

TRANSPORT AND SOCIO-SPATIAL INEQUALITIES

The Case of the Istanbul Metro

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Abstract

In this thesis, socio-spatial processes regarding the distribution of transport infrastructures are investigated and the ways in which inequalities occur as a result of these processes are discussed. The transport system of Istanbul and particularly, the Istanbul Metro, the first modern subway of the city, has been the focus of this research.

In order to understand inequalities in transport, social and spatial justice theories have been employed. Discussions have been extended in order to include different approaches to the issues of transport inequality from various disciplines such as geography, sociology and urban planning. In this sense, this study is multi-disciplinary. Debates on land rent theory, space and power, gendered mobilities, social exclusion and the right to the city are among the many concerns that formed the main arguments of this research.

In this thesis, transport is taken as a fixed, an immobile commodity that produces mobile and dynamic commodities such as mobilities and flows. Through such interaction socio-spatial processes are produced which may or may not consist of inequalities. Issues related to inequalities are deconstructed in the literature review in order to help reconstruct a theory of uneven socio-spatial development as a result of the distribution of transport infrastructure investments. Discussions on theory are further examined through four empirical chapters each of which investigates different issues related to transport inequalities. A mixed-method

approach has been used in order to fully explore the complexity of the subject and integrate different epistemological positions.

Through four empirical chapters, socio-spatial inequalities are discussed with regard to daily mobility levels of different socio-economic groups in Istanbul and the Istanbul Metro as well as in-direct economic impacts of the Metro and the socio-political processes it generates. The findings support some of the previous research on social inequalities based on transport, especially on how gender, education and employment become important determinants of travel time, trip frequency, trip purposes and the use of different transport modes. Yet, the thesis presents unexpected results on the impacts of the Istanbul Metro. On the one hand, the Istanbul Metro can be regarded as a *just* infrastructure as it accommodates users from every socio-economic background. On the other hand, it can be inequitable as it is likely to facilitate the accumulation of capital in certain areas, and circulation of producers and consumers of this capital within the same spatial unit, the Metro itself.

This thesis proposes that horizontal and vertical socio-spatial inequalities exist both individually and together in various contexts in Istanbul. These inequalities are based on the spatial distribution of transport infrastructure investments, power relationships between different socio-economic groups, the dominance of politically powerful groups and the historical development of the urban space. Together this thesis is in an attempt to establish a comprehensive narrative of the discourses of inequalities in transport planning and policy and makes suggestions on the ways to reduce such inequalities. Moreover, this thesis is an original contribution to the literature as it links hitherto unconnected strands of theory in transport geography and social and spatial justice literatures.

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Abbreviations

AKP	Justice and Development Party
ANAP	Motherland Party
CBA	Cost-Benefit Analysis
CBD	Central Business District
CHP	Republican People's Party
GHMB	Golden Horn Metro Bridge
HBO	Home-Based Other
HBS	Home-Based School
HBW	Home-Based Work
ICOMOS	International Council on Monuments and Sites
ICS	Information and Communication Services
KTVKK	Committee for the Conservation of Cultural and Natural Heritage
NHB	Non-Home Based
TAZ	Traffic Analysis Zone
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHC	World Heritage Committee

Chapter 1

Introduction

1.1 Scope and aim of the study

Inequalities are found in every aspect of life and they are seen as the reason for almost every problem societies are facing – from health and obesity to crime, low life expectancies, teenage motherhood, education and even deprived social relationships and trust (Wilkinson and Pickett, 2010). These inequalities are not related to the GDP of countries or the national income per person nor are they only faced in the underdeveloped world. In fact, high levels of inequalities are in the centre of many issues in developed countries. According to Wilkinson and Pickett (2010) countries with the largest gap between the income levels of the rich and the poor are the most unequal countries and the more unequal a country becomes the higher the level of inequalities generates.

Aiming to understand why social inequality persists, Dorling (2011) discusses that the beliefs we hold are the source of most of inequalities in the world. Five faces of social inequality, elitism, exclusion, prejudice, greed and despair, Dorling (2011) notes, continue to exist in one form or another even though we give them different names. Yet, as Wilkinson and Pickett (2010) discuss “the effects of inequality are not confined just to the least well off: instead they affect the vast majority of the population” (p. 176). Therefore, tackling the issue of inequality is important for the sake of everyone.

This thesis concentrates primarily on urban space and the urban scale since inequalities are more likely to appear as consequences of power relationships and global capitalist forces in cities. Sassen (2001) discusses how inequalities and polarisation evolve in the global cities of London, New York and Tokyo. Similarly, one can suggest that every now and then the capitalist system suffers from economic crises that emerge in these global hubs (Harvey, 2010). Therefore, as centres of both global crises and social, economic and environmental inequalities, cities have always been at the centre of any discussion on space and power. As Merrifield and Swyngedouw (1995) points out, in various analyses of space and justice, cities are considered as “vital crucibles of power - a pivotal axis around which theories of justice and ‘radically open’ empowerment are constructed” (p.13).

