public space depends on the quality of the space, but to a large extent on whether this space encourages people to perform various public activities and use public space as an integral part of their everyday life.

Contemporary public spaces reveal that most people do not use these spaces out of necessity, but because they want to use public space that gives them different opportunities in modern society. The optional character of public activity places high demands on quality of space and has for the result that most people use public space only if it provides high quality of design. To make full use of public spaces possible, it is essential that the public spaces of the city meet certain conditions in order to be appropriated by humans and their activities. According to John Montgomery (Montgomery 2003) a complex economic, social and cultural exchange is needed for a respectable public space, whereas key indicators of the vitality of public space, among others, are: the extent of local ownership or independent business, variations of working time, the existence of evening and night activities, the presence, size and specialty of street trade, availability of places for cultural and daily gatherings, availability of spaces that allow people to stand and watch, the existence of an active street life and street fronts. These indicators of public space vitality generate their essential characteristics to be attractive to as many different groups of users, and in case of Novi Sad (Figure 7) can be examined through the analysis of buildings' and ground

floors' contents, mixed land uses, position of historical monuments, cultural and administrative institutions, etc.

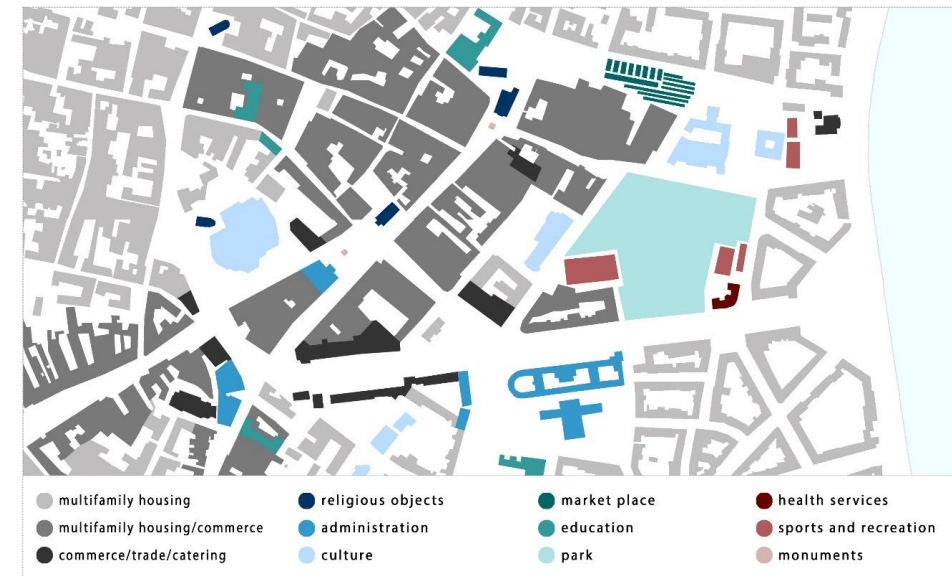


Figure 7. The contents of various buildings and structures in central zone of Novi Sad

The open public space needs to accommodate basic human activities and as such it is 'a moment of internal dynamics in the life of the city' (Rosi 2008, p. 65). All dynamic components that are taking place in the public space can be crucial in the formation of spatial identity of the city and in strengthening public spaces, recognized as such by the citizens and visitors. What makes some space public, usually is not its predetermined 'publicness', but 'when a people occupy the space in order to fulfil a specific need, and through their actions make it public' (Mitchell 2014, p. 35). Such relationship between the quality of the space and the rate of occurrence of dynamic components, such

are public activities, determines the success of a public space. In this respect, public spaces of the city are 'the mirror of the complexity of urban societies and, therefore, improvement of the existing ones is a complex process of change of the nature of public space and the strained relations that occur between the different understandings and interest groups' (Kurtovic Folic 2011, p. 4).

Figure 8. represents conceptual idea of intertwined network of public spaces (pedestrian streets, squares, micro locations, and links between them) that are currently physically and mentally separated because of inappropriate urban design. On the other hand, considerate urban design of public spaces creates stage for social activities, and therefore, has the strong impact on walking capacities, constancy of different user groups and public activities. People and their public activities attract other people, and represent a magnet that raise the value of the attractiveness of open public space.

People using public space can be designated as everyday users (people that live and work in the area), visitors/customers (people that visit the services in the area) and passers-by (pedestrians in transit or passing through the area), who all visit public space out of necessity, regardless of actual urban quality of such space, and on the other hand, recreational visitors (people that visit the area to use the public space in relation to recreation, pleasure, exercise, play, etc.), and visitors to events (people that visit the public space because of special events), who visit a public space only if it offers high urban quality of space (Søholt 2004, p. 4). Only when the quality criteria of public space is addressed, and when all user groups and different activities are probable, public space can be a successful public space of high urban quality.



Figure 8. Urban permeability and articulated network of public spaces as the outcome of considerate urban design

4. The role of urban design and marketing in creation of the new image of the city

During the last century, the cities used to compete among themselves to attract companies and investments, unlike nowadays, when they compete in development of cultural and creative resources of the city, and attracting of a growing 'creative' class consisting out of people involved in design, education, art, music, etc. Today, entire cities are being transformed into a large 'stages' for ongoing events, however, plenty of events should not be a goal itself but a means to improve the city and make it more attractive and desirable for living. Novi Sad has been known as the festival city, with a wide range of festivals taking place at its public spaces, such are - Exit (music festival, officially the 'Best Major European festival' in 2014), Street Musicians Festival (annual gathering of street art), Rhythm of Europe (celebration of the Day of Victory in WWII), Novi Sad Jazz Festival (exists since 1978), Tamburica FEST (local traditional music), International Festival of

Alternative and New Theatre (INFANT), Cinema City (international film festival), Sterijino Pozorje (international theatre festival with tradition of more than 60 years), 'Zmajevе Dečje Igre' (festival dedicated to the children), and many other festivals and cultural events with a long tradition and the international prefix which make Novi Sad a unique cultural centre of the region.

Jan Gehl (2011, p. 137) points out the difference between 'physical distance' and 'experienced distance', emphasizing the importance of experience that some urban spaces provide. Therefore, successful cities have used their culture events not only to create new physical space of the city, but also to fulfil public spaces with the social and cultural contents, and such redefining of the public space can be an alternative to the traditional infrastructure of cultural institutions. It is why an integrated approach to the relation between city and its manifestations is needed, and a clear distinction between 'the city with events' and 'eventful city' - an exciting city that became famous thanks to events (Richards and Palmer 2013, p. 48).

Network of cultural activities and events can help Novi Sad to become more dynamic and preferable for life, and in symbiosis with the network of public spaces, arranged and organized in order to ensure long-term success (Figure 9). In order for Novi Sad to become an exciting city, culture needs to be 'in the citizens' sight, within the reach of their hands, and not closed and hidden from them', and it is possible only if the culture it is 'taken out to squares and other public surfaces [...] in one word, to become the culture that is passing by' (City of Novi Sad 2015, p. 33). By offering a number of cultural activities and events, Novi Sad and other minor cities develop cultural capabilities that can match or even surpass those in the capital or larger cities.



Figure 9. The role of public spaces in the creation of the new image of Novi Sad as 'eventful' city

Different sport, cultural and public events represent a step towards a strategic repositioning and rebranding of the city (i.e. the 1992 Olympics for Barcelona or Expo 2015 for Milan). A new framework of competition for the title of the European Capital of Culture (ECOC) has enabled a cities from a potential candidate countries for EU membership to hold the title from 2021. Novi Sad has reached the pre-selection stage of competition for the title of the ECOC 2021, which can be an opportunity for 'regenerating cities, raising the international profile of cities, enhancing the image of cities in the eyes of their own inhabitants, breathing new life into a city's culture, and boosting tourism' (European Commission 2016). Novi Sad has furthermore been shortlisted in competition for European Youth Capital 2019, during which the city is 'given the chance to showcase its youth-related cultural, social, political and economic life and development' (European Youth Forum 2016). European Capital of Culture and European Youth Capital titles can be the catalysts for economic development and used for improving the image of the city, as well as a 'tool' for urban reconstruction of the city itself and its open public spaces.

Robert Palmer points out importance of public spaces as a part of ECoC cultural programmes, concluding that 'transformation of public spaces and installations in public places were also significant parts of programmes and also cited as attracting large public and media interest' (Palmer 2004, p. 66). Well-designed public spaces can play a crucial role in promotion and advancement of everyday life of the city, and correspondingly increase tourism capacities and international image of the city. New public spaces are set out as a part of action plan for the 'Novi Sad 2021' project (Figure 10), indicating that 'public spaces are necessary for social emancipation and communication of different civil groups, societies and institutions of culture; this is a precondition for any intercultural dialogue (City of Novi Sad 2015, p. 11).

Insufficient existing cultural infrastructure of the city, and lack of any recent capital investment in the aforementioned, sets up the goal to reconstruct the existing and create new public spaces for cultural encounters, entrepreneurship in culture and cultural development.



Figure 10. 'Novi Sad 2021' project – 'new connections, new strength, new spaces, a new Europe' (source: City of Novi Sad 2015)

SWOT analysis can be used as a starting point for strategic planning of open public spaces network in central zone of Novi Sad intended for various public activities, festivals, events and manifestations, and the achievement of wider economic, social, cultural, political, environmental and other objectives:

| S Strengths | W Weaknesses | O Opportunities | T Threats |
|--|--|---|--|
| <ul style="list-style-type: none"> • administrative, cultural, and tourist center; • favourable geographic and traffic position; • good connection with other urban centers of the region; • closeness of Danube river; • the second largest city in Serbia; • climate, flat terrain; • history and tradition; • numerous cultural, historical and religious monuments; • international carnivals, festivals, events and manifestations with long tradition; • preserved and arranged natural environment; • university city; • cultural diversity; • educated workforce; • developed tertiary sector; • urban development of the city; • etc. | <ul style="list-style-type: none"> • lack of financial resources; • lack of cultural infrastructure; • inadequate marketing support for public manifestations; • insufficient convictions about importance of culture; • lack of diversity of cultural contents; • unrecognizability of city's image; • unused tourist potentials; • insufficient investments in public spaces; • market size; • lack of a public spaces for cultural events; • underdeveloped environmental awareness; • etc. | <ul style="list-style-type: none"> • creation of the new image of the city; • international titles and competitions; • alternative funding sources; • international funds; • sustainable development of the city; • revitalization of old city core; • regional and international cooperation with other European cities; • networking of cities in Danube region; • tourism boost and promotion of 'event' tourism; • etc. | <ul style="list-style-type: none"> • poor economic situation; • centralization and inexistence of state support for local investments; • unstable political situation; • lack of legal framework; • low income of citizens; • unfavourable demographic factors; • underdeveloped entrepreneurial spirit; • introduction of new ways of tourism; • pollution of urban environment; • etc. |

In the region of Novi Sad, there were two ECoC in recent years - Sibiu (Romania) in 2007, and Pécs (Hungary) in 2010. The both candidacies have strongly highlighted the importance of public events, and the importance of public space as a 'stage' for specific public events. Pécs application stated that 'The ECoC application gives us an opportunity to bring back public spaces into the focus of urban development plans, and try to reclaim them for the community. One way to revitalise run-down city quarters is to renew their public spaces, as a result of which the immediate environment regains its value and new residents, shops and places of amusement may emerge

there' (Pécs 2010 Application Centre 2010, p.68). Sibiu was more oriented towards cultural events in public space - 'Both the creation of art in public spaces and the organisation of specific events in public space are given considerable attention, and eventually these projects will receive the most public and media attention' (Sibiu 2007 Association 2007). Although some ECoC are still too recent to evaluate, attempts were made to study the longer-term impacts of earlier ECoC. In general, across all ECoC, three long-term effects rate very highly (Palmer 2004, p. 146) - cultural infrastructure improvements; more developed programmes of cultural activities and events; and increased international profile of the city/region. ECoC have had important short-term impacts, and a number of long-term ones, which could be both positive and negative. Some negative effects were also observed in Sibiu, as spatial effects of ECoC 'reached only the Old Town, where gentrifying effects of the ECC were visible. Positive reactions at the mall and commercial core indicate spillover effects of gentrification' (Palonen 2011, p.254).

When it comes to branding of city as a whole, the emphasis shifts from the city marketing to creation of the brand of the city, which includes more complex process, since 'brand is much more than a logo, it epitomizes the evaluation of experiences and expectations of residents and visitors, in order to continue to produce interesting and attractive experience' (Richards and Palmer 2013, p. 246). Public spaces can become the appropriate places in the city that can be imbued with new meanings and possibilities, and thereby provide interesting and attractive experiences. Great public spaces are those places where 'celebrations are held, social and economic exchanges occur, friends run into each other, and cultures mix, and which share the four qualities: they are accessible, people are engaged in activities there, the space is comfortable and has a good image, and finally, it is a sociable place -

one where people meet each other and take people when they come to visit' (Project for Public Spaces 2016). Public spaces create an image of a certain place, and it is why 'a well-designed approach to branding of a city enables a stronger connection between the physical appearance of the city and the projection of its brand, and helps them to interact' (Vitelo and Vilkons 2015, p. 367).

Urban symbols receive important place in the economy of the city with their specific role of non-verbal advertisement, meaning that spaces of urban identity play a crucial role in urban marketing and branding of the city. In this competitive game 'imageability' becomes the new 'selling point', while restoration of the old public spaces and creation of new ones could help in creation of the new 'image' of the city. This transformation and rebranding has to represent the public interest, and an opportunity to change the city's image, as well as an investment that will bring many improvements in the cultural, economic, and social spheres. Urban design or aesthetics of the city is 'the catalyst of a strong identity and thus the success and development; moreover, the successful design of a city increases the comfort of residents, environmental quality and image of the city' (Parjanen, Harmakorpi and Kari 2015, p. 151). Urban surrounding and urban mobility can rarely be successfully transformed through a single project, and therefore systemic changes of public spaces have to be based on long-term planning of the city. It is also important that negative effects (e.g. gentrification) are reduced, and that the local population feels part of the project, whereas the refurbishment of public spaces has positive effects on them.

5. Conclusions and final remarks

The historical core of Novi Sad with its specific urban matrix has many public spaces that have not been used in their full capacity, which on the other

hand have the potential for creation of an attractive environment for both the citizens and visitors of the city. Their distinctive identity, historical importance and position in the central city core, are the basic parameters of the potential for their future revitalization. It is important to utilize the potential of analysed elements of the urban tissue, such as dense city structure, short walking distances, high degree of mixed use, active ground floors and distinguished architecture, as a starting points in the creation of the modern image of the Novi Sad.

Mistakes in design, inadequate maintenance and irresponsible behaviour of people have led to deterioration of public spaces during the last decades. Nowadays, people are less motivated to spend their free time in the public spaces of poor quality, which correspondingly affects the frequency, character and constancy of different public activities and user groups. In addition to the presence of people, certain physical qualities needed for willingly usage of public space, and creation of unfavourable conditions for cars and favourable conditions for people, all must be aims of every future alteration. Therefore, these spaces as places of socialization must pass through certain transformations to meet the needs of present-day public life in Novi Sad. The programme should take into account the extension of the pedestrian zone, the reconstruction of the public spaces, renewing of green parks, and turning them altogether into artistic and cultural sites.

Consequently, it is essential to operate towards improvement of public spaces and to the possible directions of their complex optimization in a functional and aesthetical sense, so that these spaces, designed for all categories of city residents, can create conditions for organization of daily or periodic public activities and events. The initiative of the city should encourage arranging of such places, through the planned creation of points

in the city that will create a network of unique spaces as meeting places and the focal points of social life, as the indicators of a deliberate design of urban structure. Through the conscious forming of the recognizable and legible network of public spaces, people are encouraged to use them and change them through their presence, and ensure maximum utilization of the individual resources of separate entities in the city. Revitalization of public spaces in the central pedestrian zone of Novi Sad would offer an articulated scheme of ambiances, which would be interdependent and suitable for the emergence of a space for cultural and artistic contents and events.

Urban design of articulated network of public spaces can clearly distinguish points for the future development of Novi Sad as 'eventful' city, and potential benefits of improved public spaces and urban mobility:

| | |
|----------------------------------|---|
| Social perspective | Re-established function of the analysed urban spaces as open public spaces of the city dedicated to pedestrians, would allow the presence of different user groups and public activities in the public spaces that would be safe, comfortable, interesting, and walkable, with degree of concern for the human scale; |
| Political perspective | The appropriate approach to design of public spaces enables 'democratisation' of urban space, which further allows citizens to participate in the public life of the city; |
| Cultural perspective | Cultural policy should recognize the potential of public spaces as spaces suitable for the cultural and artistic contents and events, turn them into places of identity and incorporate them into the map of the city; |
| Marketing perspective | Public spaces with a strong identity, such as cultural, consumer, entertainment and others, can successfully promote the city. The city rebranded with such concept would be attractive to those wishing to live and work in it; |
| Economic perspective | Refurbished public spaces of the central zone can promote urban revitalisation, economic development, local entrepreneurship, an expansion of creative industries and jobs, and tourism. |
| Environmental perspective | Urban space 'liberated' of the vehicles can reduce air pollution, improve micro climate, enhance walking as part of everyday life, cause enlarged social interactions in the public spaces, increase usage of bicycles, etc. |

Another role of the city is reflected in the encouragement of relevance and attractiveness of the public spaces, whose promotion will raise their importance in the collective conscience of the community, improve their general functionality and allow them to further develop. The network of public spaces can be significant benchmark in the mental map of the users and visitors, if linked through a linear pedestrian routes to a heterogeneous whole that provides countless opportunities for social interaction. Design of public spaces as spaces of urban identity can play a crucial role in urban marketing and branding of the city, help in creation of the new 'image' of the city, and be used as 'the catalyst' for cultural, economic and social objectives of the city. A programmed series of projects intended to transform public spaces and question people's perception about them is needed instead of a single, short-term project. Strategic approach to branding of the city requires a longer period of time, in order that the city to become a recognizable and attractive.

6. Acknowledgements

The paper was done within the project of Ministry of Education, Science and Technological Development of Republic of Serbia: 'Optimization of architectural and urban planning and design in the function of sustainable development of Serbia' TR36042.

7. Bibliography.

- Boddy, T. 1992. Underground and Overhead - Building the Analogous City. In Variations on a Theme Park - the New American City and the End of Public Space (ed. M. Sorkin). New York: Hill and Wang.
- City of Novi Sad. 2015. Novi Sad 2021, European Capital of Culture, Candidate City Bid Book. Accessed May 15, 2016. <http://novisad2021.rs/wp-content/uploads/2015/10/Novi-Sad-2021-Bid-Book.pdf>.

- European Commission. 2016. European Capitals of Culture. Accessed May 20, 2016. http://ec.europa.eu/programmes/creative-europe/actions/capitals-culture_en.htm.
- European Youth Forum. 2016. Why should a city apply to become the next European Youth Capital? Accessed May 10, 2016. <http://www.europeanyouthcapital.org/>.
- Gehl, J. 2010. Cities for People. Washington: Island Press.
- Gehl, J. 2011. Life Between Buildings: Using Public Space. London: Island Press
- Kalen, G. 2007. Gradski pejzaž. Beograd: Građevinska knjiga.
- Kostof, S. 1992. The City Asssembled - The Elements of Urban Form Through History. Boston: A Bulfinch Press Book.
- Krier, R. 2007. Gradski prostor u teoriji i praksi - Na primerima gradskog jezgra Štutgarta. Beograd: Građevinska knjiga.
- Kurtović Folić, N. 2011. Istorijski javni prostori i njihova sudbina u strategiji održivog razvoja gradova. In Unapređenje strategije obnove i korišćenja javnih prostora u prostornom i urbanističkom planiranju i projektovanju (ed. N. Kurtović Folić). Novi Sad: Fakultet tehničkih nauka.
- Lynch, K. 1960. The Image of the City. Cambridge: The MIT Press.
- Mitchell, D. 2014. The Right to the city - social justice and the fight for public space. New York: Guilford Press.
- Montgomery, J. 2003. 'Cultural Quarters as Mechanisms for Urban Regeneration'. Planning, practice & research, vol. 18, 2003, pp. 293–306.
- Palmer, R. 2004. Report on European Cities and Capitals of Culture - Part I. Brussels: Palmer/Rae Associates.
- Palonen, E. 2011. European Capitals of Culture and the limits of the urban effects in Luxembourg and Sibiu 2007. Brazilian Journal of Urban Management, vol. 3, no. 2, pp. 245-256.
- Parjanen, Š, Harmakorpi, V. and Kari, K. 2015. Estetski izazov. In Destinacija kao brend: Upravljanje reputacijom mesta (eds N. Morgan, A. Pričard, R. Prajd). Clio: Beograd.
- Pécs 2010 Application Centre. 2010. Borderless City: European Capital of Culture - Pécs, 2010. Accessed June 11, 2016. http://www.pecs2010.hu/wp-content/uploads/2013/10/pecs2010_english.pdf.

- Petrović, M. 2009. Transformacija gradova - ka depolitizaciji urbanog pitanja. Beograd: Institut za sociološka istraživanja Filozofskog fakulteta.
- Project for Public Spaces. 2016. What Makes a Successful Place? Accessed May 11, 2016. <http://www.pps.org/reference/grplacefeat/>.
- Richards, G. and Palmer, R. 2013. Uzbudljivi gradovi: kreativni menadžment i revitalizacija grada. Beograd: Clio.
- Rosi, A. 2008. Arhitektura grada. Beograd: Građevinska knjiga.
- Sibiu 2007 Association. 2007. Sibiu CCE 2007: The Strategy. Accessed June 11, 2016. <http://www.sibiu2007.ro/en3/strategia.htm>.
- Sørensen, H. 2004. 'Life, spaces and buildings – turning the traditional planning process upside down'. Walk21-V Cities for People, The Fifth International Conference on Walking in the 21st Century, Copenhagen.
- Sorkin, M. 1992. Introduction: Variations on a Theme Park. In Variations on a Theme Park - the New American City and the End of Public Space (ed. M. Sorkin). New York: Hill and Wang.
- Speck, J. 2013. Walkable City. New York: North Point Press.
- Statistical Office of the Republic of Serbia. 2014. 2011 Census of Population, Households and Dwellings in the Republic of Serbia. Accessed May 22, 2016. <http://pod2.stat.gov.rs/ObjavljenePublikacije/Popis2011/Knjiga20.pdf>.
- Vitelo, R. and Vilkins, M. 2015. Brendiranje destinacija i urbani leksikon: London, Njujork i Barselona. In Destinacija kao brend: Upravljanje reputacijom mesta (eds N. Morgan, A. Pričard, R. Prajd). Clio: Beograd.

8. Authors

Stefan Škorić, MArch, is a research assistant employed at the Department of Architecture and Urban Planning, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia, where he is currently involved in the scientific project funded by the Ministry of Education, Science and Technological Development, Republic of Serbia. He is a participant of numerous exhibitions

and workshops, author and co-author of several papers presented at national and international scientific conferences and a PhD candidate at the Department of Architecture and Urban Planning, Faculty of Technical Sciences in Novi Sad.

Dijana Brkljač, MArch, is a teaching assistant on the Department of Architecture and Urban Planning, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia, where she is also a PhD candidate. She is currently involved as a researcher in the scientific project funded by the Ministry of Education, Science and Technological Development, Republic of Serbia. She is author or co-author of several papers published in scientific journals and presented at international and national scientific and technical meetings and a several artworks exhibited at national and international exhibitions.

Aleksandra Milinković, MArch, is a teaching assistant at the Department of Architecture and Urban Planning, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia. She is a licenced designer since 2011, and a member of the Serbian Chamber of Engineers. As a researcher she is currently involved in the scientific project funded by the Ministry of Education, Science and Technological Development, Republic of Serbia. She is author or co-author of several papers published in scientific journals and presented at international and national scientific and technical meetings.

Milena Krklješ, PhD, has been actively involved in teaching at the Department of Architecture and Urban Planning, Faculty of Technical Sciences, University of Novi Sad, Novi Sad, Serbia, since 2003. She holds PhD in the field of Architecture and Urban Planning, and has been elected for assistant professor in the field of Architectural and Urban Planning, Design and Theory

in 2011. She has participated in several national and international research projects. She is author or co-author of more than 50 scientific papers, which were published in national and international scientific journals and presented at international and national scientific conferences.



**HOW TO IMPROVE URBAN MOBILITY THROUGH
GENERAL URBAN PLAN?**
THE CASE STUDY OF THE CITY OF ŠABAC, SERBIA

***BY KSENIJA LUKIĆ, BOJAN ALIMPIĆ & BRANISLAV
ANTONIĆ.***

How to improve urban mobility through general urban plan? the case study of the city of Šabac, Serbia

By Ksenija Lukić, Bojan Alimpić & Branislav Antonić.

ABSTRACT:

Post-socialist transition has profoundly changed the cities in former socialist societies in Central and Eastern Europe. Thus, some common “transitional” characteristics have reflected into urban space. One of them is certainly the commercialization of urban space, especially in city centres, but also around new retail zones in urban periphery. This phenomenon is considered among the main challenges for urban development. At the same time, new symbols of market economy and related individualization have arisen. The good example is newly-born “car culture”, i.e. the significant increase of the number of cars. Side by side with spatial commercialization, it has gradually limited pedestrians’ and cyclists’ mobility in the cities.

Serbia is very distinctive here. Due to the Yugoslav crisis in the 1990s, known as a “blocked transformation”, it has had postponed and harsher transition. The conditions for urban mobility have been especially deteriorated in the case of small and middle-size cities, where both mentioned phenomena have caused traffic jams, the lack of parking space and the general pressure to pedestrian and green zones. Furthermore, it is very questionable how to improve mobility in the time of scarce financial and institutional capacities. Therefore, this research aims to clarify which solutions, especially easy-implementable and inexpensive, can be used for the improvement of urban mobility in Šabac as a typical middle-size Serbian city. This is important task due to the inadequate treatment of the mobility in the current general urban

plan of Šabac. The foundation for the research is the theoretical knowledge of urban mobility, which will be customized in relation to Serbian planning and legislative framework. Then, it will be implemented through the study on Šabac. The research is also created to be proactive – the main results and findings of the research will be used for the new general urban plan of Šabac, which is currently in the first stage of preparations.