In a recent study, Ballas (2013) discusses that social justice and inequalities are important determinants of quality of life and well-being in cities. He argues that issues of socio-spatial inequalities and social justice carry important policy implications for cities: reducing inequalities leads to safer, healthier, more sociable, peaceful and happier societies and cities.

Transport is an important element for creating and maintaining healthy, happy and liveable cities. In the last three decades transport research has developed a great awareness in understanding social and spatial inequalities that generate through transport’s interaction with space, people, environment, capital and other flows and commodities. Studies from different disciplines such as geography, sociology and economics employ transport policy and planning either as a tool to explain social and spatial inequalities and consider transport as one of the many determinants of socio-spatial injustice (Harvey, 1973; 2006; 2012; Soja, 2010; also see Graham, 2010 for geographies of disruption) or discuss cases in which social inequalities based on transport policy and planning are of great concern (Banister, 1994; Cervero, 2003; Church and Frost, 1999; Church et al., 2000; Dowling, 2000; Dobbs, 2005; 2007; Farrington, 2007; Hine and Mitchell, 2003; Hine, 2008; Lucas et al., 2001; Lucas, 2004;

McDonagh, 2006; ; Ohnmacht et al., 2009; Preston and Rajé, 2007; Social Exclusion Unit, 2003; Sanchez et al., 2003; Rajé, 2004, Uteng and Cresswell, 2008; Uteng, 2009).

Social and spatial inequalities regarding transport may occur as a result of economic growth. For instance, Harvey (2006; 2012) argues that uneven geographies emerge as a result of the accumulation of immobile physical and social infrastructures, “urban-growth machines” (2012, pp 102) such as transport infrastructures, in cities and regions (discussed in Chapter 6). Moreover, further inequalities occur as a consequence of the lack of accessibility to jobs, education and health facilities and as a result of power relationships between the public, politicians as well as between different members of the society based on their gender, wealth, social status and ethnicity¹ (discussed in Chapters 7 and 8).

The underlying assumption of this thesis is that transport infrastructures, along with other infrastructures such as communication, education and other physical and social infrastructures, are commodities that produce and reproduce space in order to facilitate flows and mobility. This mode of production is a prerequisite of the capitalist system that establishes its roots through flows of capitals, including money, labour, commodities and services. Such a production results in inequalities within different contexts and at different scales. Moreover, the process of production itself may be unjust.

The Marxist analysis of commodity helps us to establish a narrative regarding how socio-spatial inequalities are generated at every spatial scale from the individual to the urban and to the global level by looking at the ways in which commodities become important elements in retaining happiness (Ballas, 2013). Ballas (2013, p. 7), drawing on Marx (1847) and Adam Smith (1759), points out that “social comparison of consumption patterns” are important issues in defining social inequalities. Individuals tend to compare their possessions with others and become unhappy in cases of dissatisfaction – also an indicator of

¹ Key thinkers and research on these issues are mentioned in the previous paragraph.

greed and envy which are amongst the causes of inequalities as Dorling (2011) suggests. In this thesis, the issue of social comparison is also explained from a spatial perspective. As will be discussed in Chapters 6 and 8, transport infrastructures, especially when combined with urban planning policies, become important elements in accumulating capital in certain areas which may lead to 'spatial comparisons' and therefore, spatial inequalities. An in-depth analysis of the accumulation impacts of transport infrastructures is presented throughout the thesis.

Although in recent years, there has been some progress in transport research to include social and spatial impacts of transport infrastructures and transport policies, and the resulting inequalities, there is yet a need to establish a deeper understanding of such issues in order to achieve the development of socially and geographically even spaces, cities, regions and countries. The main purpose of this thesis is to bridge the gap between social and spatial thinking in transport, between theories originating from different disciplines, and between different methodological approaches to social and spatial inequalities generated by transport infrastructures. Addressing these gaps is critical to enhance our understanding of inequalities in transport in order to help reshape the future of transport planning and research. This is done through an extensive case study of the Istanbul Metro.

Istanbul's transport system and the Istanbul Metro line have been evaluated from a variety of perspectives, spatial, social, economic and political, with reference to the resultant socio-spatial inequalities. The characteristics and embedded politics of the Turkish planning system set boundaries of this research. Moreover, Istanbul as the driving force of the Turkish economy as well as one of the emerging cities of the world, generates peculiarities. Therefore, the findings of this research may be unique to Istanbul and to the Turkish context and some findings may not be comparable to other countries with different political systems and traditions. Having stated this, it should also be noted that there is especially one context through which the findings of the study can be applicable to other cities and countries, that is

evaluating the socio-spatial inequalities in Istanbul within the context of “cities in-between integration and disintegration” (borrowing the term from ISoCaRP’s 2006 annual international conference theme). Cities from both developing and developed countries can be evaluated within this context.