KEY WORDS:

Urban mobility, post-socialist transition, Serbia, general urban planning

1. INTRODUCTION

Post-socialist transformation of the societies in Central and Eastern Europe has been proved as one of the main global challenges in the last decades (Hamilton et al 2005). Following the notice of H. Lefebvre that urban space is a projection of society (Lefebvre 1968, p. 64), the transformation of society always influences spatial transformation in urban areas. Indeed, post-socialist transformation of all significant levels (economic social, political, cultural) has profoundly changed the cities in former socialist societies (Petrović 2005, p. 11). As a result, this transformation has also produced some common spatial “transitional” characteristics in post-socialist cities (Hamilton et al 2005).

The main change in economic aspect was certainly the introduction of capitalism and market economy in the early 1990s. Together with the rise of mass individualisation (Bartoszewicz and Lorens 2016), it has consequently caused hitherto unknown commercialization of urban space, which has attracted much attention in scientific cycles (Vujović & Petrović 2005). This new urban process has entirely transformed city centres, where retail sector

have flourished after several decades of inaction during socialist era. Furthermore, new retail zones in the form of shopping centres and malls have emerged at the edges of post-socialist cities (Nagy 2001). Brining new requests for urban development, this new phenomenon has triggered both responsible local authorities and professionals to find new solutions for it (Hirt & Stanilov 2014, p. 5).

Another consequence of economic changes in post-socialist cities has been newly-born “car culture”, i.e. the significant increase of the number of cars due to spatial dispersion and suburbanisation (Hirt & Stanilov 2014, p. 65). As a product of liberal capitalism, car has been seen as status symbol (Bodnar 2011, p. 162). Therefore, the increased number of cars on the streets in post-socialist cities and urban transformations caused by them has gradually limited pedestrians’ and cyclists’ mobility in the cities.

However, the transformation of post-socialist cities during the last 25 years is not a monolithic development. Sizable differentiations and variations between different parts of post-socialist space have taken place in relation to their (post)socialist context. I. Tosics even proposed the “regionalisation” of post-socialist cities through the identification of several sub-types (Tosics 2003).

The place of Serbia in this “post-socialist mosaic” is very specific. Due to so-called “blocked transformation” during the 1990s (Petrović 2004, pp. 149-151), it was the last country in Europe which entirely accepted changes accompanied with post-socialist transition. Since then, urban mobility has appreciably reduced in favour of “car culture” in spite of widespread economic difficulties (Spasić et al 2007). This is especially noticeable in the case of middle-size cities, where the size of a city has never approached

public transport to be developed. Therefore, actions against urban mobility have appeared both legally or illegally here. These problems have resulted with the first-time appearance of traffic jams, the lack of parking space and further pressure to pedestrian and green zones in middle-sized cities. But, this problem with urban mobility has been more visible with the rise of these actions. Nowadays, both professionals and public are aware that this situation needs some solutions. But, it is very questionable how to improve mobility in the time of scarce financial resources and limited institutional capacities (Pantic et al 2013).

The aim of proposed research is to find those solutions which can cope with the problem of “car culture” and related problems in the city of Šabac, as one of typical middle-size cities in Serbia. The accent is on easy-implementable and inexpensive solutions, which are in line with the mentioned negative financial circumstances in Serbian cities. In accordance with the complexity and comprehensiveness of the problem, this research will be connected with urban-planning measures. Hence, the research will be done for a new general urban plan of the city, which is currently in the first stage of preparations. The current General urban plan of the city of Šabac is obsolete by many issues. This is also true with the issue of urban mobility, which is inadequately treated by it (CŠ 2008). Thus, the research can be described as proactive – its study and results will be included in the final version of the plan, giving practical contribution of this research. Before it, the basic urban patterns in post-socialist cities regarding urban mobility at regional and national level will be elaborated. Knowing that urban mobility is still a novelty for Serbia, this effort will be also a theoretical contribution in Serbia.

2. URBAN PATTERNS REGARDING MOBILITY IN POST-SOCIALIST CITIES

During socialism, government suppressed market economy, private incentive and privatisation of urban space. Accordingly, low utilisation of urban space was prevalent in socialist city, even in those places which would be extensively used in capitalist economy (Tosics 2003). This situation was entirely changed after the fall of socialism in the early 1990s. Underused space in cities has become the place of fast commercialization (Nagy 2001). This was supported with the phenomena of individualisation and consumerism. Individualisation, as a global phenomenon (Allmendinger & Tewdwr-Jones 2001), challenged profoundly the societies where it was previously undesirable by Marxist ideology and thereby suppressed by ruling system. The issue of consumerism has been an attention in post-socialist space – it has been considered even as a status symbol (Nagy 2001).

Historic city cores in post-socialist cities have particularly attracted new investments in retail and business sector. During socialist era, these parts of cities were intentionally neglected due to their “bourgeois” past (Murray & Szelenyi 2009). However, with the privatisation and the rise of rents, these parts of the cities have transformed into upscale retail and business areas (Petrović 2009; Hirt & Stanilov 2014). Specialized shops have marked the transformation of the centres, pressuring the retail for low- and middle-income groups to move outside them (Petrović 2005). Parallel with this, physical transformation of the cores has taken place – many inner city areas and neighbourhoods have been renovated (Petrović 2009). Nevertheless, general urban fabric in the cores has not been gradually changed. This means that the street network have stayed in the same shape even it has become overcrowded with new transport at the same time.

One of the main challenges regarding retail sector was the shift from high concentration in inner city centres in socialist cities to decentralisation and dispersion in post-socialist cities (Hirt & Stanilov 2009). Peripheral areas with good transport connections has become especially attractive for a “big-box” retail and international business, changing radial and monocentric form of the cities and initiating new transport routes (Hirt & Stanilov 2009). This shift was extreme in some cases. For example, 45% of retail sector in Ljubljana was concentrated in two shopping malls in 2007, leaving just 18% of it in city centre (Dimitrovska-Andrews 2007, p. 431). Other cities in post-socialist Europe have witnessed similar urban challenges (Petrović 2009). Therein, these patterns were mostly visible in the case of the major cities during the early 1990s, but they have also occurred in provincial cities since then (Nagy 2001). Side by side with the sprawl of low-density residential areas, this dispersion of new retail and business facilities have influenced the necessity of car use (Petrović 2005). Actually, these retail zones have become recognizable by huge car parks in front of their facilities.

One of the main consequences of the rise of retail and business sector and well as housing suburbanisation has been the rise of “car culture”. First, the favouritism of individualisation has also caused clear support to use of automobiles. For illustration, even the major cities with efficient mass public transport system (e.g. metro system) have faced the sharp decrease of the use of this transport mode in favour of cars (Petrović 2009). One of the reasons for such trend was the decrease of financial support to public transport (Dimitrovska-Andrews 2005). The increase of the number of cars in Budapest in the period 1990-1996 was approximately 30% (Bodnar 2011, p. 162). In minor cities, this phenomenon has been even more observable. Generally, all countries in post-socialist Europe witnessed the big increase of the number of cars. In some cases, this number was tripled in just two

decades, from 1985 to 2004 (Hirt & Stanilov 2014). By survey from 2003, the number of registered cars per 1,000 residents was the same in “Western” and “Eastern” Europe (Stanilov 2007).

The actions to cope with this situation are usually related to the extension of relevant transport infrastructure, such as the widening of the streets or new public garages (Petrović 2009). However, local budgets have not been enough to follow the rise of “car culture” with new infrastructure projects (Hirt & Stanilov 2014). Moreover, negative impact from “car culture” has been observed in many ways – more noise and pollution, the overcrowding of streets and traffic congestions, the decline of the quality of open public space, and illegal usurpation of space dedicated for other urban functions (Stanilov 2007; Petrović 2009; Hirt & Stanilov 2014).

Considering previous, the trend regarding pedestrian and cyclist transport have also challenged. They have suffered from the pressure from the increased number of cars (Barnfield & Plyushteva 2015). Although the major streets in old city cores have been pedestrianised and thereby transformed in affluent shopping and tourist areas (Hamilton & Carter 2005), this has not been a dominant pattern in the other parts of post-socialist cities. With limited network, cycling has been in even more severe situation. However, it has been also proved that the reduced number of bicycles in post-socialist streets is not just connected with the accompanying infrastructure; it seems that state of mind towards cycling has been also changed in negative way (Barnfield & Plyushteva 2015).

3. URBAN PATTERNS REGARDING MOBILITY IN POST-SOCIALIST SERBIA

Post-socialist cities in Europe present many regional differences (Wilson 2013). Serbian cities are very distinctive among them and this distinctiveness has shaped the specific characteristics of urban mobility. Generally, they belong to the sub-type of ex-Yugoslavian cities (except Slovenian ones) (Petrović 2005, p. 16).

Distinctiveness of Serbia and, more precisely the space of the former socialist Yugoslavia, has longer past. It is important to mention the influence of the unique system of socialist self-government in former socialist Yugoslavia, which enabled more freedom and decentralisation and which introduced some elements of market economy (Pichler-Milanović 1999; Petrović 2004; Petrović 2005). In the case of urban mobility, this system introduced some elements of market economy, producing thereby better living standard and similar consumer patterns like in the capitalist West (Hirt & Stanilov 2014). Therefore, former Yugoslavia was one of the most prolific socialist countries for the earlier appearance of “car culture”, which first indications were visible in the 1980s (Misanović 2013).

In contrast, the second distinctive characteristic of Serbia comes from the recent turbulent past. One of the main outcomes of the Yugoslavian wars in the 1990s was the huge number of refugees in Serbia. Their accommodation in the times with scarce resources consequently caused the “boom” of already present illegal practice in urban space (Petovar, 2003; Petrović 2004). New illegal residential settlements arose across the outskirts of Serbian cities during the 1990s, producing new level of urban sprawl. These settlements have been formed with fuzzy “urban” fabric and unorganised network of narrow streets, disabling any “normal” solution for urban mobility: decent

infrastructure, public transport, cycle and pedestrian paths, etc. (Petovar 2003; Tsenkova 2008). This phenomenon has further fuelled the use of cars. It has been especially observable in the small and medium-size cities, where public transport has been traditionally underdeveloped. But, even in the case of Belgrade, where the share of public transport in total mobility is traditionally high (more 50% in 2012), the illegally built suburbs suffer from bad transport connection (Misanović 2013).



Figure 1: *The usurpation of cycling paths by parked car in Subotica (source: www.subotica.com);*

Figure 2: *Congested streets and footways in central Belgrade (author: B. AntoniĆ)*

The other forms of informal/illegal practice have also taken a place in Serbia and indirectly have triggered mobility. Illegal conversion of the former housing areas into new retail facilities has been very common in Serbia (Hirt & Stanilov 2009). In relation with its illegality it is very hard to plan appropriate plans and actions. In the case of public space, the severe and most obvious problem with parking has occurred in the central districts, where parked cars clog most streets and footways (Stanilov 2007). Furthermore, the number of temporary objects has uncontrollably increased in the 1990s, especially in bigger Serbian cities (Vukmirović & Runić 2013), which have further shrank the space for pedestrians and cyclists.

Historic cores in Serbian cities have faced the same patterns of transformation towards retail and business zones like other post-socialist cities, but in smaller scale due to postponed and still limited economic transition (Hirt & Stanilov 2014). Here, the main pedestrian streets have been especially in the focus of both professional and government interest (Đukić 2011). However, the attempts to improve the state of public space have been generally fragmented and unorganised. The priority is usually given to car. A good illustration for this attitude can be found in the case of one of the renovated streets in old core the city of Sremska Mitrovica in 2010, where the newly-built cycling lines along the street are transferred to parking sites during project. During a conversation with one of the paper authors, the responsible designer of the project explained that this is a “temporary” decision till “adequate moment” in future.

3.1. Urban planning and mobility in post-socialist Serbia

Urban planning is considered as one of key factors in Serbia which can accelerate or inhibit urban mobility in city (Đukić & Vukmirović 2013). But, unprepared post-socialist countries have not been in position to easily customize their planning system to be able to combat which very new socio-economic reality. Thus, urban planning in post-socialist countries in less developed post-socialist countries can be described as “generally weak, passive, reactive, and subordinated to private interests” (Hirt & Stanilov 2014, p. 41). In Serbia, this phenomenon is known as “Investors’ urbanism” (Petrović 2009, pp. 262-263).

Another problem in Serbian urban planning has been the inefficient implementation of urban plans. Currently acting Law on planning and

construction and subordinated legislative acts have had many harmonization procedures last years, based on intention to create more supportive environment for both faster procedures and better implementation. Therefore, the law has made a clear distinction between general urban plans and the plans of general and detail arrangement (PS, 2009-2014). The first ones are strictly strategic documents for major urban settlements (>30,000 inhabitants) which should create a broad framework for further urban planning. Thus, they do not give profound explanations for details, but they are a right place for the introduction of innovations.

These elements should be thereby developed through the plans of general arrangement, which are used in the case of both the parts of major urban settlements and the entire middle size settlements (towns and major villages). Small settlements (villages with <1,000 inhabitants) are usually planned through spatial plans of municipalities. Finally, the most sensitive urban areas, where both a lot of resources and conflicts can be expected, are developed through the plans of detail arrangement, which are the most detailed and systematic plans in Serbian planning system. Therefore, they represent a usual approach for the development of the main projects in cities, such as flagship projects, the projects of renewal/revitalization, projects for the main infrastructure corridors, etc.

The problems in urban planning and its implementation are followed with the problems in related sectors. For example, the systems of ownership rights and cadastre are also underdeveloped and with many inconsistencies. This is also true with legislative system. For example, Serbian legislative acts on transport forbid the introduction of cycling paths along pedestrian streets and zones. Then, the legislation regarding integrated streets is almost non-existent.

Urban mobility is still a new topic for local authorities and planning agencies in the majority of Serbian cities. Due to the aforementioned problems with traffic congestions in the major cities, urban mobility is only on spotlight in Belgrade and Novi Sad. Belgrade has initiated the programme of sustainable urban and transport planning in the city (SUTP Belgrade) in the last years. It is especially oriented towards the improvement of cycling conditions and the provision of appropriate network of cyclist routes and paths (TIS 2013). Novi Sad has just started with the promotion of urban mobility through relevant discussions and round tables.

4. CASE STUDY – NEW GENERAL URBAN PLAN OF ŠABAC, SERBIA

In relation to aforementioned consideration of urban planning system in Serbia, a general urban plan is chosen as a case study in this paper.

4.1. General data about the City of Šabac and its urban development

The City of Šabac is located in the north-western part of Serbia, at the right side of the Sava River and belongs to Mačva administrative district. An average elevation of the city is 80 m and the terrain that supports the city is a mainly flatland. The population of the city is around 80,000, which includes the city with suburbs. The position of Šabac in the Serbian traffic network is very good. It is located at about 80 km from Belgrade and Novi Sad that are the biggest centres of the country and about 60 km from the Nikola Tesla Airport in Belgrade.

Very suitable configuration of the terrain and the historical period of the formation of the city have caused the extremely orthogonal urban fabric. Although data regarding the first settlements in this area date back to ancient times, and data about permanent settlement with the urban character exist since 15th century, urban fabric that are known today was formed later, in the 19th century. This time was crucial for Šabac - it was among 6 main cities in newly-formed the Principality of Serbia (Kojić 1970). Actually, it is believed that Šabac was the first urban settlement in modern Serbia which got a completely new urban form (Đokić 2009). It was based on the role-model of Habsburg settlements, developed by fortification engineers in south Pannonia.

As a border city of that time, Šabac was located very close to these examples. The current core of the city was formed in orthogonal urban fabric, with quadrant and spacious urban blocks and wide and straight streets. City core formed in the first half of 19th century is recognized by row of objects with luxurious facades positioned at the street's regulation today. These houses belonged to merchant families, since trade was the main activity in the city. Money of rich merchant families made the further transition of the city from Ottoman oriental town to European-looking city was possible.

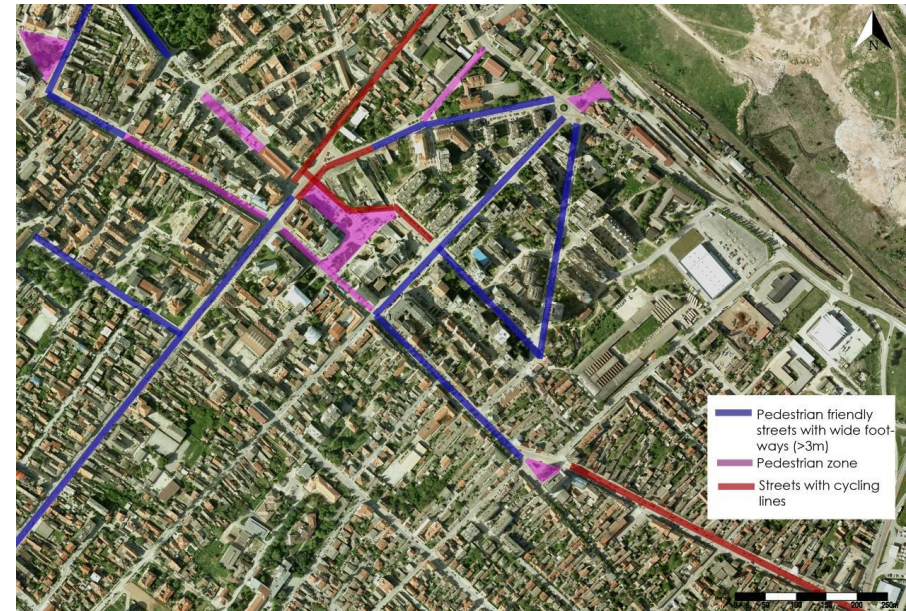


Figure 3: The centre of Šabac – current state (author: K. Lukić and B. Alimpić)

After two World Wars and transit to socialism in mid-20th century, the industry that was built, completely changed the character of the city. Several quarters, entirely adjusted to modernism and modern architecture, were built in the 2nd half of the 20th century. The end of the 20th century brought economic collapse, disintegration of the state and refugee influx, which made its impact on the city's urban patterns. The placement of the refugees happened at the edge of the city, where planning regulation and its implementation were not so strict.

While industry suffered and eventually collapsed, retail zones were growing. Trade was new opportunity for people that lost their job in industrial sector during the economic sanctions to Serbia that lasted several years in the 1990s, as well as a way of survive for the new inhabitants of the city - refugees. As a consequence of economic changes, several dominantly

residential streets, that connect city core to its suburbs, transferred into mixed-use streets with stores or small businesses in the ground floor and apartments in the upper floors. Commercial sector in the city expanded even more since the beginning of new millennium. When economical and political situation became stable, Serbian market opened and retail sector “exploded”. Šabac was no exception, resulting with expanded retail zone of city core and several retail zones at the main traffic corridors towards other cities nearby.

Nowadays, four types of city quarters can be recognizable in urban space:

1. Old city’s core (city centre),
2. Modernist quarters characterized by big superblocks and with high density and wide green areas,
3. Mostly single-family residential zone without retail,
4. Suburbia that emerged by transformation of rural areas with both urban and rural elements.

4.2. Mobility on local level

Vehicular transport functions very well, with minor jams at peak hours (7-8 AM, 12, 3-4 PM). Streets form the network which follows orthogonal urban matrix of the city. The width of the street is usually adjusted to its traffic intensity, except in a few cases. The most loaded streets are the ones that are the main corridors to the cities nearby.

Pedestrian movement is directly related to the attractiveness of the location, thus the most intensive directions are at the city core. In 2006, the main street in Šabac was declared as pedestrian zone by local decree and it has been the most important and most attractive route for pedestrians since then. Most of the streets in the city center have wide footways that enable

comfortable use. The intensity of pedestrian movement is lower at the periphery than at the centre and the quality of footways in residential areas can vary - in some quarters is very comfortable, while in the others footways do not exist. A lot of pedestrians also use the streets towards riverside of Sava.

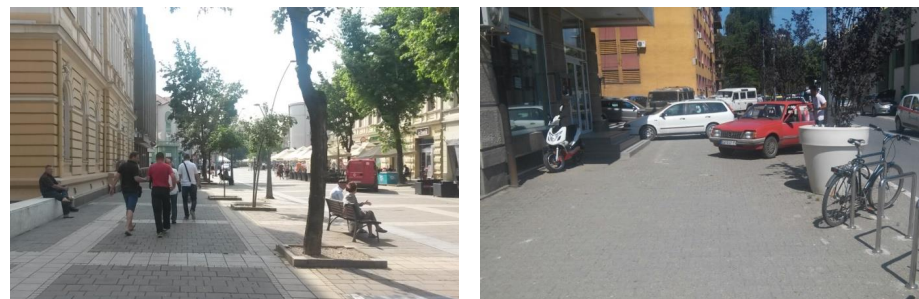


Figure 4: The main street in Šabac: example of good pedestrian environment (author: Ksenija Lukić)

Figure 5: one of the central streets in Šabac: example of footway occupied by cars (author: Bojan Alimpić)

With mainly flat terrain and streets of wide regulation, followed by long tradition of using a bike as transport device, Šabac has the potential to develop as a bicycle-friendly city. However, that potential has not been used properly so far. Currently, network of bicycle paths, which connects different parts of the city, does not exist. It is interesting that spatial and urban plans have considered connections between city centre and suburbs rather than connection between city quarters. As a result, implemented bicycle infrastructure is partly developed. Thus it requires a new, systematic approach.

Public transport is organized by bus lines. Bus stops are distributed based on location importance, but like bicycle infrastructure, a certain deficiency in

public transport routes occurred. Suburbs and city centre have a very good connection, with great number of routes during the day and public buses on these directions are being used frequently. On the other hand, city's quarters do not have proper connection between each other and the use of these routes is very low.

During several decades of socialism, urban planning in the field of transport and mobility was based on supporting vehicular transport. Consequently, the entire streets had wide regulation, which left enough space for comfortable footways and greenery. However, wide footway does not automatically mean an attractive space. Hence, many streets developed during the 1970s and the 1980s remained empty, without high significance in urban fabric and despite their wide regulation. During the last decade of 20th century, several quarters in suburbs were developed. The aforementioned "blocked transformation" was reflected in building environment by developing series of quarters at the edge of the city in illegal or semi-legal way. These quarters were exclusively residential and with narrow streets. In these conditions, street was practically reduced to roadway which put car/vehicle in focus. Footways were built either very narrow or were not built at all.

Since 2014, there has been a strong citizen initiative of citizens to develop other, more "green" ways of transport on first place, like public transport, cycling and walking. This has influenced the political will of city government. The city has been actively working on developing projects that 'reserve' public space on streets for pedestrians and bicycle lines. These intentions should be incorporated into the new General urban plan for Šabac (currently in progress). Practice has shown that political support is the very important factor to make changes in built environment.

4.3. Issue of mobility in current plans

Analyses presented in this paper are based on personal experience of the authors engaged in local urbanism, the experience and the knowledge of experts from Agency for building environment "PLAN" in Šabac, as well as on relevant existing plans: Spatial plan of municipality (2011), General urban plan for Šabac and its suburbs (2008) and Plan of general regulation for Šabac (2012). All listed plans have elaborated the issue of mobility through transport development. When it comes to mobility, the most important interventions from General urban plan for Šabac and its suburbs (2008) are:

- New regulation proposes that every new structure had to provide its own parking space –one parking place per residential unit. This regulation efficiently stopped the trend of using public space and footways as "unofficial" parking lots;
- Transport bypass was planned and constructed around the city that successfully relocated heavy transport far from the city and simplified route to the industrial zone.

Within current studies and plans, the focus is still to develop vehicular transport, while pedestrian mobility is neglected. Public transport has been developed under the issue of simplicity of bus routes rather than the needs of citizens. When it comes to bicycle movement, plan has conceptually pleased needs of citizens for creating basic bicycle routes, but did not come with systematical solution about increasing safety of bike-riders in traffic. General impression is that all of the listed plans were very analytical about transportation infrastructure, aiming to establish strict hierarchy of streets in the city. However, the missing part is a qualitative analysis and the treatment of a street as a public space.

4.5. Existing state - Street typology

Considering a street as the main and the most present element of open urban space, it is chosen for the further analysis. The typology of existing streets in Šabac thereby is formed. It also strives to simplify the entire analysis. The typology is formed on the basis of several key characteristics, which are usually divided into physical and functional ones in local practice (Nikezić 2007).