There are examples where such conflict between integration and disintegration can be observed in various scales and contexts. For instance, Los Angeles and New York City are evaluated within the global city context (Sassen, 2001). However, since they produce the widest gap between rich and poor in the developed world according to United Nation’s report (UN, 1992), they can also be evaluated within the context of *cities in-between integration and disintegration*. Likewise, it can be stated that policies trying to integrate developing regions to the global economy may also disintegrate parts of society from each other both socio-economically and spatially. The findings of this thesis on Istanbul, therefore, are likely to be applicable and comparable with other cities in the world.

1.2 Research questions

After this brief review of the aim and the scope of the thesis, the main research question can be formulated as follows: “to what extent can transport evenly distribute the social, economic and spatial impacts it generates?” The underlying assumption throughout this study is that *transport systems have an important role in creating and distributing socio-spatial processes which may not always be shared evenly and enjoyed equally by all the members of the society and across the urban space.*

In order to answer the main question, a case study is conducted. The selected case is the first modern subway line of Istanbul. According to Banister and Thurstain-Goodwin (2011), it is important to assess the (economic) impacts of transport infrastructures in four points in time: before the decision to build was taken, prior to opening, immediately after opening and further downstream (p.217). Therefore, it is necessary to analyse a ‘completed’ transport project in order to be able to understand the socio-spatial inequalities it generates. Although

the Istanbul Metro has been in operation since 2000, it is still being expanded further². Thus, its impacts are yet to be fully realised.

The main research question has been divided further into inter-related sub-questions in order to expand the discussion and allow for more substantive research. Answering them with respect to each other will develop an explanation of socio-spatial processes and inequalities within them. Each sub-questions has been subsequently addressed in the various chapters of the thesis, as structured below.

1. What is the role of transport in generating socio-spatial injustices and what are the key issues related to the unjust applications of transport that any transport policy needs to address? (Chapter 2)
2. Is there a relationship between the physical mobility levels of the residents of Istanbul and their socio-economic status? (The case of Istanbul, Chapter 5)
3. What are the in-direct economic benefits of transport infrastructures? To what extent, do they foster uneven economic growth through accumulation of impacts in certain areas? (The case of the Istanbul Metro, Chapter 6)
4. Who are the users of transport infrastructures? Is it possible to discuss the existence of specific user-profiles for different modes of transport? (The case of the Istanbul Metro, Chapter 7)
5. What are the socio-political meanings attached to transport infrastructures? In what ways can we discuss democratic rights to the city in terms of rights to transport and mobility? Is there a need to reformulate transport planning and policy in order to address issues of inequalities in transport? If so, how can this objective be achieved? (The case of the Istanbul Metro, Chapter 8 and discussions in Chapter 9)

² During the course of this research seven new stations opened.

This research lies at the intersection between the theories of social and spatial justice and draws on and contributes largely to the transport geography. It employs a number of key ideas from feminist geography, mobilities literature, philosophy, economy and urban planning and policy.

This thesis focuses on the production of space through social, economic and political forces, the socio-spatial inequalities generated during this production and the linkages between systems of transport and these inequalities. Therefore, the main concern is the role of transport in the production of 'uneven geographies' (Harvey, 2006; 2012; Soja, 2010). Moreover, this thesis positions itself within a spatial understanding that draws on Marx's ideas on the production of commodities, employing key concepts developed by Lefebvre (1976), Harvey (1973; 2000; 2003; 2006; 2008; 2012), Castells (1983; 1996; 1997; 1998) and Soja (1980; 1989; 1996; 2000; 2003; 2010). Working within this theoretical framework, the study is intended to recognise transport infrastructure as an immobile, fixed commodity that produces commodities of flows and mobilities and access to which is controlled by power relationships expressed in space. In order to better understand these power relationships, Massey's (1994) notion of geometries of power, Harvey's (1990; 1996) space-time compression, Foucault's (1976) ideas on power and Sen's (Nussbaum and Sen, 1993; Sen, 1999a; 1999b; 2009; Nussbaum, 2000; 2006) capability approach are also considered.