Table 1: Key characteristics for the formation of street typology in Šabac

| FUNCTIONAL CHARACTERISTICS | | STREET TYPE | PHYSICAL CHARACTERISTICS |
|--|---|-------------|---|
| The dominant function along a street (the name of types) | > | < | Total width of a street (street regulation) |
| The importance of a street in urban network | > | < | Roadway width (including parallel parking) |
| The frequency of vehicular transport | > | < | Footway width (both sides) |
| The frequency of cycling transport | > | < | Alley and urban greenery |
| The frequency of pedestrian travel | > | < | The presence of parking |
| The presence of public transport | > | < | The presence of cycling paths |

In relation to chosen characteristics, 8 types of existing streets in Šabac are identified:

- Type 1: Residential Street A
- Type 2: Residential Street B
- Type 3: Residential Street C
- Type 4: Mixed-use Street A
- Type 5: Mixed-use Street B
- Type 6: Industrial street
- Type 7: Special Street 1 – The main street with retail facilities
- Type 8: Special Street 2 – Alley-street

Table 2: Existing street typology in Šabac

| CHARACTERISTIC \ TYPE | TYPE 1 | TYPE 2 | TYPE 3 | TYPE 4 | TYPE 5 | TYPE 6 | TYPE 7 | TYPE 8 |
|---|---------|---------|--------|---------|---------|---------|---------|---------|
| Transport importance | Transit | Thor.* | Local | Transit | Thor.* | Transit | Special | Thor.* |
| Vehicular transport - frequency | +++ | ++ | + | +++ | +++ | +++ | - | ++ |
| Bicycle transport - frequency | ++ | ++ | + | ++ | + | + | - | + |
| Pedestrian travel - frequency | ++ | ++ | + | +++ | ++ | + | +++ | +++ |
| Public transport | Yes | No | No | Yes | No | Yes | No | No |
| Total width of a street | 24 m | 15 m | 9.5 m | 19.5 m | 12 m | ~ 50 m | 22 m | 12 m |
| Roadway width (with parallel parking if it exists) | 14 m | 7 m | 6 m | 9.5 m | 7 m | 9.5 m | - | 7 m |
| Footway width (both sides, with alleys if they exist) | 10 m | 7.5 m | 3.5 m | 10 m | 5 m | 2.5 m | 22 m | 2 m |
| Parking (2 – both sides, 1- one side) | Yes (2) | Yes (1) | No | Yes (1) | Yes (1) | No | No | Yes (1) |
| Cycling paths | No | No | No | Yes | No | No | No | Yes |

* Thor. - Thoroughfare

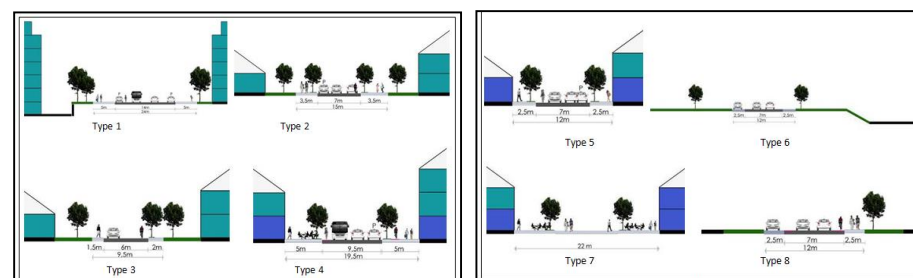


Figure 6: The sections of street types in Šabac (author: Ksenija Lukić and Bojan Alimpić)

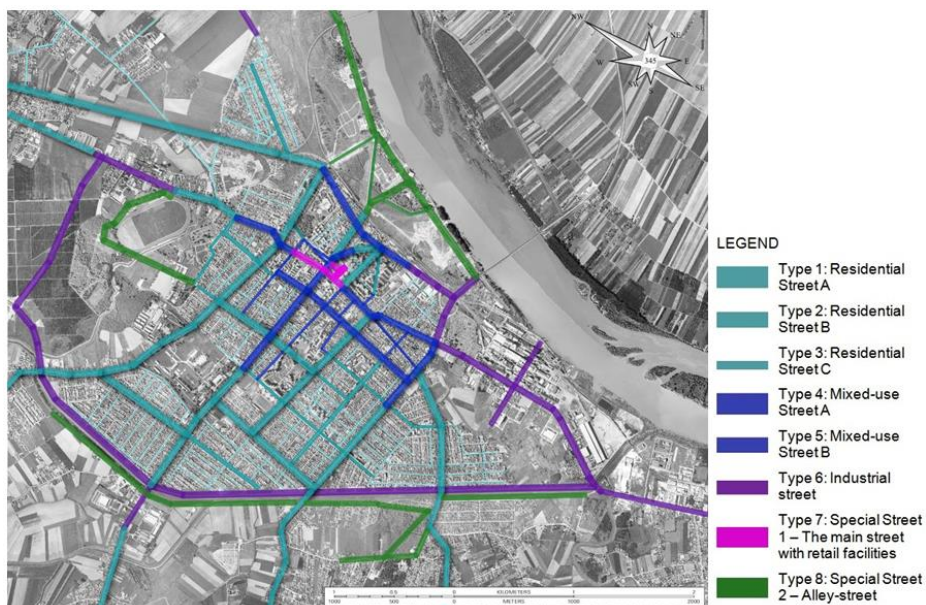


Figure 7: The typology of existing streets in Šabac (author: K. Lukić and B. Alimpić)

4.6. Existing state – The main challenges

The elaboration of existing state of streets in Šabac refers to several challenges for the improvement of urban mobility in the city:

- Street network is well-organised, but more adapted to cars than to other street users;
- Parallel parking is a common phenomenon in many streets, which disables the possibilities to form more space for bicycle paths and urban greenery;
- The lack of public transport in city limits;
- The lack of qualitative and comfortable pedestrian and bicycle paths in those streets which are the major links between city centre and the main landmarks, such as riverside.

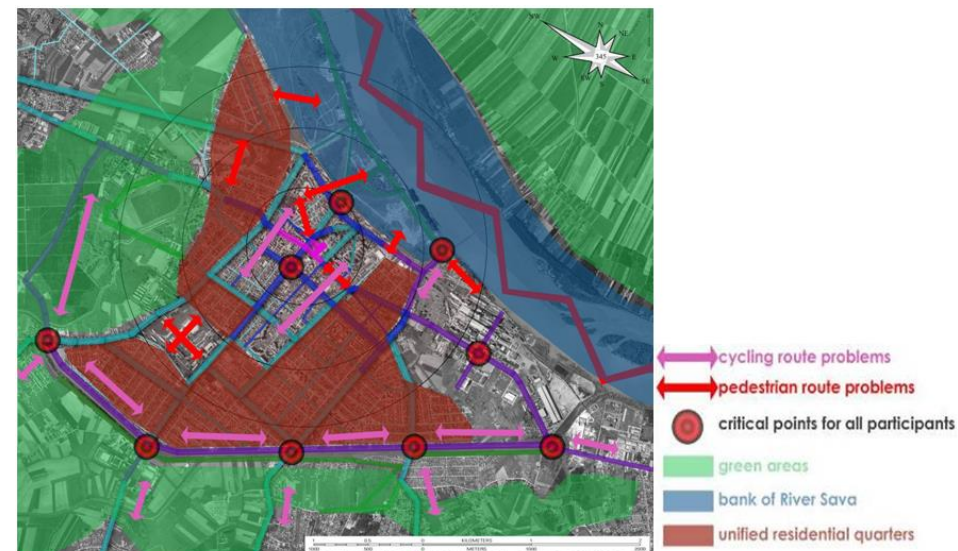


Figure 8: The main challenges for the improvement of urban mobility Šabac (author: K. Lukić and B. Alimpić)

4.7. Proposed solution for better urban mobility

In accordance with aforementioned facts and challenges for urban mobility in Šabac, the main interventions target following elements:

- The significant reduction of parallel parking along streets in inner city centre. This move will provide new space for pedestrians and cyclists. The long-term parking should be moved in the inner space of nearby big urban blocks, which is insufficiently used today;
- The extension of pedestrian zone in current contact zones. This will be done especially towards west and northwest, where two city landmarks (the main park and the highest tower) are located.
- The creation of the adequate network of cycling paths, which will follow the main flow of travellers in the city. This especially covers extended

pedestrian zone, new integrated streets and the main traffic corridors which connect centre and periphery and, particularly, important landmarks at the city periphery (moistly sport and leisure zones);

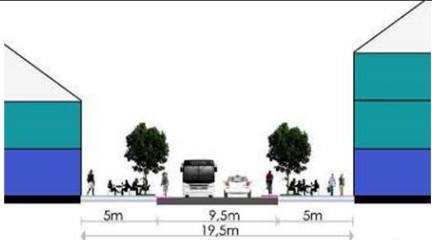
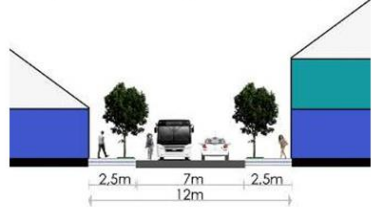

- New public transport should follow that previous proposition, i.e. it will enable good connection between centre and periphery for the inhabitants who are not able to use cycling and pedestrian “solutions” (elderly, disabled persons, parents with young children, etc.);
- A new urban bypass is inevitable to allow the “relaxation” of the main transport corridors from heavy transport. This will leave more space for pedestrians and cyclists in existing corridors;
- The transformation of the main street in Šabac, which should also include cycling paths. It is a pedestrian street now, but its dimensions and inhabitants’ needs point that the inclusion of these paths is very recommendable. Due to inconsistency in Serbian legislative (pedestrian streets cannot include cycling paths), a special local decree should be enacted to enable this action.

Significant element of a successful plan is its implementation. Therefore, focus is on measures that are affordable for Šabac. Some of the stated interventions require better organization of already existing system rather than making a new one - good example for this is proposed better network of public transport, which functions at average level and could be improved to advanced one. Furthermore, the transformation of some street types can be done relatively easy by smart use of colour, street design, calming elements for vehicle traffic, and horizontal and vertical traffic signs. The extension of existing pedestrian zone requires political decision and local decree more than expansion of spatial capacities, and same applies on inclusion of cycling paths in the existing pedestrian zone.

The previously formed types should be improved to enable proposed interventions:

Table 3: Planned street typology in Šabac – the main interventions

| TYPE | THE MAIN INTERVENTIONS | SECTIONS |
|------------------------------------|--|----------|
| Type 1 Residential Street A | <ul style="list-style-type: none"> • The construction of bicycle paths at the both edges of roadway • The reduction of parallel parking • The major improvements of urban greenery – “green barrier” between vehicles, pedestrians and housing • Better urban design | |
| Type 2: Residential Street B | <ul style="list-style-type: none"> • The construction of bicycle paths at the both edges of roadway • The reduction of parallel parking • The introduction of public transport • Better urban design | |
| Type 3: Residential Street C | <ul style="list-style-type: none"> • If streets are wider than 9 m, that they can stay in existing shape, with interventions on urban design • If streets are narrower than 9 m, that they can will be transformed in integrated streets, with the elements of traffic calming | |

| | | |
|---|--|---|
| Type 4: Mixed-use Street A | <ul style="list-style-type: none"> The reduction of parallel parking The major improvements of urban greenery - "green barrier" between vehicles, pedestrians Better urban design |  |
| Type 5: Mixed-use Street B | <ul style="list-style-type: none"> The reduction of parallel parking The integration of cycling elements into roadway, with accompanying solutions for traffic calming |  |
| Type 6: Industrial street | <ul style="list-style-type: none"> The construction of cycling paths The introduction of protecting vegetation The widening of existing footways |  |

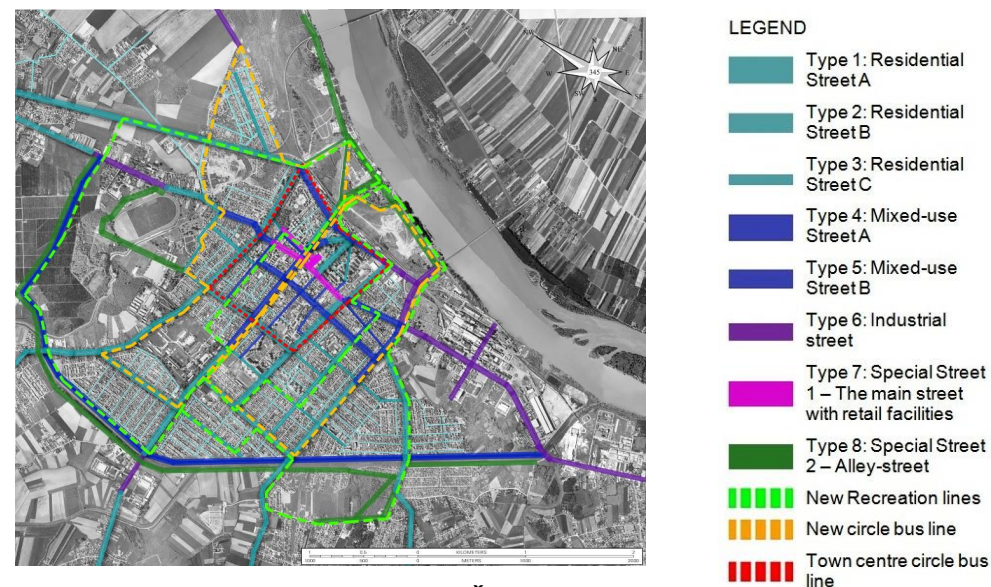


Figure 9: Proposed street network in Šabac – colours follow the previous table (author: K. Lukić and B. Alimpić)

5. CONCLUSION

The paper clarifies the main challenges which are faced ahead of urban mobility in Serbia at both national and local level.

At national level, the challenges can be divided into two groups. The first group is proposed to 'normally' developed urban fabric, where the most noticeable problems are related with bad management of the open urban space. The special actions and interventions should be addressed to the most problematic issues, such as the general clog of streets by parked cars and informal use of this space by retail. But, the main issue is probably to set all these actions in organised way, to enable the formation of a decent management system and thereby the real support to the adequate network of "smart" types of transport (cycling, walking, public transport, etc.).

The second group of the challenges refers to illegal settlements, which are more visible in the case of the main cities. Nevertheless, these locations seek

more profound actions and interventions. The past experience has proved that the interventions in these settlements are a very complex “venture”. Therefore, all interventions should respect all elements which are not a problem for development. The rational solutions, such as elements of integrated street/traffic, will probably be used here.

Local level is presented through the case of the city of Šabac. It gives an illustrative model for urban mobility in middle-size cities. It is important to accent that the main problem in this case is not an insufficient street network or the street dimensions – they are usually adequate for the improvement of urban mobility. In contrary, the task is how to organise the entire system in better way, with special attention to the formation of appropriate cycling network and better urban design, which will initiate mobility. Finally, better management of street space (in relation to parking) is also a significant issue.

These actions and interventions at both national and local level need more developed legal and strategic framework. Generally, the creation of a policy for better urban mobility is desirable. But, it should also had to include “soft-measure” documents, such as design guidance, the-best practice presentations and the documents with comparison of different experiences and solutions.

6. BIBLIOGRAPHY

- Allmendinger P, Tewdwr-Jones, M 2002, ‘The Communicative Turn in Urban Planning: Unravelling Paradigmatic, Imperialistic and Moralistic’, *Space & Polity*, Vol. 6, No. 1, pp. 5-24.
- Barnfield A, Plysheva A 2015, ‘Cycling in the post-socialist city: On travelling by bicycle in Sofia, Bulgaria’, *Urban Studies*, published online before print.

- Bartoszewicz K, Lorens P 2016, ‘Innovative public space rehabilitation models to create cognitive – cultural urban economy in the age of mass individualisation’ In *Conference Proceedings of the 3rd International Academic Conference on Places and Technologies*, eds E Vaništa Lazarević, A Krstić-Furundžić, A Đukić & M Vukmirović, Faculty of Architecture, Belgrade, pp. 497-506.
- Bodnar J 2011, *Fin de Millénaire Budapest: Metamorphoses of Urban Life*, University of Minnesota Press, Minneapolis.
- City of Šabac – CŠ 2008, *Generalni urbanistički plan za grad Šabac i prigradska naselja / General Urban Plan for the City of Šabac and Suburban Settlements*, CŠ, Šabac.
- City of Šabac – CŠ 2011, *Prostorni plan Grada Šapca / Spatial plan of of the City of Šabac*, CŠ, Šabac.
- City of Šabac – CŠ 2012, *Plan generalne regulacije Šabac / Plan of general arrangement of Šabac*, CŠ, Grad Šabac.
- Dimitrovska-Andrews K 2005, ‘Mastering the post-socialist city: Impacts on planning the built environment’, in I Hamilton, K Dimitrovska Andrews & N Pichler-Milanović (Eds) *Transformation of cities in central and Eastern Europe: Towards globalization*, United Nations University Press, Tokyo, pp. 153-186.
- Dimitrovska-Andrews K 2007, ‘The post-socialist urban reconstruction of Ljubljana: Strengthening identity’, in K Stanilov (Ed), *The Post-Socialist City*, Springer, Dordrecht, pp. 427-446.
- Djukic A, Vukmirović M 2013, ‘Crating the Walkable Streetscapes for Encouraging Walking as Climate Friendly Transportation Mode - Case Study: New Belgrade’. In Martins N, Rubonjoni Z, Popović M, Grubišić M, Blečić M, Tadić M, Rye T, Macario R, Plevnik A, Evmolpidis Y, Rupprecht S & Colaco V (Eds): *Sustainable Urban & Transport Planning – SUTP 2013 – Proceedings*, UNDP Serbia: Belgrade.

- Đokić V 2009, Urban typology: city square in Serbia, Faculty of Architecture, Belgrade.
- Đukić A 2011, *Očuvanje identiteta glavne ulice vojvođanskog grada u procesu urbane obnove / The Preservation of the Identity of the Main Street in the City of Vojvodina in the Process of Urban Renewal*, Arhitektonski fakultet, Belgrade.
- Hamilton, I, Carter F 2005 'Foreign direct investment and city restructuring', in I Hamilton, K Dimitrovska Andrews & N Pichler-Milanović (Eds) *Transformation of cities in central and Eastern Europe: Towards globalization*, United Nations University Press, Tokyo, pp. 116-152.
- Hamilton, I, Pichler-Milanović, N & Dimitrovska Andrews, K 2005 'Introduction' in I Hamilton, K Dimitrovska Andrews & N Pichler-Milanović (Eds) *Transformation of cities in central and Eastern Europe: Towards globalization*, United Nations University Press, Tokyo, pp. 3-21.
- Hirt, S & Stanolov K 2009, *Revisiting Urban Planning in the Transitional Countries*, UN Habitat: Nairobi.
- Hirt, S & Stanolov K 2014, *Twenty Years of Transition: The Evolution of Urban Planning in Eastern Europe and the Former Soviet Union, 1989-2009*, UN Habitat: Nairobi.
- Kojić B. 1970, *Varošice u Srbiji XIX veka: Regionalno-urbanistička studija / Towns in 19th-century Serbia: Regional Urban Study*, Građevinska knjiga, Belgrade.
- Lefebvre, H 1968, *Le droit a la ville*, Paris: Anthropos
- Misanovic S 2013, 'Improving environmental performances of public transport in Belgrade as a factor of sustainable development'. In Martins N, Rubonjoni Z, Popović M, Grubišić M, Blečić M, Tadić M, Rye T, Macario R, Plevnik A, Evmolpidis Y, Rupprecht S & Colaco V (Eds): *Sustainable Urban & Transport Planning – SUTP 2013 – Proceedings*, UNDP Serbia: Belgrade.
- Murray P, Szelenyi I 2009, 'The city in the transition to socialism', *International Journal of Urban and Regional Research*, Vol. 8, No 1, pp. 90-107.
- Nagy E 2001, 'Winners and Losers in the Transformation of City Centre Retailing in East Central Europe', *European Urban and regional Studies*, vol. 8, no. 4, pp. 340-348.
- Nikezić Z 2007, *Građena sredina i arhitektura / Built Environment and Architecture*, Arhitektonski fakultet, Belgrade.
- Pantic M, ilic Z, Depolo V 2013, 'Social Impact Assessment in the Large Transportation Projects - Case Study of the Belgrade Metro Project'. In Martins N, Rubonjoni Z, Popović M, Grubišić M, Blečić M, Tadić M, Rye T, Macario R, Plevnik A, Evmolpidis Y, Rupprecht S & Colaco V (Eds): *Sustainable Urban & Transport Planning – SUTP 2013 – Proceedings*, UNDP Serbia: Belgrade.
- Parliament of Serbia – PS 2009-2014, *Закон о планирању и изградњи / Law on Planning and Construction*. Belgrade: Official Gazette of the Republic of Serbia.
- Petovar K 2003, *Urbana Sociologija: Naši gradovi između države i građanina / Urban Sociology: Our Cities between State and Citizen*, Geografski fakultet, Arhitektonski fakultet, IAUS, Belgrade.
- Petrović, M 2004, *Sociologija stanovanja / Sociology of Housing*, Institut za sociološka istraživanja, Belgrade.
- Petrović, M 2005, *Cities after socialism as a research issue*, Centre for the Study of Global Governance, London School of economics and political science, London. viewed 8 May 2016, <http://eprints.lse.ac.uk/23378/1/DP34.pdf>.

- Petrović M, 2009, *Transformacija gradova: ka depolitizaciji urbanog pitanja / Transformation of Cities: Towards the De-Politicization of urban Question*, Institut za sociološka istraživanja, Belgrade.
- Pichler-Milanović N 1999, *Housing Privatisation in Central and Eastern Europe: From Policy to Practice*, United Nations University Press, Tokyo.
- Spasić N, Petrić J, Filipović M 2007, *Small and Medium Towns in Central Serbia*, Institute for Architecture and Urban and Spatial Planning of Serbia, Belgrade.
- Stanilov K 2007, 'Democracy, markets, and public space in the transitional societies of Central and Eastern Europe', in K Stanilov (Ed), *The Post-Socialist City*, Springer, Dordrecht.
- Tosics, I. 2003, 'City Development in Central and Eastern Europe since 1990: The Impacts of Internal and External Factors', in, I Hamilton, K Dimitrovska Andrews & N Pichler-Milanović (Eds), *Transformation of cities in central and Eastern Europe: Towards globalization*, United Nations University Press, Tokyo, pp. 44-78.
- Transportes, Inovacao e Sistemas – TIS 2013, *Belgrade SUTP: an Overview*, TIS, Lisbon.
- Tsenkova S. 2008, *Trends and Progress in Housing Reforms in South Eastern Europe*, Council of Europe Development Bank, Paris.
- Vujović, S, Petrović, M 2005, *Urbana sociologija / Urban Sociology*, Zavod za udžbenike i nastavna sredstva, Belgrade.
- Vukmirović M, Runić D 2013, 'Micro-urbanism and its Impact on Walking in Cities'. In Martins N, Rubinjoni Z, Popović M, Grubišić M, Blečić M, Tadić M, Rye T, Macario R, Plevnik A, Evmolpidis Y, Rupprecht S & Colaco V (Eds): *Sustainable Urban & Transport Planning – SUTP 2013 – Proceedings*, UNDP Serbia: Belgrade.

- Wilson H 2013, 'Post-socialist Cities and Urban Studies: Transformation and Continuity in Eurasia', *Urban Studies*, vol. 50, no. 16, pp. 3463-2

Authors.

Branislav M. Antonić (бранислав м. антонић, 1983) is an urban planner from Serbia. He graduated as a student of academic generation at the Department of urbanism of the Faculty of Architecture, University of Belgrade, in 2008, with the professional title of a diploma engineer in architecture. His academic, scientific, pedagogic and professional focus has been in the fields of urban and spatial planning, urban design, urban dimension of housing, and history and theory of urbanism.

Bojan B. Alimpić (бојан б. алипић, 1985) is a certified urban and spatial planner and architectural designer from Šabac, Serbia. He has been employed in Public Enterprise for Urban Planning 'Plan' in Šabac since 2009, Currently, he holds the position of 'Urban planner II'. B. Alimpić has been the leading urban/spatial planner of the working team in several spatial plans, plans of general regulation, plans of detailed regulation, and of numerous urban projects.

Ksenija D. Lukić (ксенија д. лукић, 1988) is an architect and urban planner from Šabac, Serbia. She has been employed in Public Enterprise for Urban Planning 'Plan' in Šabac since 2013 at the position 'Urban planner II'. Ksenija Lukić has been part of the working team in several plans of general regulation, plans of detailed regulation, urban projects and spatial studies and has led several urban design projects in Serbia.

THE MOVEMENT OF LISBON
STUDY OF THE URBAN MOBILITY SPACE IN THE CITY
AND ITS PLANNING

BY RITA ISABEL GRAGA CATARINO

The Movement of Lisbon

Study of the urban mobility space in the city and its Planning

By Rita Isabel Graga Catarino

0. Introduction

Nowadays half of the worldwide population lives in cities. By 2025, according to the United Nations, the number will be around three quarters.

The increasing population density recorded, with the first cause the industrialization process and consequent migration of rural population to the cities, was the genesis of intense phenomenon of urbanization from the nineteenth century.

The lack of housing or any plan of legal framework for land, meant that urban expansion is made throughout the twentieth century under housing developments without any land occupation's logic, only obeying to the ease of acquisition criteria of ownership and maximum return on the ground.

The new development comes thus dispersed, according to a vast network built, population, activities and services, where some places have gained importance as centralities, the location of different economic and social activities, while others remained rural nature of urban values and dynamics. Urban planning adopted in the twentieth century, bringing the modernist principles of "Athens Charter" as the ideal city models represented by the "Ville Radieuse" of Le Corbusier or the "Garden City" of Howard, aimed to structure the fragmented expansion metropolitan territory based on functionalist principles.

According to him, the buildings came to be seen as autonomous, isolated objects; the spaces observed between them as surplus a rest without

autonomy or structure itself; and road system had a functional separation in which the tracks being reserved to a method of locomotion had to separate and secured together so as to intersect only at certain points.

The city grew under deep changes, and, at the beginning of the century, the contemporary urban space appears as a vast fragmented puzzle, a summation of parts connected by a network of major highways and monofunctional.

The large road infrastructure and the exponential growth of the car park serve as the main urban development engine to polycentric network, appearing next to its nodes/ access new commercial and industrial centres POLIZADORES. The new routes movements characteristics brought the need to isolate the fast traffic and pedestrian passages, leading to that ripped pre-existing urban structure to build viaducts, tunnels and other divisive barriers in the continuity of the city.

This was the physical support of the urban culture of modern mobility where the high degree of differentiation of the production system, the segregation of functions (housing and labor), the increase in the radius of action of a productive activity dictated the daily commuting between home and workplace, periphery and center.

Changing modes of locomotion in the last century had radical consequences in the transformation of use and characterization of public space. The new forms of urbanization, are also "a process of social and economic development" (Gaspar, 2000), which have brought "a new way of living, with changes in time use patterns and space" (Gaspar, 2001).

Although time is understood as a long-term continuous movement, a complex flow of interwoven systems and seasons, a countless synthesis tablets times in a single space; the concept mobility defines a spatio-temporal relationship, a move where you can set cycles and different development models and encode transforming types of urban forms.

At the end of each cycle are turning points, which Tschumi (1970) describes how the event, the time at which the drama can happen within a set, give the possibility of another set up. It is from here that the architecture has the possibility of building a new city, positioning itself in relation to these events organized and strategically, as a change agent.

If the modern planning due to the dispersión of metropolitan scale drew large equipment, the road infrastructure to structure the new urban territory. Today the fragmented movement, punctuated and Rapid City twentieth century, regimented in a physical space with the same characteristics will make urban planning to position.

How?

"The movement of Lisbon" studies the changes of both the city and the ways to plan over time. To this end, comprises mobility as a key word, since, besides being the cause of the current urban problem, it is the result of spatio-temporal relation of the city synonymous with urban movement with associated internal rules where spaces transform and influence behavior.

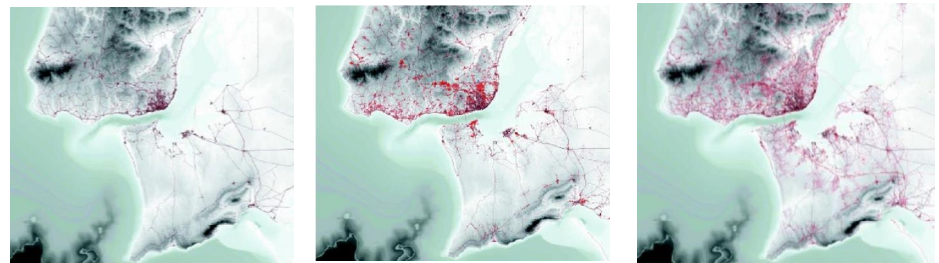
As such, the study notes the proposed mobility in the new plans for the municipality of Lisbon through the transformations of the road structure, since this is understood as the physical support of the movement and both are redefined when changed.

The public space, previously treated evenly and shared by all users regardless of whether it is a directed movement, informal recreation or any collective manifestation was during the twentieth century exclusively occupied by the vehicle and its movements and its spatial typological diversity, and time has been reduced to the road structure.

What changes in road layouts are defined in the new plans? How will the new move implicit in them transform the city already consolidated?

The methodology of work begins with a historical overview of the road structure of Lisbon, where the roads are covered in three spatial types that are associated with a specific movement, following the reading of the mobility system of the existing plans and road space transformations printed on them. In this reading plans, in order to facilitate understanding, they used the three types found in the previous chapter.

Finally, the conclusion seeks to answer that changes are presented in the current presented plans new spaces and movements they welcome.



1.1 AML images of Urban Growth (1940, 1965 e 2001)

1. Brief Historical Context of the Road Structure of Lisbon and its movements

The city of Lisbon is the capital of Portugal, Europe.

The region where the capital is located, with the central element the Tagus River estuary, which here flows into the ocean after covering 320km² of the Iberian Peninsula, has natural limits: the Sintra Mountains to the north, south to Arrábida and the Sado river estuary and the east the alluvial plains of the Ribatejo marshlands (Morgado, 2001).

The natural conditions of the site and Lisbon location print on urban growth strong personality traits (Ribeiro, 1994) and the radial roads of the metropolitan radiocentric structure is adapted to the valleys of its natural morphology.

The city of Lisbon is the central core of the metropolis, where the consolidated urban fabric concentrates the vast majority of equipment and top-level services, converging on it the main transport infrastructure and large flows of people and goods (PROT 2004).

The following chapters describe the urban growth of the city in three types of pathways, providing accessibility required for the expansion and urban reconfiguration, imprinted different forms of movement.

1.1 Movement of Expansion of the Radial Road System

In the fifteenth century, Lisbon is the cosmopolitan center and the main port of Routes of Discovery, between the Mediterranean Sea, Atlantic Ocean and Indian. On its banks disembarking people and goods, as foreigners living

attracted by trade and bustle, and local people who live and work in contact with the sea (Ribeiro, 1994).

The Tagus River estuary margins represent this century the main growth line and where accumulate urban activities (trade, banks, ministries, administrative services or distractions), making up area recognize as Old Riverside Arc.

It is from the river and on the system of perpendicular valleys that open a network of open spaces that are part of the two large squares of the sixteenth century:

Comércio Square, which functions as a symbolic and commercial port of Lisbon to be located on the bank of the River Tagus, and Rossio that, located in the vicinity of an exit of the city, has the market function.

The Reconstruction Plan of the city after the destruction caused by the 1755 earthquake, though with the construction of the Downtown in a regular orthogonal layout very different from the previous one, preserves these two open spaces in its design.

Subsequent urban boundaries are reset successively in circles centered in the downtown area, in a planned and programmed manner, abandoning the old radio-centric nuclear form, the subject of spontaneous and organic growth from the previous city.

The General Improvements' Plan of the town of Ressano García (1903), which traced the Liberdade and the República Avenues, opens a new chapter

urban planning of the city of Lisbon. Its urban sprawl, oriented to the north, is planned through avenues and adjacent orthogonal meshes, being adapted to the natural topography of the voucher system, have a radial structure.

Thus, the city expands north of Rossio along Liberdade Avenue, Rua Fontes Pereira de Melo, Ressano Garcia Avenue (Av. República), when it comes to Rotunda Picoas, Campo Grande and Padre Cruz Avenue in Lumiar. The traces of the axes of the new avenues, develop in parallel and perpendicular streets adjacent orthogonal grid.

Simultaneously with the known urbanization process for "New Avenues", the Almirante Reis Avenue is built for this. Both are a great outpouring urban city and provide the main axes of development to the expansion movement. The radial spatial structure acquired in the early twentieth century, with the primary axis the Liberdade Avenue, developed to the post by other avenues of the city where later radiated the way beams (national and rail roads) towards the peripheral agglomerations (Cascais, Sintra, Loures and Vila Franca de Xira) (Morgado, 2001).

The consolidation of the industrialization of capital brings a profound demographic change to the territory of Lisbon, meeting unprepared grows in the form of small urban centers along the radial roads out of the city limits. In addition to being in the metropolitan formation genesis, radial expansion pathways provide physical support to the flows of commuting (for work reason to Lisbon) (PROT, 2004) that due to changing means of transport for the automobile use and because of its convergence being located in Lower reinforce the functional dependence of Lisbon, while creating congestion problems, pollution and road accidents.

The old Riverside Arc, which in centuries past served as a port at World Routes of Discovery suffered in the twentieth century profound changes. Landfills built there instead of serving as riverside public space as originally planned, were occupied by industries, ports, railway lines and stations, away from the city's main means of accessibility and urban booster, the River Tagus.

1.2 Consolidation Movement (accelerated and transverse) Of Beltways

In the nineteenth century, there are associated with the process of industrialization, new equipment and vehicles that drive the expansion of the city and redefine the city limits.

The Circunvalado Road built in 1852, is, in addition to a redefinition of municipal boundaries of the city, a major ring road crossing that united more quickly throughout the city.

This work marks a new phase in the growth of the city supported by new means of transport, examples of which are the opening of the railway line in 1888 and the introduction of the "American" line (drawn carriages animals) in 1873.

In 1886, the expansion of the city of Lisbon, gave rise to the Military Road, being a circular saw, set the current geographical limits of the Municipality of Lisbon.

Although these roads are being assimilated into the urban growth, they are the first two examples of ring roads in Lisbon and has succeeding other urban consolidation cycles.

The rapid urbanization phenomenon, called Font (2004) as "City Explosion" was the urban sprawl of metropolitan scale. It arose, the taste of maximum profitability and availability of soil, divided illegal along the radial roads in need of a plan that has structured the city's growth senses and organizes the location of the main urban functions (Morgado, 2001).

Appears during the 40s the Groer Plan that was commissioned by Duarte Pacheco, developing the first change in Portuguese planning scale.

In the plan there is a concern planning and programming road infrastructure that unite Lisbon to peripheral clusters, and public equipment of metropolitan scale, examples of which are the Parque Florestal de Monsanto (1937), the North-South highway and the overpass Duarte Pacheco (1944).

The Regional Master Plan of Lisbon (1964) defines a road road network able to structure the urban area of the metropolis. In addition to integrating new radial and circular road, also make the connection between the two banks of the Tagus through Alcantara-Almada bridge. In the plan appears drawn outer ring roads to Lisbon, as CRIL and CREL, as well as the motorway Cascais and South (A2), the radial Loures and Fine and Coima Ring network whose realization we came recently check.

The change of scale, ring roads, as road infrastructure, gain importance by the ability of connecting to distant urban elements. The cross-section of these routes, their acceleration and deceleration characteristics in access, creating uneven crossings and the central to the almost exclusive use auto adapt perfectly to the current city conditions.

So while one can point to the network of ring roads (cross) as responsible for creating breaks in the city center, it draws a "matrix network territorial level that allows restructure dispersed urban areas" (Smith, 2001) and, according to an INE study on commuting, the network avoids the monocentric polarization, giving a polycentric character of the territory to foster the emergence of complementary and opposing phenomena, such as the creation of vast urban fabric matrix.

2.1 PDM of Lisbon (since 2012 until 2016)

In the XXI century, the context of crisis and uncertainty brought new challenges to the planning and the city of Lisbon. With 85% of the consolidated municipality and the network of large infrastructure already implemented, the reflection on how to improve had to make on the pre-existing city.

The dispersed urban development model of the twentieth century, based on major road infrastructure and automobile use had as consequences:

- Air pollution, excessive noise, the public space congestion caused by private vehicles in circulation;
- Difficulty of mobility and use of public space for pedestrians;
- Lack of parking for residents discourages housing occupation in more central areas.

The new Municipal Master Plan (2012) reviews the 1994 plan in a changing context and outlines strategic and programmatic objectives for the next 10 years of Lisbon. In them the mobility system is one of the main vectors of the city planning model.

This chapter studies the new policy of urban mobility as being mobility spatio-temporal relationship of movement of objects/ individuals and plans, the growth base of the city, the plan reading will "measure" the motion between the current city and the future.

The following reflection has three urban study of scales that are related to road types and their movements. The circular and radial roads are part of the road infrastructure that having territorial scale were important in the planning of the twentieth century.

2.1.1 Beltways

From the regulation and coordination of conditions of urban flows, the current PDM intends to transform the relationship with the territory, reallocate functions, organize traffic, and address the congestion and pollution of the city.

As such, the plan proposes the transformation of radiocentric Lisbon model through the classification and grading of roads and in order to guide interfaces larger flows to the farthest higher grade routes from the city center.

The reordering of movement and design of the ring roads is essential because the characteristics of these routes are not compatible with the proper functioning of the urban structure of the city.

Thus, the Second Beltway, as a distributor shaft traffic at the regional level, will be transferred to the North-South axis and CRIL. Your current fast track characteristics are converted through a project that changes its cross-section turning it into urban boulevard.



imafem1 .

Image on the right

In the Redevelopment Project of the Second Ring Road, the route will be a wooded corridor linking transversally Monsanto to Belavista Park. To reinforce the concept of avenue:

- Eliminated the crossroads that connected the process of metropolitan scale,
- the tracing keeps the number of tracks, but its width is reduced, while the tracks along the berms will be used to a slower shooting. These outer bands change materiality and have a bituminous covering, being marked with another color.

The plan of the Second Circular has the aim of solving the problem of congestion in the city center, reducing 50% the noise caused by the movement of cars and rehabilitate the existing drainage system.

Imagem da CRIL

Alongside this road travel to the CRIL (ring road outside), pinworm a modernization of Alcántara and the surrounding space of the East Station which is designated as "urban polarity ring" (PDM,2012).

In it, the polarities are areas to convert, where they are located:

- Public transportation interfaces connected to a parking policy, which calibrates the function in parking supply in the offer of public transports (through minimum and maximum ratios that restrict individual transport and promote the use of public transport) .
- Concentration of tertiary employment and new residential areas near the accessibility points with outer ring roads to ensure the metropolitan connection.

2.1.2. Radial routes (and Old Riverside Arc)

The widespread use of the twentieth century automobile transformed its public space in the city road space. Thus, the paths have been extended at the expense of pedestrian surface and squares made the surface car parks.

The core functions of Lisbon leaving downtown and moving to the north, focusing on República Avenue, Fontes Pereira de Melo Avenue and Amoreiras.

The PDM Lisbon defines the redevelopment of the old road structure of Lisbon as a structural axis of intervention in the revitalization of the city center.

The plan has as historical axes avenues radial road system and the Old Riverside Arc.

Road System Radial (Liberdade Avenue and Almirante Reis Avenue)

In Downtown and Liberdade Avenue proposes to:

- Create a shopping center to open by the increase in pedestrian areas,
- Reuse of abandoned buildings for institutional purposes
- Reduce the marginal and crossing traffic (especially in residential areas).

Almirante Reis Avenue interventions are timely and have diverse characteristics as:

- Rehabilitation of the squares of Martim Moniz and Largo do Intendente through the transfer of municipal, commercial and administrative functions,
- Creation of a cultural center in Exile,
- Rehabilitation of the built heritage and increasing green areas for the use of block interiors.

Old Riverside Arc



The classification of river marginal zone started in one of the most important interventions at the level of public space in Lisbon to return the Tagus River to the city.

The displacement of the car flow to the marginal beltway infrastructure (CRIL, North-South axis) and the retraction of the port activity allowed the container terminals to be confined to Alcantara and Santa Apolonia and there was a project for the conversion of riparian areas.

The proposed redevelopment of the Old Riverside Arc had as a goal the design of an urban mall through:

- increasing the space for pedestrian circulation and permeable green areas,
- setting of permanency spaces on the banks of the Tagus and the hills overlooking (who were divorced by the barrier effect of road and rail infrastructure meant).

Within the general project arose several urban projects along the river, examples of which are: -the new terminal St.a Apolonia cruises;

- a rehabilitation of the river Naus Avenue with green spaces, recreation and leisure;

- and the conversion of riverside Bishop Pit, Santos, Alcántara and Pedrougos with urban use predominantly recreational, leisure and nautical sports.

2.1.3. The reticulated multifunctional model- local scale

The old operating Lisbon structured in radial road system, with vertex in the Commerce Square (first open space of the city), induced congestion and pollution from the central area of the city. To avoid this, the new plan restricts road traffic avenues and adopt a grid road model, where the local public space is a priority.

To make the cross-linked road model was necessary for planning it substituted the principle of zoning (based on large areas assigned to a use) by the principle of multifunction (based on the general mix of uses).

The mixture of functions causes:

- Dispersion of workplaces

- Established network of small centralities (street trading and other local activities are gaining ground)

- Reduces the number of work-home rentals and encourages soft mobility means (pedestrian and bicycle), which promotes a healthy lifestyle and greater socialization through increased contacts and social livings.

The road reticulated system also promotes the qualification of public space and urban regeneration of the built

2.2 The Program "A Square in every Neighbourhood"

From conceptual principles enshrined in the PDM as micro polarity, multifunction and cross- linked road system (in which the local public space is structured) appears the program "A Square in every Neighbourhood".

It is one of the axes of the Program for the City Government 2013/2017 and is sponsored by the Lisbon City Council in collaboration with the 24 parish councils of Lisbon.



The program structures the city of Lisbon by creating a network of squares, because according to it the square is

- a meeting point for the local community,
- a micro centrality concentrating activity and employment,
- public -space of excellence and a place of leisure,
- a space of intersection between the soft modes of transportation and public transport (where the car traffic should be conditioned).

The 30 interventions of the program punctuate the city strategically and plan to have a contaminating effect on the spread of solutions. They go through a planning work to micro scale where to identify the points it has to be understood what are the areas of convergence between flows and socialization cores, which are grouped different communities that make up Lisbon.

The adopted methodology begins with neighborhoods' identification and their centralities.



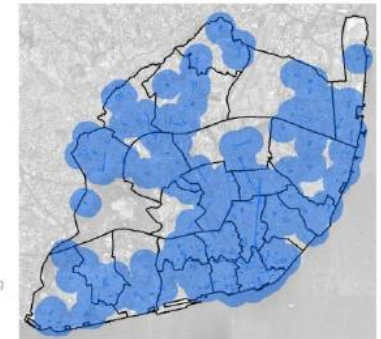
Figura 11 – Esquema da metodologia de delimitação dos bairros.

The neighborhoods' delimitation resulted from an evaluative analysis based in morphological and historical assumptions, always under the preoccupation

of framing the neighborhoods in the administrative subdivisions.



Figure 14 – Esquema adaptado da metodologia Project for Public Spaces (PPS) utilizado para a classificação das centralidades.



To identify and define the centralities in the city, it was used an adapted form of the PPS methodology (Project for Public Spaces), whose indicators were used as population density, average family size, trade fronts, sociability points, listed buildings, equipment collective, roads and crossroads. The observed areas were subsequently subjected to a detailed analysis in which it sought to gardens, parks, squares and streets to translate the centrality.

Priority centralities were then characterized according to the above indicators, assigned ratings and chosen the centralities that would be the project's object.

The assembly 150 centrality were analyzed in terms of pedestrian accessibility potential, using the design of a buffer 500 meters (equivalent to a journey on foot about 15 minutes) on the basis mapping. The plant below helps visualizing that the city will be well served by public spaces.

Conclusión

The urban planning of the twentieth century, concerned the urban disordering brought the demographic explosion of post-industrial city, proceeded to structure the metropolitan territory based on large equipment and road infrastructure. To the large scale design the use of cars joined, which allowed to supply great distances in their quick and timely move.

This modern movement and its physical support brought pollution problems and congestion, but mostly nullified social life in the public space, because their scale of action was not human.

The new PDM Lisbon reduces car space in the center of Lisbon and is made of a restructuring of local public space, opting for promoting forms of soft mobility.

To this end, there is an essential link between scales (municipal master plan and the promotion of public space programs, as exemplified by the program "A Square in every Neighbourhood") which is essential in the further development of the architectural scale, for observation made from up to down, usual under the municipal and regional strategies will not resort observation of pre-existing habit to design and often arise sites that are marginalized because they are not used.

The return to the pedestrian public space design means a return to the city and to its slow experience, and human remains. Made of contacts, conflicts and life.

The city of Lisbon in the twentieth century developed based on major road infrastructure (radial and circular) and fast and timely movement of the vehicle resulted in the loss of quality of public spaces.

Findings:

Loss of quality of public spaces and roads as a result of the absolute use of the daily car use as a transport.

The lack of quality of the public space in European cities as a place for meeting and socializing. The absence of a collective approach in pedestrian infrastructure

Imbalance in the attention of every means of transport mobility plans which are mainly infrastructural

Point of view:

Success and failure can be explained by the use of citizens and functioning pedestrian public space is seen as the key to sustainable development of sites that can contribute to the perception and experience of the city and the daily life

living streets is the city of principle living cities

Relationship between pedestrian experience and public space design, public space design and pedestrian capabilities

Conclusion: small scale interventions are more beneficial to the locals in degrading areas with disadvantaged population

Observe the experience of citizens in the public space and promote a better quality of public spaces

Author

Rita Catarino - BA in Architecture and Urban Planning at the College of Architecture of the University of Lisbon 2004 – 2009 Master of Architecture and Urban Planning at the College of Architecture of the University of Lisbon 2009-2013.

CYCLING IN A MEGACITY: THE CASE OF LONDON

BY GRAZIANO DI GREGORIO & SIMONA PALMIERI



CYCLING IN A MEGACITY: THE CASE OF LONDON

By Graziano Di Gregorio & Simona Palmieri

ABSTRACT

Today, cities around the world are pushing forward their political agenda for more urban cycling as an active mode of transportation. Cycling has been increasingly promoted as an active mode of transportation and Governments at every level have been implementing policies to increase cycle levels within urban centres, to improve the overall sustainability of the transportation system and the liveability of our cities.

This paper adopts a wider focus and a deeper understanding of the role of cycling in megacities along with the opportunities and challenges of promoting cycle mobilities in such large urban areas. London is used as an empirical case study in order to investigate how this megacity has implemented its own 'cycling revolution'. Current and past policies are analysed and supported by examples - of completed and on-going projects within the city - in order to illustrate how the city is addressing its long-term strategy.

The main conclusions drawn from this paper can be delineated in three main factors as key elements in promoting cycling in a megacity.

1. INTRODUCTION

Cycling has been widely recognised as a sustainable mode of urban transportation having potential to improve the liveability of cities while providing benefits both to individuals and to society. In recent years, European cities have been implementing strategies and policies to support cycling as an integral part of urban mobility and infrastructure.

This paper, starting from an extensive review of the current literature regarding cycling, illustrates the wider benefits of cycling for the society along with the challenges and opportunities of cycling in large urban areas such as in a megacity. Moreover, it examines how to promote cycling through a series of policy packages and provides a list of general tasks cities should undertake in order to encourage cycling further.

Furthermore, this paper investigates the role of cycling in a megacity, such as London, and analyses its governance and policy strategies. Empirical case studies are provided in order to illustrate how the city is currently implementing its long-term strategy to make London the best global megacity for cyclists.

Finally, this paper revisits and finalises the main findings arisen from this study delineating the main factors in order to increase the number of cyclists in a megacity.

1.1.Cycling as a sustainable mode of urban transportation

"Equipped with a bicycle, man is more efficient than all machines and all animals too." (Tolley, 1990:15)

Walking is the natural form of locomotion for a human being and - from a physics point of view – the most thermodynamically efficient way of movement, far more than any other type of motorised vehicle. Nonetheless, as Tolley (1990) states, humans on bicycles surpass walking.

Over the years, a growing concern and awareness of the relation between global motorization and climate change has led to an increasing interest in sustainable and alternative mode of transportation (Susan et al., 2010). In a constrained climate change scenario, a personal mode of transport such as cycling can be seen as an ideal answer to today's environmental concerns

(Tolley,1990). In fact, bikes are able to meet the increasing demand of our society for an environment-friendly and sustainable mode of transportation with the individual needs for speed and flexibility (Huwer, 2000).

Cycling is noiseless and fuel-efficient, and from an energy point of view, it is an ideal way of travelling (Tolley, 1990). It consumes far fewer non-renewable resources than any other motorised transportation mode and causes no air pollution or impacts on the surrounding environment (Owen, 2009; Pucher and Buehler, 2012a). Cycling is virtually affordable by everyone and physically possible for the majority of population. Moreover, having the potential to enhance mobility options for every social class, it is a socially equitable and equalitarian mode of transportation (Tolley, 1990; Pucher and Buehler, 2012a). Also, the energy required for cycling, contributes to the daily physical activity, keeping people fit without investing extra time and money (Huwer, 2000; Le Vine et al.,2014).

Bikes take a small fraction of the space needed for cars and they have the potential to reduce road congestion and all the other negative impacts produced by cars (Pucher and Buehler, 2012a). Also, facilities for bikes cost far less than for the private car and public transportation and - from the wider public interest perspective - cycling is the most desirable of all transport modes because it requires by far the lowest investments for the society in public infrastructure (Tolley, 1990; Pucher and Buehler, 2012a).

Cycling provides benefits both to the individual and to society, it is an environmentally, economically and socially sustainable mode of transportation, and is indeed a path to more sustainable mobility, which can help make cities more liveable (Pucher and Buehler, 2012a).

1.2. Cycling and megacities

“If cycling can thrive even under the difficult conditions of a megacity, that provides hope for cycling elsewhere.” (Pucher et al., 2012)

Cities, and in particular megacities, offer special challenges and opportunities for cycling due to their nature of large and complex dynamic organisms. Megacities are usually defined as a metropolitan area with a population threshold, which according to different sources, can vary from a low of 4 million to 8 or 10 million inhabitants (Sorensen and Okata, 2010). Cycling conditions in these large urban areas are quite different from those in small ones (Stefansdottir, 2014). High population density, a good mixture of land use and an efficient – mostly overcrowding – public transport, generally favour walking and have the potential to work well together to increase cycling levels (Owen, 2009; Pucher et al., 2012).

A bicycle-oriented megacity would highly benefit in term of cost, space efficiency, energy conservation, personal health, equitability, safety, speed, reliability, social equity and environmentally friendliness (Tolley, 1990). Vice-versa, because their density and lack of space, megacities force cyclists to share space with pedestrians on crowded sidewalks, and with motor vehicles on clogged and congested streets (Pucher et al., 2012). Lack of space and pre-existing constraints make the installation of separate facilities more expensive and politically difficult, making cycling more stressful, intimidating and dangerous than in smaller cities (Pucher et al., 2012) raising the issue regarding safety of cycling in megacities. Moreover, the extension of megacities produces many long trips that are difficult to cover by bike, especially for the commute to work. (Pucher et al., 2012)

Nonetheless, cycling in some megacities is becoming iconic, cutting edge and central to lifestyle. Nowadays, particularly among younger adults, cycling is viewed as a cool way to get around, and this trend is now influencing views on cycling far beyond the cities' own borders (Pucher and Buehler, 2012b)

1.3. Promoting cycling

There is a general consensus among policy makers and public opinion that cycling is a desirable mode of transport (Horton et al, 2015). However, despite apparent efforts made by governments over the last years, the major trend is still towards less cycling for transport (Horton et al, 2015).

As Pucher and Buehler illustrate in their book *City Cycling* (2012b) there are many ways to increase cycling. In particular, they conclude their research defining the ten most successful aspects that a strategic policy package should contain in order to encourage cycling. These are as follows:

- Arrange an exhaustive comprehensive package of integrated measures. The key of a successful city in increasing cycling level is a coordinated program between infrastructure provisions, promotional programs, and transportation and land-use policies;
- Build an extensive network of integrated cycle route, which separate cyclists from other vehicles;
- Provide cycle parking at transport hubs and key destinations. It is important to offer parking at key destinations and transport interchange points in order to encourage people using the bike;
- Implement bikesharing programmes integrated with a major transportation network to increment the number of cyclists in the city.

- Provide accessible information about events and facilities as well as cycle maps and other information in order to involve people to cycle. In particular, it is recommended to involve youngsters, offering training and information about routes, parking, safety and special promotional events;
- Introduce individualised marketing to target specific population groups.
- Improve cyclists' education. Schools and specific organisations must set up training and activities towards children and youngsters;
- Improve motorists' training, licensing, and traffic enforcement. Motorists' training and behaviour need to be improved, especially in car-oriented countries, in order to raise cycling levels and improve cyclists' safety;
- Restrict car use through traffic calming, car-free zones, and less car parking spaces. Car use restrictions, such as car taxations or reduced access to the city centre, facilitate cycling and discourages the use of the private car.
- Design communities to be compact, mixed-use, and bikeable. Compact cities and mixed-use developments have been considered a successful urban form in order to facilitate short trip distances.

Although, as Pucher and Buehler (2012b) affirm, there are many ways to increase cycling, it remains impossible to define a unique common strategy because policies require specific measures based on diverse circumstances given by the context of each city. Nonetheless, as the authors continue, three main tasks should be undertaken by any city seeking to promote cycling (Pucher and Buehler, 2012b):

- First, it must gather the necessary public and political support.
- Second, it must determine the most appropriate mix of measures.

- Third, it must develop a method for long-term implementation and on-going feedback from cyclists, other key stakeholders, and the public at large.

In order to facilitate the implementation of these tasks, Pucher and Buehler (2012b) illustrate a series of general lessons each city should follow. In particular, the authors say that an active public informational campaign should be undertaken in order to clarify economic, social and environmental benefits of cycling. Moreover, this campaign should refer to a diverse public and convince people to use cycle as means of transport.

In addition, cities should develop long-range bike plans and periodically updated them in response to the change of the surrounding communities. Local communities and residents must be involved to ensure their participation at all stages of planning and implementation so as to discuss possible conflicts before new policies are implemented.

Furthermore, the authors suggest combining incentives for cycling with disincentives and restrictions for the use of the private car. They suggest to implement controversial policies in stages, starting with projects that almost everyone agree on, and proceeding step by step to the more controversial ones.

Finally, it is widely recognised that planning coordination at various levels along with strong leadership will enable the creation of good relationships among politicians, cycling organizations, and other bike-friendly groups, while playing a crucial role in generating public support in order to implement policies.

1.4. Cities in transformation

In recent years, many cities around the world have recognised the importance of cycling as a sustainable mode of urban transportation. Governments at every level have been implementing policies to increase cycle levels within urban centres, to improve the overall sustainability of the transportation system and the liveability of our cities (Pucher and Buehler, 2012a). Cycling has been increasingly promoted as an active mode of transportation, with targeted policies direct to improve the safety of cyclists and to create a continuum cycle network around cities. (Pucher and Buehler, 2012a; Vine et al., 2004)

As Van Duijnen et al. (2013) illustrate, a number of supporting strategies regarding implementation of policies have been drawn up with a special focus on promoting cycling and discouraging car use. However, according to Horton et al (2015), these policy packages were not enough to build a cycling culture between within the population. As in fact, yet too many people still do not consider cycling as an alternative mode of transport due to the fact that the transport system has historically been focused solely on motor traffic (Horton et al, 2015).

In conclusion, As Horton et al (2015) explain, an effective promotion of cycling as an active mode of transportation require a radical change from a car-based system to a cycling mobility one through a 'revolution' which needs both political and cultural drastic interventions.

2. THE CASE OF LONDON

Nowadays, cities around the world are pushing their political agenda towards a more urban cycling system as an active mode of transportation. During the last decade a number of supporting policies have been implemented in

combination with infrastructure investments and public awareness campaigns.

London, in particular since 2000, has started its own 'cycle revolution' in order to make the physical and cultural changes required to a megacity to become a cycling city (TfL, 2010a). The UK's capital (Fig 1), due its particular characteristics, can be easily defined as much as a city as also a 'region' (Travers, 2002). Its metropolitan area – which comprises Greater London and the area in which it is practical to commute to work in London – is the largest in the EU with a population of 14 million (Eurostat, 2015).

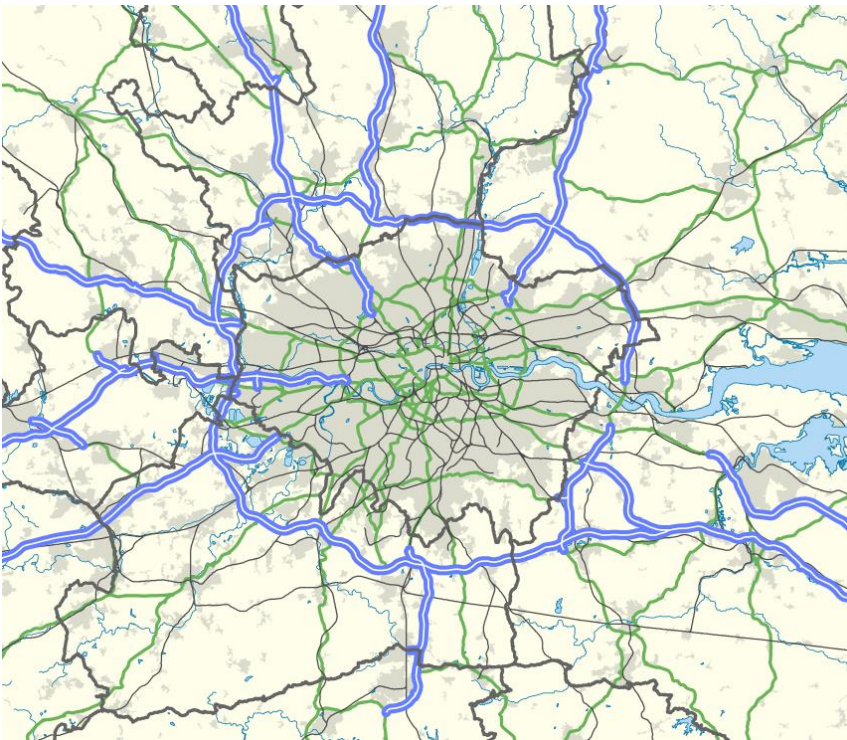


Fig. 1 Map of London. Source: www.wikipedia.org

The Greater London Authority, which is the citywide administration, includes 33 districts and covers an area of 1,572 km² with a population of 8,539,000 (ONS, 2011a) at a gross residential density of about 5,400 people per km² with peaks of 27,100 people per km² (Cities LSE, 2012).

Despite its size, London is a city built with a relatively low-density level. Almost half of its surface consists of open and recreational spaces, and more than 50% of its dwelling units are terraced, semi-detached and detached houses with a typical low density - within residential neighbourhoods - varying between 40 to 150 people per hectare (Sorensen et al., 2010).

At the same time, London possesses one of the most extensive rail systems in the world with an underground system that measures 408 km in length, and regional rail - within a radius of 70km - that surpasses 1,300 km (Sorensen et al., 2010; Cities LSE, 2012).

This extensive system guarantees a high level of public transport use but, at the same time, low-density levels in most areas of London offer little incentive for walking and cycling (Sorensen et al., 2010). Conversely, the central area of the city, with high peaks of density facilitates walking and cycling. Nonetheless, these advantages are minimised by the negative impact of traffic, pollution and overcrowded streets (Burdett, 2015).

2.1. Governing London

Since 2000, a new authority has governed the British capital: the Greater London Authority (GLA). This institution is a democratically elected strategic authority responsible for local government across the region. It consists of the Mayor of London elected directly by Londoners and the London Assembly (London Council, 2016).

This new institution was created in the capital in 2000 after the abolition of the Greater London Council in an effort to create an effective citywide government for the capital (Travers, 2002). The Mayor has an executive role with the power to set an overall vision for London and define clear strategies on a range of issues including transport, while the Assembly members act as scrutinisers (London Council, 2016).

Much of the work towards transport infrastructure is carried out by functional bodies such as Transport for London (TfL). TfL is a statutory body created by the Greater London Authority (GLA) Act 1999 which *“gives the Mayor of London a general duty to develop and apply policies to promote and encourage safe, integrated, efficient and economic transport facilities and services to, from and within London.”* (TfL, 2016a).

Since coming to office, the new elected Mayors of London, Ken Livingstone first (2000-2008) and Boris Johnson later (2008-2016) - have tried to make London a better city for two-wheeled transport aiming to deliver a 400 per cent increase in cycling by 2026, compared to the 2001 baseline (TfL, 2010a)

2.2. London strategies & policies

With the election of Livingstone, back in 2000, London has invested in promoting cycling through the implementation of targeted policies. Cycling has been taken more seriously and a range of policy interventions have led to the expansion and improvement of cycling infrastructures (Pucher et al., 2012; Horton et al, 2015).

Since then, there has been a sustained growth and the number of cyclists on the Capital's major roads has increased by 117% (TfL, 2010a). However, this phenomenon has raised serious issues about the feasibility of cycling in a

megacity, such as London, along with the capacity of the existing network to accommodate an increasing demand of cycling.

In order to support this demand, a new set of policies, with a profound shift in ambitions and intentions for the bicycle in London, were approved since 2010. The milestone of this new vision is the Mayor's Transport Strategy (2010), which was set to achieve a 5% modal share for cycling (current 2%) by 2026 and planned a cycle expenditure over the next 10 years of £913 millions (GLA, 2013). This document defines the main objectives and guidelines to increase number of people travelling by bike, raise the number of parking spaces at the interchange transport stations and start a bikesharing programme (GLA, 2010)

Moreover, in order to reach these objectives, further policies were approved to improve existing cycle infrastructure as well as deliver new high quality and safer cycle facilities (GLA, 2010).

Boroughs were actively involved in this process, playing a central role in the development and delivery of safer routes for cycling, by transforming in some cases their town centre for cycling, and by promoting and increasing a wider range of cycling opportunities in their areas (GLA, 2010). Moreover, through a safety education campaigns funded by TfL, they provided cycle training for adults and children in order to increase cycle awareness and safety on the street (GLA, 2010, 2013).

The local community was also informed – through TfL website, leaflets and information boards – and encouraged to take part in the decision-making process by developing and assessing cycle proposals throughout public consultations (GLA, 2010, 2013).

| Policy | Aim | Objectives | Outcomes |
|--|--|--|---|
| <ul style="list-style-type: none"> Mayor's transport strategy (2010) | <ul style="list-style-type: none"> Achieve a 5% modal share for cycling (current 2%) by 2026 Increase number of cycling parking space by 66,000 by 2012 | <ul style="list-style-type: none"> Provide better information and training Improve cycle infrastructure and safety Create cycling culture+ Use bicycles for commercial purposes Integrate cycle provision with development Create cycle parking at tube and rail stations | <ul style="list-style-type: none"> 12 Cycle Superhighways: 2 finished by 2010 Central London Cycle Hire scheme Cycle parking on the DLR |
| <ul style="list-style-type: none"> The Mayor's vision for cycling in London: An Olympic Legacy for all Londoners (2013) | <ul style="list-style-type: none"> Increase number of people travelling by bike Improve the cycle network that will be heavily used by 2020 Attract people who do not cycle | <ul style="list-style-type: none"> Tube network for bike Safer streets for cycling Improve places and transform London into a place dominated by people, not by motor traffic | <ul style="list-style-type: none"> Fully- or semi-segregated lanes and junctions Network of Quietways across London Green corridors with more tree planting along cycle routes East - west segregated superhighway delivered by 2016 Crossrail for bikes from western suburbs to Canary Wharf and Barking : the longest continuous largely segregated urban cycle route in Europe Mini-Holland in the suburbs |
| <ul style="list-style-type: none"> The London Plan (2011 - further alteration March 2015) | <ul style="list-style-type: none"> Increase cycling in London for at least 5% of the existing modal share by 2026 | <ul style="list-style-type: none"> Identify and implement a network of cycle routes Operate and improve the cycle hire scheme Transform up to four outer London borough town centres into cycle-friendly Mini-Holland+ Provide integrated and accessible cycle parking Integrate cycling network for London by providing infrastructure that is safe, comfortable, attractive, coherent, direct and adaptable Provide links to existing cycle infrastructure Create cycle superhubs | <ul style="list-style-type: none"> Cycle Superhighways Quietways Central London Grid Mini-Holland Cycle hubs around public transport stations Increase number of cycle parking |
| <ul style="list-style-type: none"> London Cycling | <ul style="list-style-type: none"> Plan and deliver a London-wide | <ul style="list-style-type: none"> Main objective which describes what good design for | <ul style="list-style-type: none"> Fully segregated lanes: |

2.3. Case studies in london

Forty per cent of households in London have access to a bike, but one in five of these are unused. The challenge is to get these bikes and more into action. (TfL, 2010a).

The challenge set by the policies was to increase the number of cycle users in London along with the creation of cycle infrastructures able to accommodate an increasing number of cyclists. Moreover, in order to attract people to use two wheels, specific cycle programmes have also been developed.

Potential cycle trips and zones to develop cycle facilities were identified in three different areas of London: central, inner and outer London.

In order to transform these potentials in reality, the Mayor's Cycling Vision developed different proposals for these areas around London, based on their characteristics and specific targets (Fig.2).

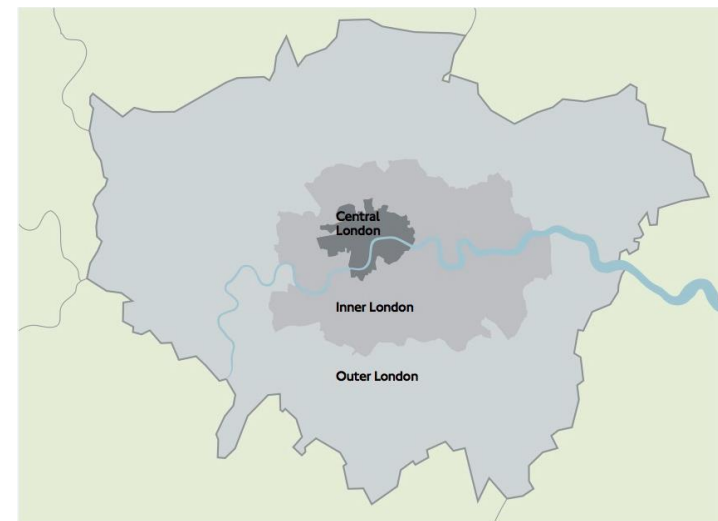


Fig. 2 Central, Inner and Outer London. Source: TfL (2010a) Cycling revolution London

Central London

The central part of the city is characterised by high employment density, short journey, limited road width and restricted use of the car by congestion charges (TfL,2010a).

A Central London Grid scheme has been developed as more appropriate for this area, which includes Superhighways and Quietways.

Inner London

Thousands of workers use public transport - such as buses and undergrounds, to make their journey to central London each day (TfL,2010a). Superhighways have been delivered to connect - through fast routes - London boroughs with key destinations in central London. Moreover, a Quietways network, which is complementary to the Superhighways, offers secondary routes on low traffic streets.

Outer London

Many short journeys are made by car in Outer London and few people use bikes (TfL,2010a).

The 'Mini - Holland' scheme has been proposed to encourage people to make shorter journeys in the town by bike.

2.3.1. Central London grid

Central London Cycling Grid (Fig.3) is a network of connected and safe routes taking cyclists across central London and suitable for anyone who wants to ride a bike (GLA, 2015).

Around 75% of the scheme is composed by lower-interventions on routes away from main roads – such as Quietways – while the remaining 25% is

composed by higher-interventions on main roads such as Superhighways (TfL, 2016c)

The Central London Grid is funded by the Mayor's Vision for Cycling on a 10-year plan with the aim to deliver cycling improvements across London spending up to a total £913m by 2022.

Proposed Central London Cycle Grid - Routes for completion by December 2016



Fig. 3 Central London Cycle Grid. Source: TfL (2016) Central London Grid

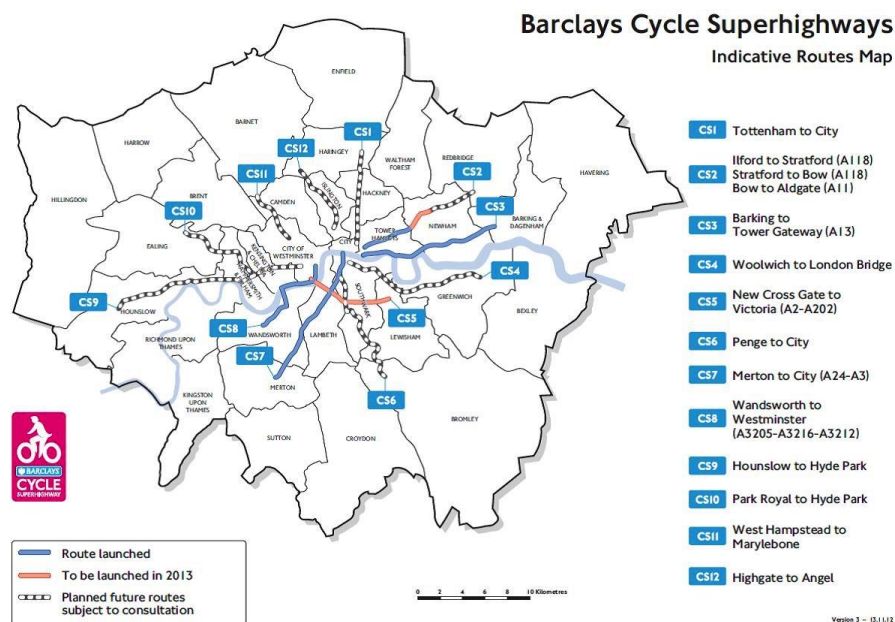


Fig. 4 Cycle Superhighways. Source: www.bikeradar.com

2.3.2. Cycle superhighways

The London Cycle Superhighway programme was announced by London Mayor Ken Livingstone back in 2008 with the aim of creating continuous, direct, comfortable, safe and easy to find cycle routes within central London (GLA, 2015). The mayor's vision is to create a high capacity tube network for bikes (Fig. 4) in order to improve cycling conditions for people who already commute by bicycle and to encourage new people to cycle (GLA, 2013)

| Name | Route |
|------|-------------------------------|
| CS1 | Tottenham to Liverpool Street |
| CS2 | Stratford to Aldgate |
| CS3 | Barking to Westminster |
| CS4 | Woolwich to Tower Bridge |

| | |
|------|---|
| CS5 | Oval to Pimlico |
| CS6 | Elephant & Castle to Stonecutter Street |
| CS7 | Merton to the City |
| CS8 | Wandsworth to Westminster |
| CS9 | Hounslow to Hyde Park Corner |
| CS10 | Park Royal to Hyde Park Corner |
| CS11 | Cricklewood to Marble Arch |
| CS12 | East Finchley to Angel |

The ambitious project is to create 12 radial cycle superhighways with fully segregated cycle lanes, and - where the segregation is not possible - with semi-segregated lanes shared with buses. Particular emphasis was given to the safety of cyclists. The design of better junctions was the most important priority taken into consideration in the design of the Superhighways.

To date, part of the north-south and east-west superhighways are already completed as well as CS1, CS2, CS3, CS5, CS6, CS7, CS8, CS11 which are currently open; CS12 has been cancelled while CS4, CS9, CS10 are under construction.

The North-South Cycle Superhighway

The North-South Cycle Superhighway connects King's Cross in the north of the city centre with Elephant and Castle on the south side of the river Thames (Fig.5).

This cycle superhighway is intended to compensate the heavy bike traffic that currently makes up a quarter of rush hour traffic in central London. The cycle infrastructure is being delivered in a close partnership between TfL and all the boroughs involved. Moreover, the local community has been

consulted and informed through public consultation sessions were comments and issues were collected.

This project involved a series of road layout changes in order to accommodate the new cycle infrastructure such as:

- A wide, two-way, kerb-segregated cycle track in the road, replacing some traffic lanes along most of the proposed route;
- Redesigned junctions;
- Changes to parking and loading spaces along the street;
- Changes to bus stops, including new bypasses for cyclist; and
- Changes to footways and pedestrian crossings.

The first phase of the superhighway from Elephant and Castle to Stonecutter Street has already been completed, while the second phase from Stonecutter Street to King's Cross is underway after a recent public consultation.

Fig. 5 North-South Cycle Superhighway. Proposed route.
Source: www.tfl.gov.uk

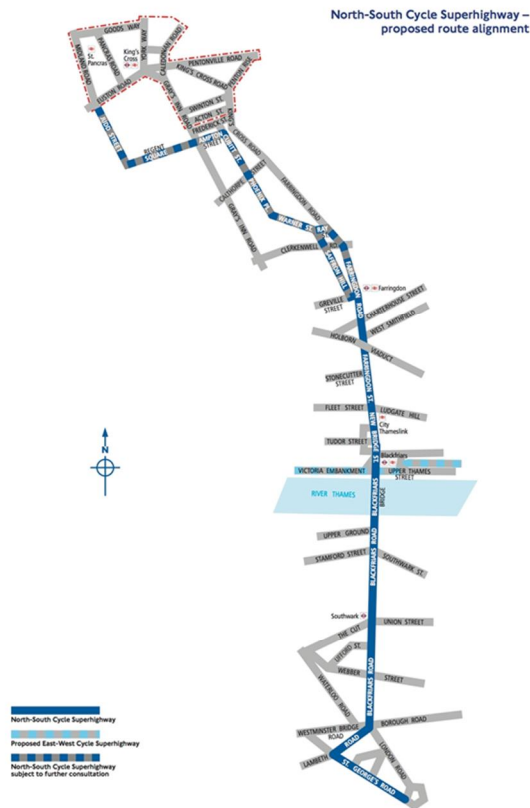


Fig. 6 North-South Cycle Superhighway. Proposed works, before-after.
Source: www.tfl.gov.uk

2.3.3. Quietways

Quietways are a network - complimentary to Superhighway scheme - of radial and orbital routes mainly on low-traffic back streets in London (Fig. 7). These routes are predominantly created to involve people that were less confident in using cycling as a means of transport as well as to provide a more pleasant and gentle place for existing cyclists (GLA, 2015; TfL, 2016b).

The main objective of this scheme – as part of the London Mayor’s vision (2013) - is to improve connectivity and overcome all existing barriers to cycling, linking key destinations within London. Moreover, it aims to provide an opportunity to deliver healthier, more pleasant and safer streets by improving the public realm, while increasing

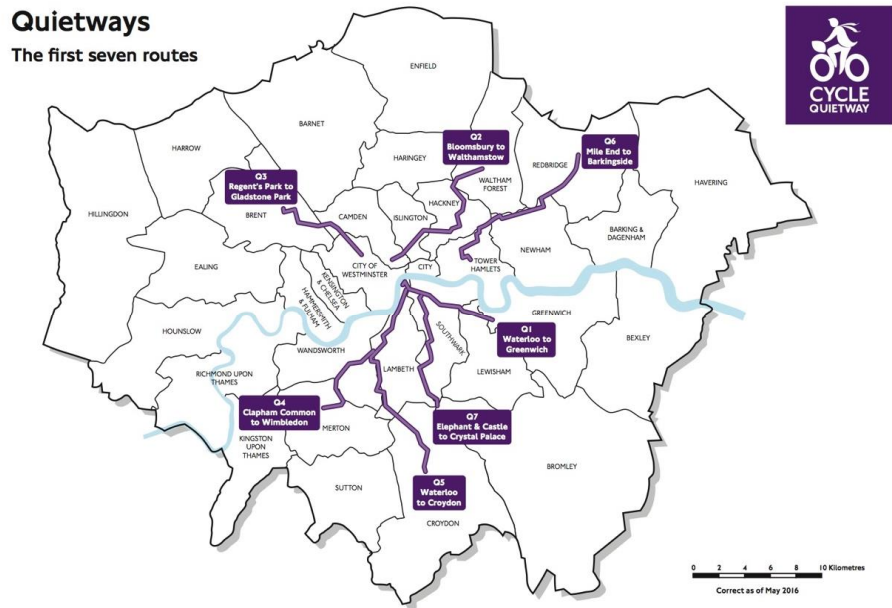


Fig. 7 The first seven quietways. Source: TfL (2016) Quietways

The network is designed to be direct, easy to follow and to be delivered end-to-end, not in piecemeal sections (TfL, 2015b). This ‘light’ infrastructure is mainly made of low-impact interventions on existing low traffic streets primarily using unsegregated cycle paths.

During the inception stage in 2013, the Mayor’s Cycling Commissioners – which is made of professionals who help to deliver the Mayoral commitments to cycling - discussed with each of London’s boroughs their aspirations in terms of improving cycling facilities. Following this consultation, TfL appointed Sustrans – a sustainable transport charity that works on practical projects to encourage people to walk, cycle and use public transport in order to reduce motor traffic and its adverse effects and to coordinate Route Delivery Plans and define the key routes for Quietways.

Subsequently, the proposals of each quietway has been presented and discussed during public consultations involving local communities and residents in order to create consent and deliver the first routes by 2017.

| Name | Route | Boroughs and Managing Authorities |
|------|--|--|
| Q1 | Waterloo to Greenwich | Lambeth, Southwark, Lewisham, Greenwich |
| Q2 | St Pancras to Walthamstow | Camden, Islington, Hackney, Waltham Forest, Lee Valley Regional Park |
| Q3 | Regents Park to Gladstone Park (Dollis Hill) | Westminster, Brent, Camden |
| Q4 | Clapham Common to Wimbledon | Lambeth, Wandsworth, Merton |
| Q5 | Waterloo to Croydon (via Clapham Common) | Lambeth, Wandsworth, Croydon |
| Q6 | Aldgate to Hainault (First phase Victoria Park to Barkingside) | Tower Hamlets, Newham, Redbridge, Hackney and London Legacy Development Corporation. |
| Q7 | Elephant and Castle to Crystal Palace | Southwark, Lambeth |

Quietway 1

Quietway 1 (Q1) is the first cycle path delivered by TfL with the partnership of the boroughs of Lambeth, Southwark, Lewisham and Greenwich (Fig.8).

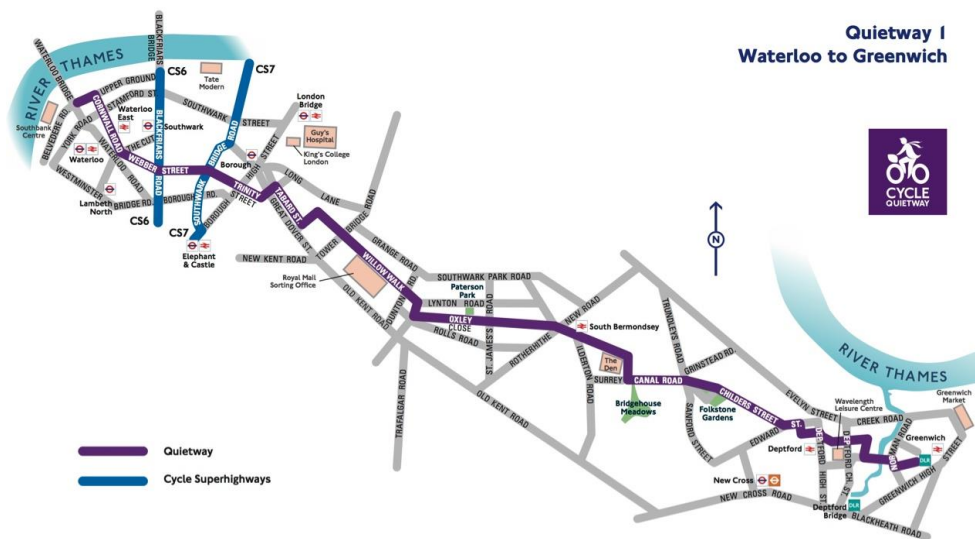


Fig. 8 Quietway 1 From Waterloo to Greenwich. Source: TfL Quietways

This route, opened in June 2016 and connects Waterloo to Greenwich running through 9 km of traffic free-paths and quieter residential streets. The intervention introduces a cycle-friendly path in a lower traffic street, increases tree planting, de-clutters the area and creates a high quality public realm that makes the journey more pleasant and attractive to users.

Other interventions related to this scheme include the widening of footways and pedestrianised areas along with the improvement of crossing facilities along the route.

2.3.4. Greenways

The Greenways programme is part of a 4 year project (2010 – 2014) focused on small and localised interventions in order to improve existing routes currently joined with the Quietways programme described above.

This scheme (Fig.9) aims to support and encourage pedestrians and cyclists creating a network of safe, attractive and functional routes for walking and cycling – through parks, green spaces and lightly trafficked streets - across the capital (TfL, 2013; GLA, 2015).

In particular, a large section of the Greenways in London run through the major parks, such as Kensington Gardens, the Serpentine, Hyde Park, and Victoria Park.

Nonetheless, not all Quietways are Greenways; as in fact the majority of Quietways are normal streets, not parks or canal towpaths (TfL, 2016b).

These projects, funded by public and private stakeholders, have seen a total of 510 km of routes becoming more attractive for cyclists. In particular, this programme has contributed to:

- Provide access to green and open spaces;
- Provide safe cycle routes ;
- Increase the use of cycle or walking for short trips;
- Create more pleasant and accessible urban environment; and
- Reduce congestion on London's roads.

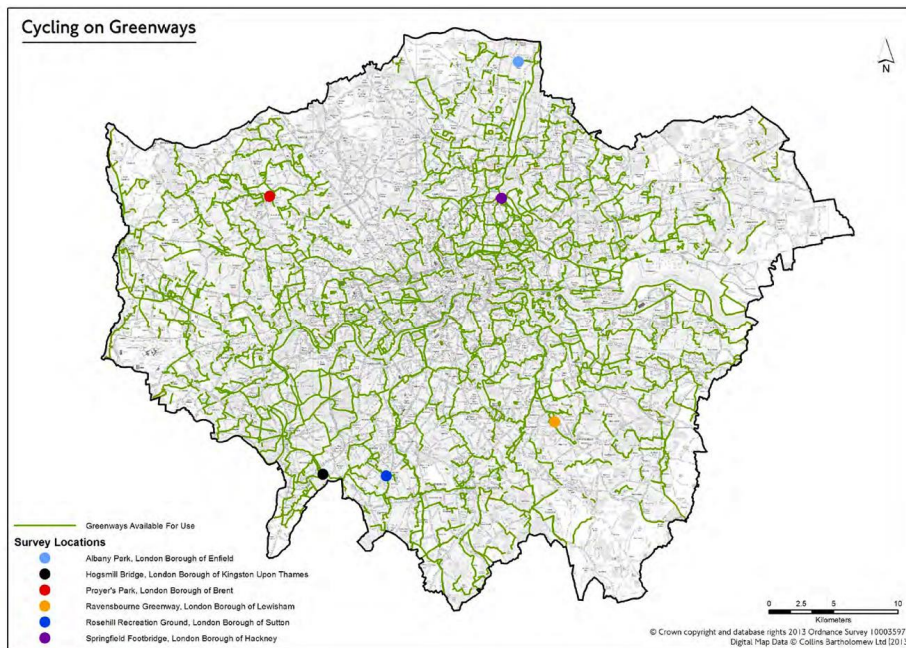


Fig. 9 Greenways network in London. Source: TfL (2013) London Greenways Spikes Bridge to Bulls Bridge

This scheme, part of a major town-path project in Spike Bridge Park, started in 2012 with a partnership between Canal & River Trust and London Borough of Ealing with a total budget of £261,016 (TfL, 2014).

The project (Fig.10) includes the improvement and the widening of a 1.2 km town-path in order to provide a more pleasant route for local people. (TfL, 2014).

This scheme has been carried out with the engagement of local community and the organisation of numerous events to raise the scheme's profile and secure funding for other related projects in the area. Moreover, schools have

been involved in local events and cycle training programmes in order to encourage local citizens to cycle as well as involve them in the maintenance of the town-path.

Beckenham Place Park – Ravensbourne Greenway

This scheme, part of a wider project inside Beckenham Place Park, started from a group of cyclists working together with local stakeholders. It delivered a new 1km cycling and walking link between two train stations along the River Ravensbourne (Fig.11).



Fig. 1 Spikes Bridge to Bulls Bridge-before and after. Source: TfL, (2014) London Greenways.



Fig. 2 Beckenham Place Park Ravensbourne Greenway-before and after. Source: TfL, (2014) London Greenways.

Mini-Holland

The 'Mini-Holland' project, which aims to create a series of Dutch-style town centres in London, is part of a wider commitment that former London Mayor Boris Johnson made to the London Cycle Campaign – an independent charity lobbying for better conditions for cycling in London - and the Londoners who supported the 'Love London, Go Dutch' campaign in the run-up to the 2012 mayoral election. (LCC, 2016b.)

The programme aims to encourage more people to cycle, more safely and more often while providing better streets and places for everyone. It specifically targeted for people who make short car journeys in outer London Boroughs and that could be cycled easily instead (LCC, 2016b).

In particular, the Mini-Holland main objectives are (GLA, 2015):

- provide cycle-friendly town centres;
- increase cycling in residential areas; and
- deliver cycle routes and cycle super-hubs at local railway stations.

The town centres – within London Boroughs - that have been appointed as potential cycle-friendly places are: Enfield, Kingston and Waltham Forest. Each of these Boroughs has been granted £30 million by TfL to be invested in cycling infrastructure in order to achieve a radical change, not just for cyclists but for everyone who lives or works in the town (TfL, 2015a).

This scheme has given particular emphasis to the active participation of residents, involving the local community as much as possible in training and events in order to encourage them to use the bike.

Waltham Forest: “the Mini-Holland”

In March 2014, Waltham Forest Borough has secured £27 million as funding for the 'Mini-Holland' initiative to improve the existing road network and cycling conditions by March 2018 (TfL, 2015a). The main objectives of this programme are:

- to increase the number of cycling trips in the town centre;
- to create more attractive public spaces; and
- to deliver a safe network of cycle routes and secure cycle parking.

The scheme will focus on improvements on a number of key routes and residential areas around the town centre to create a borough-wide network of high quality cycle routes.

The Mini-Holland network (Fig.12), which considers the present routes and the potential future heavily trafficked cycle routes within the borough, consists of five different macro-projects (TfL, 2015a):

- Forest Road;
- Lea Bridge Road - a Street for Everyone;
- Leyton to Blackhorse Road cycle route;
- Leyton to Chingford cycle route; and
- Walthamstow Marsh to Walthamstow Village cycle route.

These routes will be redesigned - in order to create favourable conditions for people who cycle and walk - with segregated space for cycling, improved footways, speed reduction measures, redesigned junctions and new space for people to enjoy (TfL, 2015a).

The Mini-Holland Programme vision will be delivered through different stages, following a well-defined timescale from 2015 to 2020 in order to:

- Create segregated cycle lanes and low traffic routes;
- increase the number of short journey undertaken by bicycle;
- improve the streetscape through planting and landscaping;
- introduce training and events in the schools;
- engage people, especially residents;
- create a network using cycle apps; and
- increase the number of parking.

In particular, the first phase will be focusing on the redesign of the town centre - characterised by mixed-use developments – and on removing traffic from residential areas in central Walthamstow. In fact, a key feature of the Walthamstow Mini-Holland proposal is the concept of ‘Villagisation’ of the central area to make it an excellent environment for cyclist (Waltham Forest Council, 2013).

To ensure that the underway investment in cycling will catalyse a lasting culture of cycling across the borough, the Borough of Waltham Forest is actively involved in monitoring and reviewing the progress of the programme, collecting data and organising cycle training, workshops, events and promotions to support and encourage the community to embrace the physical changes taking place (TfL, 2015a).

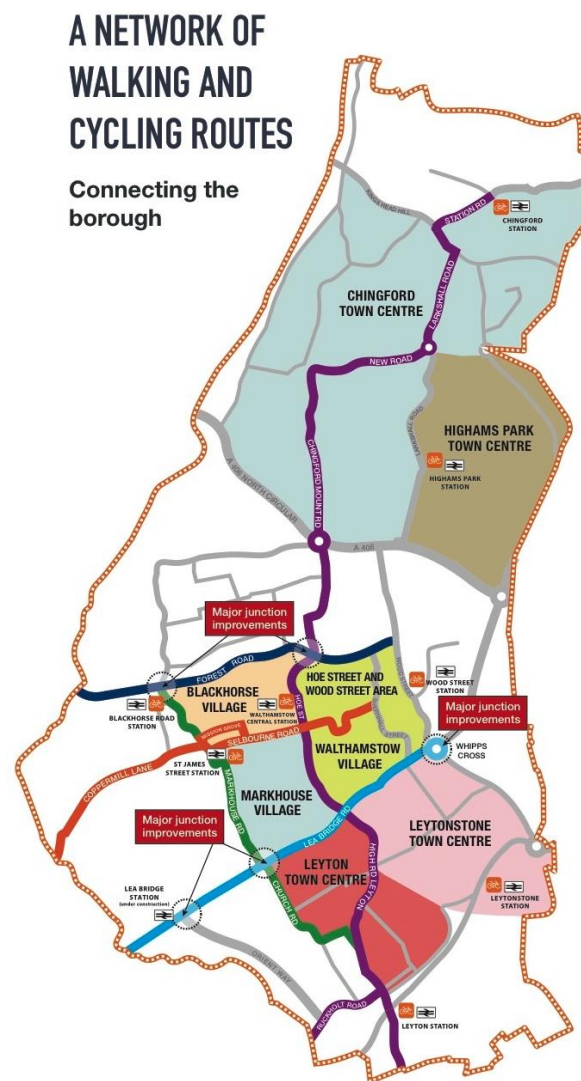


Fig. 10 Mini-Holland Waltham Forest Cycle network. Source: TfL (2015), 2020 Vision. Cycling in the London Borough of Waltham Forest, 2015 – 2020.

2.4. Main findings

Since 2000, the former Mayor of London, Ken Livingstone, promoted a £500m programme to “convert” London in a cycle – friendly city (Russell,

2008) and encourages cycling through the implementation of targeted policies. The following Mayor, Boris Johnson proceeded along the same lines with a range of policy interventions and physical and operational changes which led to the expansion and improvement of cycling facilities.

Strong and consistent leadership, along with an active local community engagement process, has supported the implementation of comprehensive policy strategies in the last fifteen years in London. The so called “Cycling revolution” (TfL, 2010a) supported by both Mayors has led to a consistent physical and cultural change in the Londoners’ daily life.

TfL statistics show a general growth in cycling as an alternative means of transport and predict that the number of people commuting to central London by bicycle will overtake the number of those commuting by car in the next three years (Jones, 2016). In particular, in London's most central area - Zone 1 - during the morning peak hours, the ratio of cars to cyclists was 11 to 1 in 2000, but by 2014 the ratio was down to 1.7 cars for every one cyclist. (Jones, 2016). In 2014 the total number of cycling journeys rose by 5% to 610,000 per day and cycling on TfL roads increased by 11%. (BBC,2015)

Despite these figures being extremely promising, the substantial growth has arose a series of issues concerning the safety and the capacity of the existing roads to accommodate the increasing demand of cyclists. In many places, the existing network of narrow streets represents a physical constraint in providing safe segregated cycle lanes. In fact, data demonstrates an increased number of fatalities on such streets in London. 2014 statistics show that 432 cyclists were seriously injured, while 13 were killed - mainly by heavy transport vehicles or buses (BBC,2015).

In absolute terms, the number of deaths suffered on London streets is lower than the one perceived by population. As the data demonstrates, in the past years the amount of journeys by bicycle has increased while the number of deaths decreased. Also, statistics show that the average number of cyclists killed on London roads has decreased from 18.3 - between 1986 and 1999 - to 16.5 - between 2000 and 2009 (Storbeck, 2011). Despite these numbers, the amount of cycle journeys have doubled since the 1990s, and the number of cyclists who have been killed has remained constant. (Storbeck, 2011). An increased awareness among the population has led to a growing demand for safer infrastructure along with the request of ‘Safe Urban Driving’ training to thousands of HGV drivers and cyclists.

Existing policies have set up a target of 400 per cent increase in cycling by 2026. However, the London Cycling revolution will not happen overnight (TfL, 2010a),. This is a complex process that will require long term strategies and specific measures to be adopted based on the particular context of this megacity. The strong leadership on the subject shown during the years has started turning London into a cyclised megacity where people can ride their bikes safer and easier than before and - according to the new elected Mayor Sadik Kahn - this strategy will continue in the future in order to make London the best megacity city for cyclists in the world.

3. CONCLUSION: LESSON FOR FUTURE IMPLEMENTATION POLICIES

The study has evolved from the fact that 55% of the world’s population is currently living in urban areas and this figure is predicted to increase rapidly in the coming years. This confirms that sustainable mobility plays a crucial role not only in small cities but even more so in a megacity as large as London.

This paper highlights that there are general guidelines that cities pursuing to promote cycling should follow. However, because each city has a unique context it is impossible to define a global strategy that can be adopted everywhere. Policies need to promote awareness and be sensible enough to address diverse factors given by the surrounding cultural, political and institutional context.

This study suggests that in the case of London neither a well-defined policy package nor a strong leadership on its own is sufficient to promote cycling. On the other hand, a holistic approach made up of political and cultural interventions, such as strong governance, cultural influence and good design, are fundamental to promote sustainable mobility.

- *Strong Governance.* There must be a common desire to change the road hierarchy and overcome the car-oriented system in order to achieve sustainable mobility. It is essential not only to promote cycling but also to disincentive car use, through a range of policies and a series of car restrictions. It must come from a common vision which involves all fundamental stakeholders through an interactive and participatory process. The effective implementation of policies requires participation of key stakeholders as they have to be aware of the reason behind policy proposals in order to support them. Strong governance can drive visions across, develop long-term strategies and monitor short-term interventions. The long-term strategy has to be robust, adaptable, and flexible to the changing needs of the city over time.
- *Good design.* Good design is essential in order to implement policy strategies. There must be an overall design strategy and not only

single and accurate interventions. Small projects need to be integrated in the overall strategy, such as the establishment of an extensive cycle network of integrated cycle routes. Design must improve cycling infrastructure and enhance safety for all the different categories of cyclists.

- *Cultural influence.* Promoting sustainable mobility is not only a matter of implementing policies, but it is also a process of engaging people through debate and constructive consultation. Cyclists need to be educated to understand the benefits of cycling and to support the cultural shift from a car-based society to a cycle-based one.

BIBLIOGRAPHY

- Abraham, J. E., McMillan, S., Brownlee, A., & Hunt, J. D. (2002). Investigation of cycling sensitivities. Paper presented at the Transportation Research Board Annual Conference, Washington, DC.
- Banister, D. (2008). The sustainable mobility paradigm. *Transport policy*. 15(2), 73-80.
- BBC (2015). Number of cyclists in London reaches record high. BBC. Available from: <http://www.bbc.co.uk/news/uk-england-london-33002701>. [Accessed 20 June 2016]
- Burdett, R. (2015) A tale of four world cities – London, Delhi, Tokyo and Bogotá compared. *The Guardian* 11 February 2015
- Carmona, M., Tiesdell, S., Heath, T., & Oc, T. (2010). *Public places, urban spaces: The dimensions of urban design*. Amsterdam: Architectural Press.
- Cities, LSE (2008) Population density: London. [Online] Available from: <https://urbanage.lsecities.net/data/population-density-london-2008> [Accessed 24 June 2016]
- Cities, LSE (2012) World city living and working densities are poles apart. [Online] Available from: <https://lsecities.net/media/objects/articles/world-city-living-and-working-densities-are-poles-apart/en-gb/> [Accessed 24 June 2016]
- Eurostat (2015) Population by sex and age groups on 1 January. [Online] Available from: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=met_pja_naggr3&lang=en [Accessed 24 June 2016]
- Gatersleben, B., & Uzzell, D. (2007). Affective appraisals of the daily commute: Comparing perceptions of drivers, cyclists, walkers, and users of public transport. *Environment and Behavior*, 39 (3), 416–431.
- Greater London Authority (2010). *Mayor's Transport Strategy*. London, GLA.
- Greater London Authority (2013). *The Mayor's vision for cycling in London: An Olympic Legacy for all Londoners*. Greater London Authority, London.
- Greater London Authority (2015). *The London Plan*. London, GLA.
- Horton, D and Jones, T. (2015). Rethoric and reality: understanding the English cycling situation. In Cox, P., (eds.) *Cycling Cultures*. Chester: University of Chester Press, pp. 63-77
- Huwer, U. (2000) Let's bike - The 10 point pedalling action programme to support cycling. *World Transport Policy and Practice*, 6 (2) (2000), pp. 40–44.
- Jones, M. (2016). The staggering growth of cycling in london. *GQ magazine*. Available from: <http://www.gq-magazine.co.uk/article/cycling-london-cars>. [Accessed 20 June 2016]
- Le Vine, S., Miranda-Moreno, L., Lee-Gosselin, M., & Waygood, E. O. D. (2014). Gender and the growth of cycling in a megacity region: Emerging evidence from London. In *5th International Conference on Women's Issues in Transportation*.
- Litman, T. (2014). *Transportation affordability: evaluation and improvement strategies*. Victoria Transport Policy Institute [Online] Available at: <http://www.vtpi.org/affordability.pdf> [Accessed 18 May 2016]
- London Council (2016) *The essential guide to London local government*. [Online] Available from: <http://www.londoncouncils.gov.uk/who-runs-london/essential-guide-london-local-government> [Accessed 27 May 2016]

- London Cycling Campaign, (2016a). Cycle superhighways. [online] LCC. Available from: <http://lcc.org.uk/pages/cycle-superhighways> [Accessed 24 May 2016]
- London Cycling Campaign, (2016b). Mini Hollands. [online] LCC. Available from: <http://lcc.org.uk/pages/mini-hollands> [Accessed 25 May 2016]
- Ogden, L.E. (2014) City cycling: health versus hazard. [Blog] 4 March 2014. Available from: <http://mosaicscience.com/story/city-cycling-health-versus-hazard> [Accessed 20 May 2016]
- ONS, Office for National Statistics (2011a) 2011 Census: Population and Household Estimates for England and Wales, March 2011. Office for National Statistics.
- ONS, Office for National Statistics (2011b) Subnational Population Projections with Components of Change (Births, Deaths and Migration) for Regions and Local Authorities in England: Table 5. [Online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/componentsofchangebirthsdeathsandmigrationforregionsandlocalauthoritiesinenglandtable5> [Accessed 20 June 2016]
- Owen, D. (2009) Green Metropolis: Why Living Smaller, Living Closer, and Driving Less Are the Keys to Sustainability. New York: Riverhead.
- Pucher, J. and Buehler, R., (2012a) "Introduction: Cycling for sustainable transportation." In: Pucher, J. and Buehler, R., (eds.) City cycling. MIT Press, pp 1-7.
- Pucher, J. and Buehler, R., (2012b) "Promoting Cycling for Daily Travel: Conclusions and Lessons from across the Globe" In: Pucher, J. and Buehler, R., (eds.) City cycling. MIT Press, pp 1-7.

- Pucher, J., Lanversin, E., Suzuki, T. and Whitelegg, J., (2012) "Cycling in megacities: London, Paris, New York, and Tokyo." In: Pucher, J. and Buehler, R., (eds.) City cycling. MIT Press, pp.319-345.
- Pucher, J., & Dijkstra, L. (2000). Making walking and cycling safer: lessons from Europe. *Transportation Quarterly*, 54(3), 25-50.
- Russell, B. (2008). Livingstone plan for street – corner cycle hire stands. Independent. Available from: <http://www.independent.co.uk/news/uk/home-news/livingstone-plan-for-street-corner-cycle-hire-stands-781025.html>. [Accessed 20 June 2016]
- Sorensen, A., & Okata, J. (Eds.). (2010). Megacities: Urban form, governance, and sustainability (Vol. 10). Springer Science & Business Media.
- Stefansdottir, H. (2014). Urban routes and commuting bicyclist's aesthetic experience. *FORMakademisk*, 7(2).
- Storbeck, O. (2011). Cycling in London - How dangerous is it? Cycling Intelligence. Available from: <https://cycling-intelligence.com/2011/03/16/cycling-in-london-how-dangerous-is-it/>. [Accessed 20 June 2016]
- Susan, S., Stacey, G., & Hua, Z. (2010). Bike Sharing in Europe, the Americas, and Asia. *Transportation Research Record*, 159-167..
- Sustans, (no date) London Quietways. [Online] Available from: <http://www.sustrans.org.uk/our-services/what-we-do/london-quietways> [Accessed 13 June 2016]
- Tolley, R. (ed.) (1997). The greening of urban transport: planning for walking and cycling in Western cities, Edition II. John Wiley & Sons, Chichester.
- Transport for London (2010a) Cycling revolution London. Transport for London

- Transport for London (2010b). Travel in London, Report 3. London: TfL.
- Transport for London (2010c). Data on the specific length of different kinds of cycling facilities in London in 2010 were obtained directly from Transport for London as the result of a Freedom of Information request, September 29, made by John Whitelegg.
- Transport for London (2013) London Greenways. Monitoring Report September 2013. Transport for London
- Transport for London, (2014) London Greenways. Final monitoring report 2010 - 2014. [Online] Available from: <http://content.tfl.gov.uk/greenways-final-annual-monitoring-report.pdf> [Accessed 13 June 2016]
- Transport for London (2015a) 2020 Vision. Cycling in the London Borough of Waltham Forest, 2015 – 2020. [Online] Available from: <http://www.enjoywalthamforest.co.uk/wp-content/uploads/2015/01/018978-Mini-Holland-Cycling-Strategy-v2-FINAL.pdf> [Accessed 29 May 2016]
- Transport for London (2015b) London Cycling Design Standards. Transport for London, London
- Transport for London (2016a) How we are governed. [Online] Available from: <https://tfl.gov.uk/corporate/about-tfl/how-we-work/how-we-are-governed> [Accessed 27 May 2016]
- Transport for London (2016b) Quietways. [Online] Available from: <https://tfl.gov.uk/travel-information/improvements-and-projects/quietways> [Accessed 28 May 2016]
- Transport for London (2016c) Central London Grid. [Online] Available from: <https://tfl.gov.uk/travel-information/improvements-and-projects/central-london-cycling-grid> [Accessed 29 May 2016]

- Transport for London, (no date) Quietways, Grid and Mini-Hollands consultations by boroughs and partners. [Online] Available from: <https://consultations.tfl.gov.uk/cycling/grid-and-quietways-consultations-by-borough> [Accessed 13 June 2016]
- Travers, T (2002) Decentralization London-style: The GLA and London Governance, Regional Studies, 36:7, 779-788
- Van Duppen, J., & Spierings, B. (2013). Retracing trajectories: the embodied experience of cycling, urban sensescape and the commute between ‘neighbourhood’ and ‘city’ in Utrecht, NL. Journal of Transport Geography, 30, 234-243.
- Waltham Forest Council (2013) Mini-Holland, December 2013. Waltham Forest Council
- Yang, L., Sahlqvist, S., McMinn, A., Griffin, S. J., and Ogilvie, D., (2010). Interventions to Promote Cycling: Systematic Review. British Medical Journal 341

Authors

Graziano Di Gregorio is a registered Architect currently working as urban designer in UK. He holds a Master's degree in Architecture from the Seconda Università di Napoli (2012) and an MSc in 'Mega infrastructure planning, appraisal and delivery' from University College London (2014).

He gained research experience working at the OMEGA Centre (Centre for Mega Projects in Transport and Development) at Bartlett School of Planning in research involving various aspects of the planning, appraisal and delivery of mega transport projects world-wide.

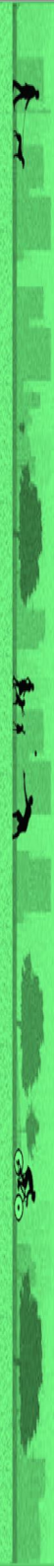
Simona Palmieri is a qualified Urban Designer with a background in Architecture. I have worked in practice for about four years, initially on residential and commercial projects in both Italy and Spain, followed by

larger scale urban design and master planning projects in UK. She is a registered Architect working in an Urban Design practice and currently involved in a PhD research on the impact of refugee camps – as temporary urban spaces – on the existing urban settlements in Europe. She holds a Bachelor degree and a Master in Architecture from the Seconda Università di Napoli (20112). She has also completed a Master's degree in International Planning and Sustainable Development (Urban Design and Planning) at the University of Westminster in 2014. She has strong architectural awareness and interest in urban design and planning research.



**SUSTAINABLE URBAN MOBILITY PLANS IN SPAIN.
ASSESSMENT OF WALKING PROMOTION AND ITS
IMPACT IN THE QUALITY OF PUBLIC SPACE.**

BY MATEUS PORTO SCHETTINO



Sustainable Urban Mobility Plans in Spain. Assessment of walking promotion and its impact in the quality of public space.

by Mateus Porto Schettino

Abstract

In recent years, several Spanish cities have taken action against the growth of individual motorized displacements, promoting active and socially equitable modes of transportation. They are contributing to a new mobility's culture in which walking should have a leading role. However, this change depends on complex socio-economic issues and requires planning. For that, according to European guidelines, the Sustainable Urban Mobility Plan (SUMP) is the suitable instrument to address this challenge.

The instrument arises in Spain in the middle of the last decade and nowadays the majority of medium cities have a SUMP. Nevertheless, we still do not know much about its effectiveness, especially about its impact over pedestrians. Therefore, with the aim to contribute to the knowledge about the SUMP experience in Spain, a doctoral thesis is being prepared for the Urban Planning Department at the Polytechnic University of Madrid. The study characterizes the planning instrument in a mobility policies panorama and analyses in detail its relation with urban features and planning. The adoption of a mobility plan represents a political commitment, but its implementation is not always successful, as the instrument has little legal implications in Spain. That is why its coordination with urban plans is so important.

There is a hypothesis that SUMPs address mainly traffic and public transport, compared with little attention to pedestrian and cycling promotion or the

restriction of private cars use. The analysis' methodologies and actions proposed still have traditional traffic and essentially infrastructural approach, with not enough attention to urban aspects, other functions of public space beyond circulation or the social aspects related to the demand for mobility. Otherwise, the research revealed some good practices that should be shared and widespread between those (technicians, students, politicians and activists) interested in sustainable mobility with walking and cycling promotion and improvement of urban space quality.

1. Introduction

In recent years, several Spanish cities have taken action against the growth of individual and motorized displacements, promoting active and socially equitable modes of transport. Working with new concepts and instruments, they are contributing to a new culture of mobility in which walking should have a leading role.

However, the application of measures to encourage this change depends on complex socio-economic issues and requires planning. For that, and according to some European guidelines, the Sustainable Urban Mobility Plan (SUMP) is the suitable instrument to address this problem. Following the European experience, this instrument arises in Spain in the middle of the last decade, and since then many municipalities have promoted and implemented mobility plans.

Nevertheless, the adoption of a mobility plan represents a political commitment, but its implementation is not always successful, as the instrument has little legal implication in Spain. In addition, we still do not know much about the effect of these plans, especially about its impact over pedestrian mobility.

Therefore, with the aim to contribute to the knowledge about the SUMP experience in Spain, a doctoral thesis is being prepared for the Urban Planning Department of the Polytechnic University of Madrid. The study characterizes the planning instrument (SUMP), in midsize Spanish cities, contextualized in a panorama of urban mobility policies in the country. Furthermore, it analyses specially the relation established between mobility plans and urbanism.

This paper presents part of this mayor research, and addresses the instrument's characterization, referring to its consideration towards the different modes of mobility and the effect over the public space quality and livability, especially from the pedestrian point of view.

2. Context and goals

The planning instrument object of analysis in this work has its origin in the context of environmental awareness that marked the late '80s and early '90s. The *Eco 92, Rio de Janeiro Earth Summit* is a landmark of this process, where an intergovernmental agreement was settled to favor a more sustainable development. The *Global Program for sustainable development in the 21st Century*, presented in the Conference, also promoted the idea that the solutions to global problems would come from a local approach. The recover and application of the concept *think global - act local*, originally related to Patrick Geddes's ideas, demanded citizen implication and a leading role of local administrations. The result was the Agenda 21 United Nations' Program implementation in several cities around the world during the following years, which established a new approach to town planning in terms of environmental goals, governance and citizen participation.

In this context, urban transport matters received special attention and since that, the European Union has promoted a more sustainable model throughout different campaigns and funding programs. For instance, CIVITAS and URBAN Programs, which made possible some of the most interesting and recent transformations related to urban mobility in Spanish municipalities.

Regarding the promotion of SUMP, a specific landmark is the European *Thematic Strategy on the Urban Environment*, started in 2004 and finalized in 2006. The inclusion of *sustainable transport plans* (term used at that moment) as a key measure to achieve a more livable and healthy urban environment resulted from an important lobby of the consultant's sector and some countries experience. For that time, the law in France and U.K has already introduced the SUMP as a mandatory instrument, designed to plan the transportation of passengers and goods in urban and metropolitan scope in a long-term perspective.

The *Thematic Strategy on the Urban Environment* also advocated for the coordination between mobility policies and other sectors closely related, especially urban planning. Since the approval of the *Strategy*, the Sustainable Urban Mobility Plan (term introduced latter in a more holistic approach) is indicated as the most suitable instrument to define development guidelines in terms of transport in towns, for medium and long term, considering the specificities of each place. To that end, the *Strategy* also recommended the European Commission to prepare a manual to support local authorities in SUMP's elaboration. (Gregorio 2014)

In Spain, the public awareness about the negative effects of an unsustainable transport model led to the first experiences of traffic calming and

pedestrian friendly measures, during the 90's. In general, the first improvements of public space to favor pedestrians were mainly related to historical centers protection and refurbishment. It was only in 2003, with the *National Strategy for Energy Saving and Efficiency 2004-2012* approval, when a national framework was established and *transport* identified as the most important sector in terms of energy consumption and greenhouse effect emissions.

To make the strategy operative, two consecutive *Action's Plans* were developed: 2005-2007 and 2008-2012. Both plans included measures organized in three different categories: *Modal shift*, *More efficient use of transport* and *Vehicles efficiency improvement*. The SUMP appears as the first key measure of the *Modal shift* group of actions, in both periods. In the first *Action's Plan* the main target was the cities with more than 100.000 inhabitants. While in the second, a wider scope included cities with more than 50.000 people.

In 2004 the Regional Energy Agency of the Basque Country - IHOBE published the first guide for sustainable mobility plans elaboration. Two years later, in 2006, the State Institute of Energy Diversity and Saving - IDAE published the *Practical Guide for SUMP's Elaboration and Implementation*, with a widespread national impact. That was a starting landmark of a 6 years period (until 2012) in which an intensive production of SUMP's took place in Spain. The approval of these plans has significantly increased especially from the *Sustainable Economy Act 2011*, which established the existence of a municipal SUMP as mandatory requirement for public transport funding subsidies.

This research identified more than 90 Spanish medium cities (from 50.000 to 500.000 inhabitants) with a SUMP elaborated during those years. After that,

few cities developed or updated their mobility plans, as the result of a shift in public subsidy to mobility policies, from planning process to electric cars production and acquisition. Nevertheless, this intensive planning period was sufficient to produce the first generation of mobility plans in Spain, which permits and demands analysis in order to improve approaches and technics for the future plans or revisions to come.



Among the 139 municipalities of 50.000 to 500.000 people, 90 PMUS identified.
7 plans identified in municipalities of more than 500.000 people.

To achieve a more sustainable mobility and better life quality for citizens and future generations, all instruments, from European and National Strategies to SUMP local guidelines, highly recommend the promotion of walking, cycling and public transport. Moreover, in agreement with its leading role in the urban modal split in Spain, pedestrian mobility should have a special consideration in SUMP's. Also according to official guidelines, the promotion of more sustainable forms of mobility should come from an integrated policies' approach between related sectors (transport, land-use, environment, economic development, social inclusion, gender equity, health, safety, etc.). Guiding principles consider expressly the integration of mobility in urban planning and citizen participation as key elements for the different

phases of planning and implementation processes (Lamíquiz, F. et al 2009). Therefore, it is imperative to define methodologies to assess those criteria in plans elaboration and execution (GIAU+S 2010).

Consequently, the main goals of this paper are:

- Demonstrate a suitable method for pedestrian assessment of mobility plans.
- Analyse a sample of the first generation of SUMPs in Spanish medium cities.
- Compare the attentions devoted to the different modes of transport in SUMPs.
- Describe how or by means of which type of measures the plans intend to achieve goals.
- Identify the presence of pedestrians in the SUMPs' citizen participation processes
- Discuss the repercussion of the approach previously described in the public space's quality and its distribution between different users.

Finally, as part of a PhD thesis the paper intends to test the analysis method and indicators suitability for the investigation.

3. Methodology

Considering the objectives listed above this research works with following hypotheses:

1. There is an unbalanced attention to each mode of transportation in the diagnosis and the correspondent proposals' sets.
2. Proposals and actions are mainly infrastructural.
3. Pedestrians do not take place in citizen participation processes as an organized collective or stakeholder namely represented.

4. The public space configuration that might result of the measures application do not fully correspond to pedestrians' necessities.
5. The method to follow permits to take conclusions about the hypothesis, being suitable for pedestrian assessment of SUMPs.

In order to confirm or refute hypotheses, the method consists in a descriptive statistical analysis of SUMPs' basic features, throughout indicators' definition and assessment of documentary sources: Urban Mobility Plans and documents directly related to its development, like technical guides and reports, contracting basis, etc.

In this first phase of the PhD investigation, five cases (plans) were analysed. It is a small number of cases, but sufficient considering that the goal is not to present definitive conclusions, but test the method and identify result hints. The criteria to select cities and their mobility plans are minimum geographic diversity, municipality's population size, representation of the author consulting team and documents availability.

The SUMPs analysed are the following:

- *Plan de Movilidad Urbana de Gijón 2002*
- *Plan de Movilidad Urbana Sostenible de Toledo, 2007.*
- *Plan Integral de Movilidad Urbana Sostenible de Castellón del Plana 2007-2015*
- *Plan de movilidad urbana sostenible de Donostia-Sán Sebastián 2008-2024*
- *Plan de Movilidad Sostenible y Espacio Público en Vitoria-Gasteiz, 2008*

In the first place, there is a quantitative description of the selected plans, throughout the following indicators:

- Documents contents and structure. Common elements and chapters order.
- Terminology used in the complete text. Counting words and comparing the number of references to each mobility sector (walking, bicycle, public transport and private car).
- Space (pages) devoted to each sectors' proposal set.
- Budget split between sectors.

Then, a qualitative approach takes place, to describe and analyse:

- Methods and instruments in diagnoses
- Areas of intervention: infrastructure, legislation, culture and education, demand management, urbanism, taxes policies, etc.
- Compilation of most usual measures proposed for the different sectors, with special attention to the restriction or promotion of private cars traffic.
- Pedestrian and cyclist's role in citizen participation processes.

4. First results and discussion

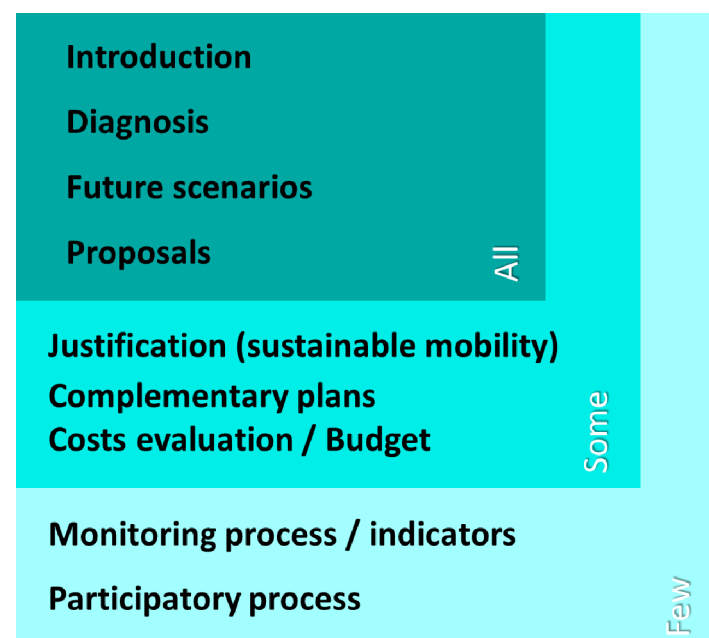
In order to check the coherence between plans and the instructions for its elaboration, the analysis includes the *Practical Guide for SUMP's Elaboration and Implementation – IDAE 2006* as well.

As the sample intend to represent general features of the SUMP's developed in Spain, and not the specificities of each case, in the analysis does not identify the cities, and a random number is assigned to each case.

Structure of the plans

The documents present a similar sequence of sections and chapters, attending to the contents and phases proposed in the guidelines and established by contracting authorities. The basic structure, meaning the

similar chapters included in all documents reviewed, is *Introduction – Diagnosis – Future scenarios – Proposals' plan*. In addition to those, some plans include also specific chapters for *Justification and sustainable mobility advocacy*, *Complementary programs* and *Cost/benefit evaluation*. Fewer are the plans that present chapters for the *Citizen Participation process* or *Monitoring system and indicators*.



The *Introductions* normally present the main precedents, the urban context and the methods for the plan elaboration. In this first chapter, pedestrian and cyclist mobility promotion appears between the plans' main goals, together with public transport and a more rational use of private cars. Plans normally highlight the great importance of pedestrian share in the modal split, which is considerably high in Spanish cities (around 50% in the cases studied).

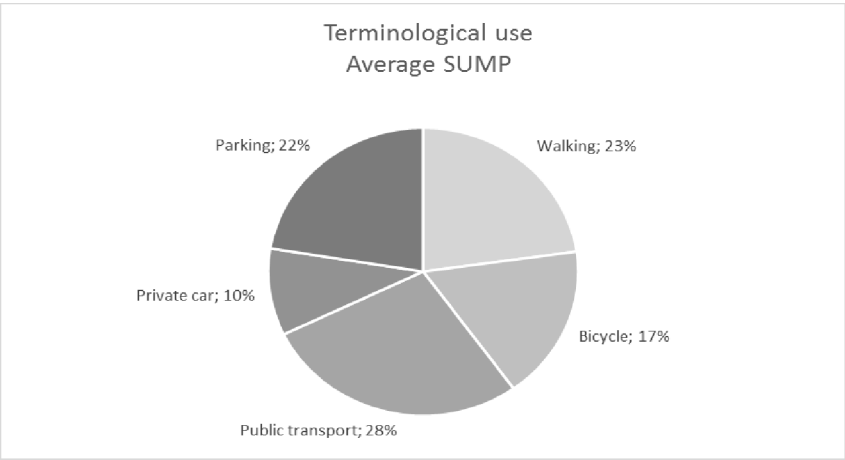
Diagnoses have a very important role in SUMP. Actually, the analysis of current situation consumes great part of work and time in SUMP elaboration, compared to other phases of the planning process.

Proposals are usually organized in blocks referring to the different modes of transportation. The sets of measures are quite similar in all cases, despite the differences between municipalities identified in *Diagnoses*. It seems that, regardless the problematic of each case, solutions are always the same.

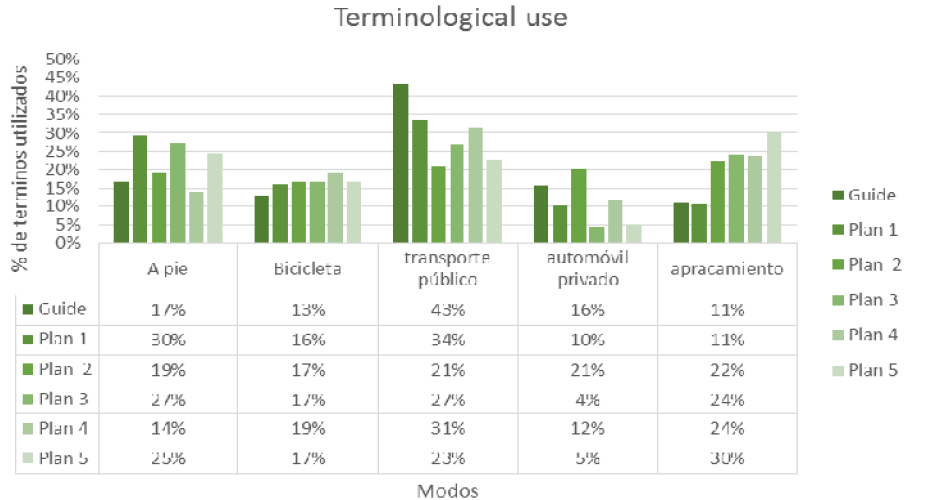
Terminology used in plans

The use of the term *mobility* in technical and legal texts, in place of *transport* or *traffic*, represented the introduction of new actors in urban policies. During a long time, pedestrians and cyclists, active participants in the public streets, were forgotten or almost invisible in the traditional traffic engineering theoretical corpus, more concerned about motor vehicles safe and fluent flow. The question here is how much space did those new actors gained in the technical rhetoric.

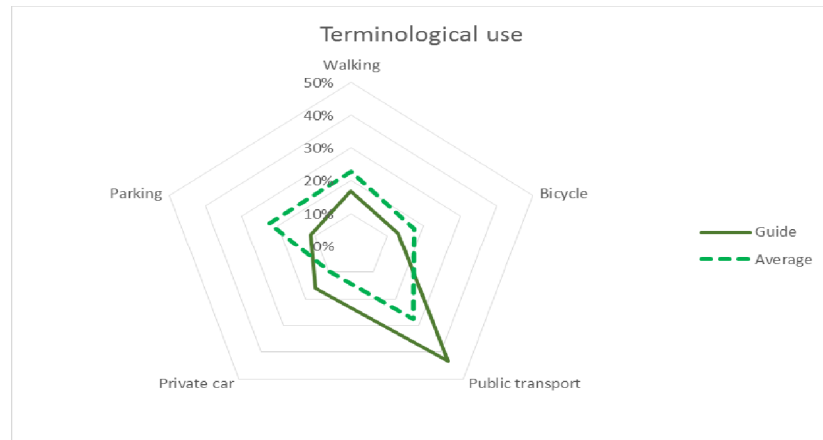
The repetition of words referring to a certain type of mobility and its proportional relation to the total of references to all types is the indicator applied to estimate plans’ awareness about pedestrian in comparison to other modes. The terminological usage comparison reveals a balanced relation between modes in an overall view of the counting results.



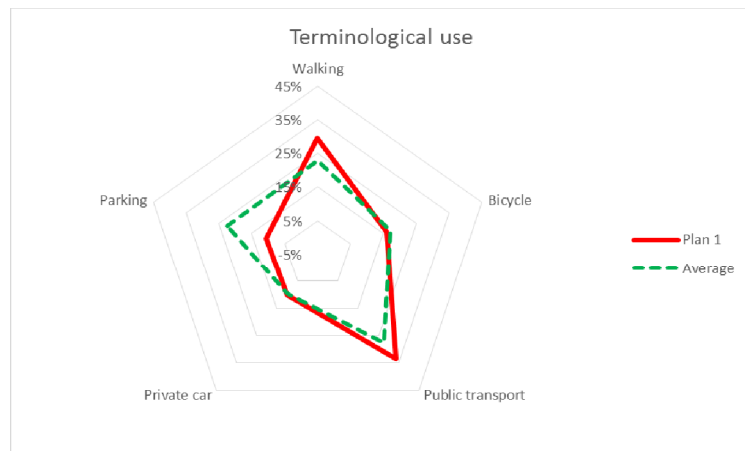
The identifications of references to the different sectors result from a search for a set of terms related to each mode of transportation. The counting process revealed the relative presence of the different modes in the whole text of the SUMP. Results, represented in the figure above, reflect a balanced situation in which *private car and parking* slightly prevail (32%), followed by *public transport* and then *walking*, while *bicycles* have the shortest participation.



The proportional relation between modes is coherent to that one identified in the official Guide, except for the case of parking that has a bigger participation in plans than recommended.



In the comparison between SUMP, it is remarkable that terms referring to cycle mobility appear with the same proportion in all cases. Other interesting results are that public transport is always the most mentioned and the plan that more speaks of pedestrian is the one that less refers to private cars.



Diagnoses' methods and instruments

The balance observed in the terms proportional usage is not present in the *Diagnoses* elaborated for the plans. In all analysis' chapters there is a clear contrast in the treatment applied to the different modes of transport, that contradicts the pedestrian and bicycle priority previously advocated by the plans.

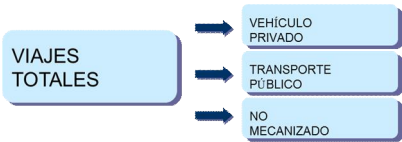
The studies present general data about the modal split and different networks inventories focused on the infrastructures capacity and state of repair. However, the great difference resides in the information about the flows intensity and other characteristics of the different mobility systems. While for motor traffic and parking there is exhaustive data about intensities and directions, occupation, speeds, etc.; the information about cycling and walking is limited to basic considerations. This research did not find any accurate counting system, satisfaction surveys or potential demand studies for pedestrians or cyclists.



Daily Average Intensity Map in the Road System only elaborated for motor traffic.
Source: Plan de Movilidad Urbana Sostenible de Toledo, 2007.

The same contrast, result of biased methods and instruments, marks the consecutive step in the general methodology adopted by plans: *the future scenarios elaboration*. In this case, the usual approach is to compare future prospects, with and without the SUMP implementation, based on current evidences. The result of the opposite scenarios to come are described by means of hypothetical modal splits, whose repercussion in the street system is generated by traffic engineering simulation models.

The question is that those mathematical models focus in motorized traffic and road capacity. Neither the variables introduced to generate the models, nor the dynamics presented as results, consider pedestrians or cyclist features, necessities or constraints in a systematic way.



Methodological diagram for traffic simulation model, which divides the total number of trips in three categories: Private vehicle, Public transport and No mechanical. Source: Plan de Movilidad Urbana Sostenible de Toledo, 2007.

It is important to consider that the complexity related to human movements, walking or by bicycle, in the city exceed automobiles displacement patterns. For instance, all the activities related to rest, children playing or social relation in the public space, direct related to pedestrian behaviour, do not have place in those models. In addition, simulation models have bases on data about previous situations extremely constrained by traffic impositions. Furthermore, as mentioned before, there are no accurate figures about pedestrians and bicycles circulation in towns to feed those models. In this case, is representative the fact that some models present predictions for pedestrian and cyclists under the common category of nonmotorized trips,

ignoring that they are very different forms of urban mobility, with distinguished necessities, flow patterns and share in the modal split. All those reveal a great unbalance between the active and the motorized transport in terms of intensity and amount of information provided, in favour of public transport and private car’s traffic. It is imperative to clarify that the previous description results from an initial qualitative reading of five different diagnoses. Accurate verification of the main considerations demands a systematic method further development and application.

Proposals sets: place and space devoted

Usually, once the diagnosis is finished, plans present *proposals programs* with measures to adopt in order to promote the desired transformation in urban mobility patterns. Generally, proposals are grouped around modes of transport and their networks. In this case, regarding the documents’ structure it is worth mentioning that pedestrians and cyclists are usually, ones of the latest chapters in the reading order.

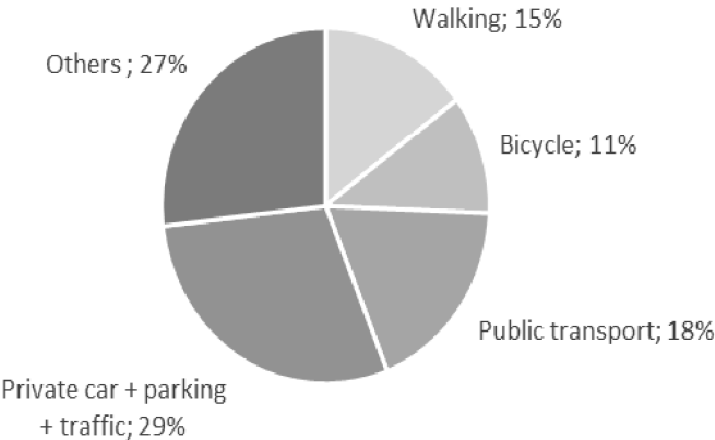
| | | | |
|--|-----|---|--|
| Propuestas. Medidas a Adoptar | 42 | 2 Programas de actuación | |
| 1. Red viaria y el tráfico | 42 | 2.1 Plan de circulación y red viaria | |
| 2. Programa de formación para la conducción eficiente | 65 | 2.1.1 Propuesta de red viaria | |
| 3. Club de viaje en coche compartido, proyecto “Compartir Coche” | 66 | 2.1.2 Acciones específicas a emprender para la implantación de la propuesta.. | |
| 4. Mejora del Transporte público | 68 | 2.1.3 Implantación por fases de la propuesta de red viaria | |
| 5. Gestión del Aparcamiento | 95 | 2.1.4 Recomendaciones generales | |
| 6. Medidas de fomento de la movilidad peatonal | 109 | 2.2 Plan de estacionamiento y carga/descarga | |
| 7. La movilidad ciclista | 146 | 2.2.1 Introducción | |
| 8. Planes de movilidad a los centros de trabajo | 158 | 2.2.2 Plan de aparcamientos subterráneos | |
| 9. Camino Escolar | 158 | 2.2.3 Plan de estacionamiento en vialio | |
| 10. Políticas de movilidad sostenible en los nuevos desarrollos urbanísticos | 161 | 2.2.4 Plan de carga y descarga y circulación de vehículos pesados | |
| 11. Plan de Seguridad vial | 162 | 2.3 Plan de potenciación del transporte colectivo | |
| 12. Plan de Comunicación, divulgación y sensibilización | 19 | 2.3.1 Transporte público | |
| | | 2.3.2 Transporte discrecional | |
| | | 2.4 Plan de ciclabilidad y peatonalidad | |
| | | 2.4.1 Red de ejes ciclistas | |
| | | 2.4.2 Red de ejes peatonales | |

Position of pedestrian topic in the Index of the Action’s Program from two different SUMPs

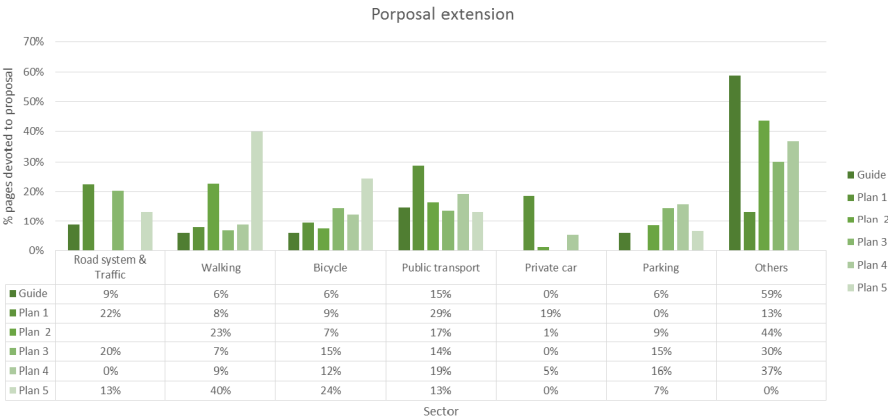
Bicycles and pedestrians even share one single chapter in some cases, while traffic reorder and proposal for private cars are the first to treat in the majority of plans. The problem here is not only the order in itself, but the fact that this organization might reflect the priority granted by the planning process. By this way, when proposals for pedestrians and cyclists come, all the important decisions about the street-system would be already taken with the focus on motor traffic. To verify this hypothesis it is necessary to assess the final proposals. A first evidence of this planning sequence and the biased diagnoses is the “new” streets hierarchy set out in SUMPs, to be analysed latter in this work.

Regarding the space devoted for each mode, the “pages split”, inside the proposal’s programs, walking and bicycle have participations of 15% and 11% respectively. Public transport deserves 18% of the total pages, while traffic and parking take approximately 30%, the same as other measures.

Proposal extension. Average SUMP



Usually plans have a specific proposal set for the whole road system, which is supposed to concern to all the different users of public streets. However, in the usual approach to the complete system of streets, traffic demands and criteria are still hegemonic, as discussed later in this paper. That justifies the consideration of *road system* and *cars circulation and parking* as one single topic.



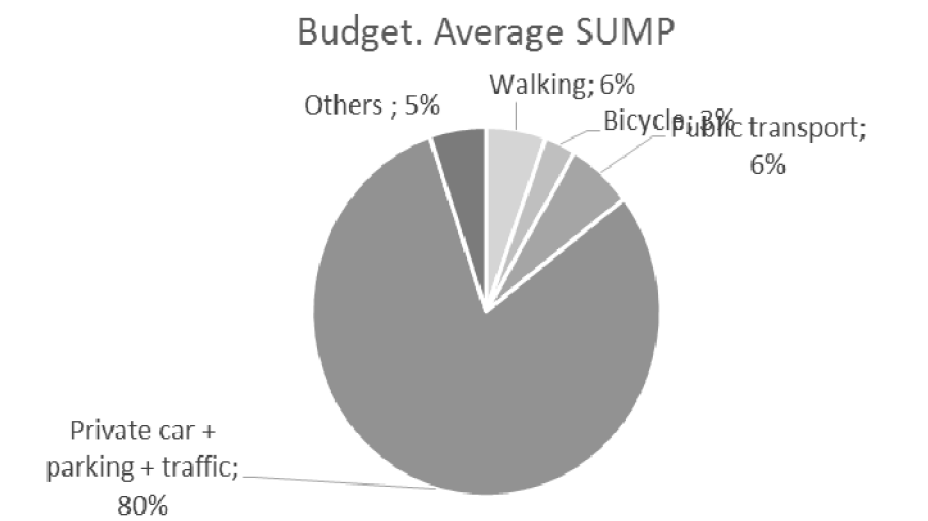
Those are indicators of the attention devoted to each mode to redefine the mobility model. In this case, as in the word counting, the fact that plans use lots of pages to present measures for cars does not permit to know if traffic is being promoted or restricted, but confirm the importance of this sector in the whole mobility model. To reflect the concerns nature or the type and direction of the alternatives planned in each sector a more qualitative analysis is necessary. Specially for cars circulation and parking, where restrictive measures are expected to be found more than others.

Budget split

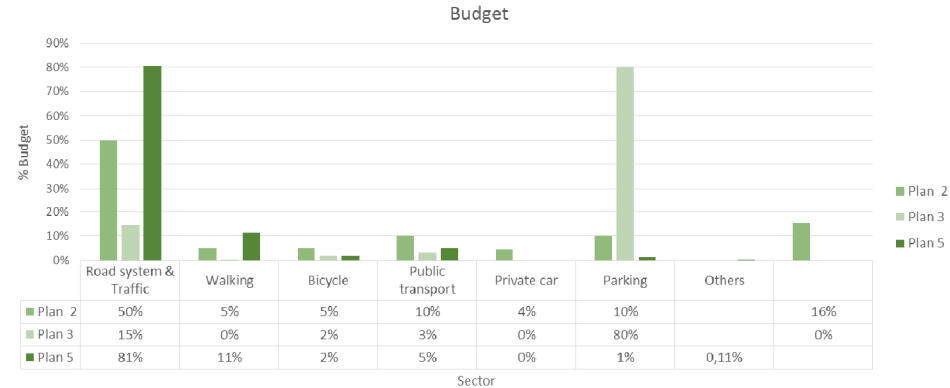
The economic programs or studies are fundamental features towards the plan implementation. Moreover, the amount allocated to each sector reveals

the relative priority between modes, beyond the good will and laudable principles presented in all plans.

Nevertheless, not all the plans present economic schedule or cost/benefit study. Only three out of the five plans analysed so far have this information, crucial for the measures execution in the future. In any case, the analysis of the budget assigned for each mobility sector reveals an enormous difference.



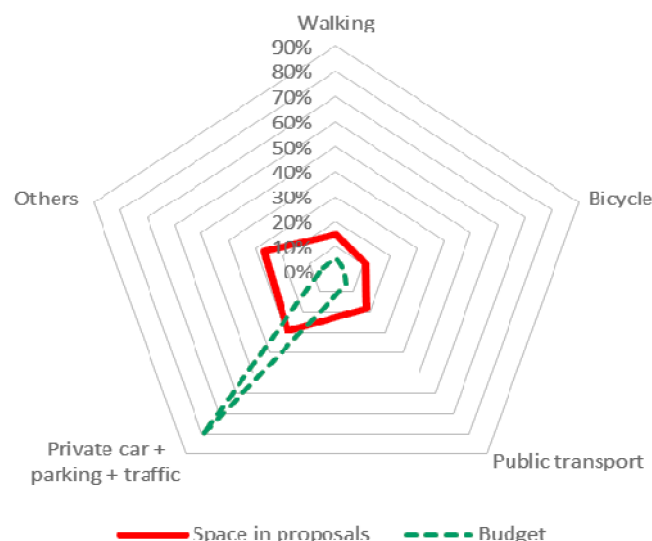
Actions for *walking* promotion and pedestrian network enhance take a very small part in the financial allocation, compared to other modes. Sometimes pedestrians even share item with *bicycles*, which have a similar residual participation when treated separately in the economic distribution. In the other hand, interventions on the *road system* related to motorized *traffic and parking* consume the majority of resources, followed by the *public transport* system.



Once more, as in the previous analysis about the space devoted to each mobility sector, the fact that the road system transformation receives the bigger amount, not necessarily means that plans are favouring traffic. Depending on the character and intentions behind the interventions, it could also favour sustainable transport modes. That is why a qualitative analysis of measures becomes necessary. Nevertheless, the criteria in money allocation and the final budget structure do reflect and reinforce the tendentious approach and procedures pointed before. It is remarkable the case of *parking*, which in some plans consume almost 80% of the economic resources.

It is also interesting to compare the budgets with other characteristics of the plan, like the terminology used or the declared intentions and the new hierarchy of public space users. For instance, the following figure shows the difference the extension of the proposals and the money finally allocated to each sector.

Proposal extension vs Budget



Areas of intervention

As mentioned in chapter 2, to achieve a more sustainable mobility model and better life quality for citizens and future generations, SUMP guidelines recommend an integrated approach of practices between policy sectors (land-use, environment, economic development, social inclusion, gender equity, health, safety, etc.). Nevertheless, the contents of the *Action's Programs* studied so far are essentially infrastructural.

Confirming the second work hypothesis, strategies and actions in other areas, like *educational/culture, urbanism, social/economy, juridical* or *demand management*, are marginal, considered complementary to the main infrastructural corpus. However, infrastructure is only one of the multiple variables with influence on the modal choice. *Distances/time* and *economical cost* are other significant constraints to the election of the most suitable

mode for different trips. It is a partial approach in terms of areas of intervention, but also one-sided in the way plans address the infrastructure (road system). Similar to the *Diagnosis*, *Proposals* are excessively constrained by traffic and circulation, as it will be detailed further down. There is a minimum consideration towards social interaction and permanence in the public space. None about other functions of the road system in towns, like urban morphology, installations support, biodiversity and metabolism (Pozueta 2014).

Summing up, the approach restricted to circulation matters with an exclusive infrastructural answer to the problem is not sufficient to archive the challenging goals proposed in SUMP. Furthermore, this bias prejudices especially pedestrians and vulnerable population, like disabled, children and elderly.

Usual measures compilation

Regardless the differences between cities in terms of size, urban model and feature (density land uses distribution, morphology, etc.) all plans present a very similar set of programs and actions. It is like a "magic formula", repeatedly prescribed, irrespective of the diversity of urban realities and mobility patterns exhaustive analysed in each plan's *Diagnosis*. The most usual measures proposed for each mode of transportation are synthesised in the following tables. The underlined topics are the ones of doubtful contribution to a more sustainable mobility model:

| Road system and traffic | Private car |
|---|---|
| - New road hierarchy and circulation scheme | - New Network (restrictions vs. <u>facilities</u>) |
| - Traffic restriction in singular areas | - Car-sharing |

| (historic centers, residents, etc.) - Traffic calming (30 zones) - New circulation ordinances - Road Safety Plan - <u>Measures to favor traffic flow (ring roads and new connections/access, simplifying intersections, street conversion to one-way)</u> | - Car-pooling - Eco-driving training - <u>Financial aid for efficient vehicles' purchase</u> |
|--|---|
| Public transport | Parking |
| - Complete system reorder (network redefinition and integration) - New modes of high capacity (tram or subway) - New technologies (SAE) - Intermodality (Hubs, park & ride, free transfer) - Special or unique rate - Bus lane and priority in traffic lights - Fleet renewal (vehicles and fuels) - Discretionary transport (work or school) - Metropolitan transport authority - Taxi system and fleet renewal - Improving universal accessibility to vehicles, stops and stations | - Parking streets regulation (central areas) - Reduction of parking in the streets to improve or expand pedestrian, cyclist or public transport space - Disabled (provision, location and design) - Standards review for facilities, work places and residential areas (<u>increase</u> vs. supply reduction) - <u>Dissuasive Parking (Park and ride)</u> - <u>Network of underground and surface parking (combinations of residents and rotation, usually increasing supply)</u> |

Some plans advocate for traffic fluency and propose the expansion of infrastructures as a solution for congestions. In addition, some interventions

over the street system in order to improve traffic efficiency, like the simplifications of intersections or reduction of the possible directions in main axis. However, it is demonstrated that road expansions or better connections do not necessarily solve congestion. Because of new cars attraction effect, the new infrastructures capacity is fulfilled in short time terms. About the actions on intersections and directions, it is important to notice that in many cases it ends up to penalize other users, specially pedestrians and cyclists.

About parking, any improve of the current offer encourages ownership and more car use, since car displacement depends on the existence of parking in origin and destination. Therefore, when plans talk about *Dissuasive parking* (term usually applied in Spain referring to *park and ride*) they fall into a contradiction and generate some expectations that will not be fulfilled. It is important to highlight that this parking modality might dissuade long distance trips from periphery neighbourhoods to cities' centres. However, at the same time, it generates a local displacement by car, that should be solved better walking, by bicycle or local public transport.

| Pedestrians | Bicycle |
|--|--|
| - Pedestrian Network (variety of schemes: superblocs, principal and local, themed itineraries) - Universal accessibility (removing barriers) - Extension of pedestrian space (sidewalks, coexistence, and pedestrian streets) - Improving itineraries continuity and cross-permeability | - Cycle network Implementation (variety of schemes) - Public bicycle-sharing systems - Bicycle parking network - Signposting to improve coexistence with other modes - Intermodality with public transport - New municipal ordinances |

| | |
|---|--|
| <ul style="list-style-type: none"> - Improving crosswalks - Improving environmental quality (biodiversity, soil permeability, visual contamination and noise control, furniture, etc.) - Pedestrian signposting - Vertical public transport (urban elevators) | |
|---|--|

For pedestrians and cyclists, the most interesting advancement in the technical approach in the introduction of concepts, like *network and itinerary*. The idea that walking and cycling are important modes of functional mobility leads to the necessity of a specific functional network. To be comprehensive regarding territory and land uses, networks must include a series of itineraries, which connects the residential areas with the main centralities (public facilities, green areas, work places and commerce, at different scales, from the very local to the city scale).

In turn, in this technical glossary, *Itinerary* means as a group of streets and public spaces that provide access to the different destinations attending to the specificities of the different users in order to assure safety, comfort, and universal accessibility.

The consolidation of both concepts, *pedestrian itineraries* and *network*, in the planning literature and instruments, is fundamental to establish a more balanced “negotiation” with other modes of transport in the public space share.

| Complementary measures | |
|--|---|
| Logistics | Other |
| <ul style="list-style-type: none"> - <u>Spatial and time distribution regulation -Ordinance and places allocation for goods loading and unloading operations</u> - Neighborhood logistical hubs - Information systems | <ul style="list-style-type: none"> - Mobility Plans at workplaces - Safe roots School - Communication Plan: awareness-marketing - Integration of mobility in urban policies - Plan for demand for mobility management - Public space - civic space - Training and education programs - Road Safety Plan - Accessibility Plan |

Logistics and transport of goods have a crucial role in the cities daily life, and should have more prominence and complexity in urban mobility planning. It is not helpful to assign a secondary role to this activity in the planning instruments, as the result is a subsidiary relation with other types of transit, mostly in private cars and for going to work. Space and time distribution regulations for loading and unloading operations usually has the aim of reduce interference with private motorized traffic in the rush hours. By this way, to favor traffic flow, policies ends up to generate new problems, like noise and annoyance of neighbors during inappropriate hours or the reduction of the environmental quality of local public spaces.

Impact on public space

The different modes have to share one single infrastructure that is basically the city’s street system. There are more or less possibilities for pacific

[illegible]

Moreover, some times, parts of the main streets are part of local walking itineraries, to go to school, daily shopping or errand, for instance. Therefore, they should be an important part of the pedestrian network as well. In other cases, main streets divide neighbourhoods or establish the relation between two different urban areas. In both cases, the accumulation of traffic in those streets reduces the possibilities of interaction between people from both sides and isolates some areas.



~ 165 ~

In those cases, where the same street is a main axes for both pedestrian and traffic, the question is which design criteria will prevail. To provide a new share of a limited public space, attending to contradictory necessities, is not an easy task. Specially considering that those streets are normally the most important for public transport and bicycle as well.

Citizen participation

SUMPs' manuals include the citizen participation in different planning phases and implementation processes, as a fundamental feature for its success (IDAE 2006). Nevertheless, in not all SUMPS there are specific chapters or concrete references about the development or the results of participatory processes.

Only two out of the five plans analysed so far include a section to explain the citizen participation and report its results. In those plans, there is no reference to a pedestrian association or named representative of this collective between the stakeholders.

The situation is different for cyclists, which have more consolidated experience in civil organization to include the bicycles in the public agenda. Other stakeholders usually present are political parties' representatives, trade unions and entrepreneurs, mostly from the public transport sector. In this framework, the best advocacy for pedestrian matters come from disabled people associations, usually invited to take part in those processes. In this case, similar to *Diagnoses*, the hypothesis demonstration demands an accurate analysis system, which should provide a deeper understanding of how citizen participation addresses pedestrian matters.

5. Conclusions

The method permits to take conclusions about the hypothesis and it is possible to access pedestrian consideration in SUMPs. The sample and the analysis did so far, confirm the work statements formulated at the beginning. Moreover, the results add complexity to the hypothesis and reveal new aspects to investigate:

There is an unbalanced attention to each mode of transportation in the diagnosis and the correspondent proposals' sets. In addition, the balance is more in favour of motor traffic: public transport and automobiles has the biggest consideration, while pedestrians and cyclists are subsidiary, both in the diagnosis and proposals.

Proposals and actions are mainly infrastructural. Furthermore, the way plans addressed infrastructure does not necessarily contribute to a more sustainable mobility.

Pedestrians do not take place in citizen participation processes as an organized collective or stakeholder namely represented. While cyclists, disabled, or entrepreneurs, from the public transport and automobiles sector, have a consolidated presence throughout organized associations.

The public space configuration that might result of the measures application do not fully correspond to pedestrians' necessities. The most common circulation schemes constrain walking to the local and residential scale and generate barriers inside the city as the result of the traffic concentration in main street, that compose the so-called "basic" or "primary" network.

So far, the sample is not enough to extract over-all conclusions, but the methodology leads to interesting results on the comparison between SUMPs

or between the instrument and the technical guidelines. The research continuation and the sample enlargement, may lead to a general view of its object and average figures about the indicators of analysis.

Despite the identification of different planning methods, SUMP's often repeat the contents and structure. The documents mainly devote to reorganize the road hierarchy and the transport networks. While policies related to other like social matters, education/culture, urbanism, economy/taxes, regulatory framework or demand management, are marginal or considered complementary.

Action programs contain mainly infrastructural and traffic management measures, with the declared aim of promoting lower impact modes. However, the proposed "new" hierarchies of streets remain highly conditioned by traffic requirements. There is little or no consideration at all towards other activities beyond circulation that take place in the street. This bias prejudice especially pedestrian and leads to a low quality public space, with a segregated and reduced use.

Methodologies, exclusively focused on circulation, also neglect other functions of the road system, like determine the urban morphology, cover and distribute urban services (water supply, energy and communications, sewage, etc.) and contribute to the cities' environmental equilibrium (biodiversity, thermal comfort or soil permeability and water cycle). In addition, the actions proposed for the road network regarding the use of private cars and parking are not always restrictive, but some even promote this kind of traffic and its.

In any case, in Spain SUMP's represented a great advance in mobility policies and an important space for technical, political discussion and public awareness. The instrument still has a lot of its essence as *traffic plan*, nevertheless it introduced some new design criteria to favour pedestrians and bicycle transit in the municipal policies.

As a strategic document, it projects significant changes in traffic sector, but forget some very important aspects related to the mobility generation: cultural and educational aspects, urbanism or economic constraints, for instance. However, this limited vision is not part of SUMP's legal or technical framework, fact that represents an opportunity to maintain its potential as a useful planning instrument. For that, it is important to improve its diversity in terms of intervention scope, as it is necessary to redefine and enhance its attention towards pedestrian matters and the quality of the public space.

6. Bibliography

- GIAU+S. 2010. *Catálogo de Experiencias Españolas en Movilidad Sostenible y Espacio Urbano*. Madrid:
- Grupo de Investigación en Arquitectura, Urbanismo y Sostenibilidad de la Universidad Politécnica de
- Madrid e Instituto para Diversificación y Ahorro de Energía – IDAE.
- GREGORIO, S. de. 2013. *Políticas de Movilidad Urbana sostenible en España (2004-2011). Un análisis desde la perspectiva de la gobernanza*. Madrid. Centro de Estudios y Experimentación de Obras Públicas - CEDEX.
- IDAE. 2006. *Guía Práctica para la elaboración e implantación de Planes de Movilidad Urbana Sostenible*. Madrid. Ministerio de Industria, Gobierno de España.

- IHOBE, 2004. *Agenda Local 21. Guía Práctica para la elaboración de Planes Municipales de Movilidad Sostenible*. Vitoria. IHOBE. S.A. Gobierno Vasco.
- LAMIQUIZ, F; Porto, M; Pozueta, J. 2009. *La ciudad paseable*. Madrid. Centro de Estudios y Experimentación de Obras Públicas - CEDEX.
- POZUETA, J. 2014. Nuevos criterios para el diseño y clasificación del viario urbano. *Carreteras: Revista técnica de la Asociación Española de la Carretera*. 2014. (193) p 33-53.

7.Author

Mateus Porto Schettino, Architect and Urban Planner, Universidade de Brasília, UnB." (2003). PhD courses and Diploma of Advanced Studies in Peripheries, Sustainability and Urban Vitality. Department of Urban Planning, ETSAM. UPM, Madrid. (2005-2007) Diploma of Advanced Studies. Department of Urban Planning. ETSAM. UPM, Madrid. (2009) PhD thesis on Sustainable mobility plans and its relation with urban planning in Spanish medium cities. Professor, Department of Urban Studies a at the School of Architecture of the Universidad Europea de Madrid. (Since 2009)

FINAL CONCLUSIONS

By Jonathan Manns, ECTP-CEU Young Planners Workshop Facilitator

The relationship between urban planning and space mobility has, in many ways, come to define contemporary approaches to city design and management. However, whilst the tide appears to be turning, this workshop reinforces the need for continued and collective action to ensure that sustainable principles are integrated into the built form of our urban areas.

Widely promoted by activists and architects alike, the emphasis on sustainable transport relates directly to the compact cities concept. Actively promoted by international figures such as Jane Jacobs, Jan Gehl and Richard Rogers, this model represents a symbolic rejection of car-dominated transport and land uses which came to dominate much of twentieth-century design.

It's a challenge which hasn't gone away. There is a continued reliance on car use in most European cities. Likewise, as revealed through research in Serbia, the challenge continues to grow in certain areas. The post-socialist experience in many Central and Eastern European countries, for example, has resulted in a pronounced growth in car ownership, reflecting the vehicle's aspirational status. The result, as occurred elsewhere in the world, has been to increase pressure on streets and erode possible political support to restrict their use.

The need to encourage more sustainable transport has nonetheless been recognised transnationally. Each paper demonstrates how the importance of mobility has been transmitted both internationally and to the local level.

They also reveal that plan-makers and decision-takers today engage with far wider discussions about the way in which people relate to the spaces in which they live, work and play.

The workshop research within this collection collates and demonstrates a range of possibilities relating to the design and development of our public spaces. Each has the potential to change the current paradigm; encouraging more sustainable modes of transport (such as walking and cycling) whilst simultaneously creating more sociable and liveable environments.

Encouragingly, there is evidence that small and cost-effective interventions can make a big difference. Take, for example, the Belgian suburb of Molenbeek. One of 19 municipalities in the Brussels-Capital Region, it is a poor district within the city's "croissant pauvre" which investigators believe was the operational base for the network that launched the "November Attacks" in Paris in 2015. Yet, there is scope for tangible improvements to public space. Here, spatial public realm interventions have established physical integrations which simultaneously integrating people socially and improve their perceived relationship to others.

Molenbeek demonstrates how liveable streets might in fact be the first act in delivering liveable cities. Elsewhere, the workshop papers reveal how this demands a change in approach. At the most basic level, this requires recognition that it's at eye-level that we experience the city. The ability to walk and cycle should therefore be a key consideration not only because of the sustainability and cost benefits but because it plays a significant role in the public perception of space, both as residents and visitors.

We still have a long way to go in this regard, with more work research needed on exactly how our cities function. Evidence from Cork indicates that some 67% of all pedestrian crossings in the city don't function correctly. In failing to allow sufficient time to cross junctions by foot (some 7.5-8 seconds on average) it encourages behaviours such as "jay-walking" which creates conflicts with other road users and is illegal under Irish law.

The implication is undoubtedly that mobility needs to become a more important consideration, but herein lies the on-going challenge. In smaller Serbian cities, planning simply does not happen. Consequently, there is a lack of any regulatory framework through which to encourage change and secure funding for interventions which may prove beneficial. In Spain, where Sustainable Urban Mobility Plans are prepared, many lack consistent criteria. Most do not typically account for the pedestrian experience or have appropriate evidence as to how each mode of transport is used.

Across Europe, the legislative context for mobility considerations and weight attributed to them by local authorities lags behind our understanding of what is required. Whilst we will continue to need long-term strategies for the foreseeable future, this short-term deficiency creates scope for soft-measure documents. This includes measures such as design guidance and best practice presentations. It also exemplifies the benefits of collaborative workshops such as those overseen by the ECTP-CEU.

In exploring such issues further, the need for new and innovative approaches to understanding sustainable mobility becomes paramount. Research in Dublin demonstrates clearly how emerging notions such as that of the "urban flâneur" could reveal new understandings of how people relate to the space around them. In conjunction with technical assessments, such as

Street Clutter Audits, these could serve to explain how and why people behave as they do, informing lasting solutions.

Taken together, the workshop findings expose the importance of our streets as opportunities for connection, at various levels, both by foot and pedal. All too often obstacles to cross as opposed to amenities to enjoy, they set out important examples at a time when there is an environmental imperative to address climate change and reduce reliance on fossil fuels. Far from the uncertainty facing those like Jacobs, these papers paint a positive image for the future of our streets; with a key role in bringing people together, enhancing the environment and securing a better quality of life.

PARTICIPANTS AT THE WORKSHOP MEETING IN BRUSSELS, ON JULY 4TH 2016.

COMMITTEE OF THE REGIONS-THE XITH EUROPEAN URBAN AND REGIONAL PLANNING AWARDS.



Photography courtesy by Julian Hills