Although there are philosophical and methodological differences between these bodies of scholarly work, in this thesis, no single theory is favoured over the other. All approaches are very valuable as they provide different and often complementary explanations of transport's role in generating socio-spatial inequalities. Therefore, an eclectic approach to theory brings different dimensions to research. These selected theories on social and spatial justice work in conjunction with each other to form the various considerations that need to be taken into account when thinking of systems of transport as contributors to socio-spatial inequalities. Furthermore, this thesis not only lies conceptually at the

intersection of these theories but also evaluates them within the transport geography and mobilities research. The theoretical framework, therefore, constitutes a synthesis of social exclusion studies (Church and Frost, 1999; Church et al., 2000; Lucas et al., 2001; Social Exclusion Unit, 2003; Hine and Mitchell, 2003; Hine, 2008; Sanchez et al., 2003; Rajé et al., 2004, Cervero, 2003; Lucas, 2004; McDonagh, 2006; Farrington, 2007; Preston and Rajé, 2007; Ohnmacht et al., 2009), gendered mobilities (Dowling, 2000; Dobbs, 2005; 2007; Uteng and Cresswell, 2008; Uteng, 2009), ideas on freedom and restraints to movement (Sager, 2006; Amin and Thrift, 2002; Jensen, 2009) and mobilities (Urry, 2000; 2007; Kaufmann et al., 2004; Sheller and Urry 2006; Adey, 2010; Cresswell, 2010; 2012; Cresswell and Merimann, 2011). Finally, the disadvantages of following an eclectic approach are eliminated with a case study approach combining qualitative and quantitative methods. The methodology of this thesis is described in detail in the following paragraphs as well as in Chapter 3.

1.3 Methodology and structure

The primary methodology is a detailed case study preceded by an extensive literature review. The literature review is composed of two parts in one chapter. In the first part, the concept of spatial justice is deconstructed in order to construct a theory of socio-spatial justice for transport research and to discuss the spatial turn in social sciences. This is followed by a review of spatial discourses in social justice literature in order to make a synthesis of both theories, which are believed to explain the complicated issues of inequalities at different scales from the body to cities, regions, countries and the globe. This is followed by a discussion of the role of power and politics in generating uneven geographies, thereby, linking the historical importance of urban areas and the debates on the right to the city as well as the importance of cities in reclaiming people's place in socio-spatial, economic and environmental struggles. This section is concluded with an attempt to explain future challenges that the social and spatial justice thinking face.

The second section of the literature review focuses on the ways in which transport infrastructures create social and spatial inequalities based on the discussions in the first section of the literature review. In addition, the section employs Marx's theory of rent (Marx, 1990 [1894]; Harvey, 1973), the literature on social exclusion, mobilities and gender, environmental justice and the discourses of space and power in transport. The literature review presents a set of issues that need to be considered for ex-post and ex-ante analysis of the selected transport project and policies. Such a policy package can be used during the application of new policies and for understanding the aftermath of policy and projects and have been picked up later on in Chapter 9.

Transport research is produced within a complex set of political, economic and social relationships and is therefore an area that continuously needs to develop its understanding of the socio-spatial and political processes attached to it and make their evaluation with reference to the externalities and related causalities produced by the system as a whole. As mentioned earlier, in order to understand the socio-spatial inequalities further, findings in the literature are assessed through a case study. Empirical work is an important tool for understanding and developing theory. Discussing the importance of case studies in social sciences, Flyvbjerg (2011) emphasises that context-dependent knowledge helps building expertise and that knowledge produced through case studies is more valuable than the search for predictive theories and universals (p.304). Moreover, empirical studies are keys to advancing theory, as they provide testing grounds for various theories, test their feasibility and contribute to the feedback cycle. The logic and the importance of using case studies as a research strategy will be largely discussed in Chapter 3. Hence, empirical work based on case studies is an important tool for understanding and developing transport theory.

The case study consists of two components: Istanbul's transport system as a whole and the Istanbul Metro. The former helps evaluate the findings of the main case study, the Istanbul Metro, from a systems point of view while trying to understand the social and spatial

inequalities in Istanbul and their possible relationship with the transport network (Chapter 5). The latter provides a deeper understanding of spatial, social and political inequalities generated through transport infrastructures (Chapters 6-8).

A mixed-method approach has been employed in this thesis. Mixed-method approaches “[focus] on collecting, analysing and mixing both qualitative and quantitative data in a single study or series of studies” (Cresswell and Plano Clark, 2011). Using a mixed-method approach is an important research strategy, as it not only helps the researcher avoid the quantitative-qualitative binary (Kwan and Schwanen, 2009) but also provides strengths that offset the weaknesses of both quantitative and qualitative research (Cresswell and Plano Clark, 2011), gives opportunities for cross-referencing (Philip, 1998), thereby, enhancing a wider understanding of complicated issues (Philip, 1998; Creswell, 2003) and providing for explanations of a complex phenomenon. Chapters 5 to 7 follow a quantitative approach while Chapter 8 applies qualitative methods. All chapters and methods used in them complement each other in theory and methodology. This, along with the mixed-methods approach, has been discussed in detail in Chapter 3. The results of quantitative and qualitative analyses have been merged in the discussion in Chapter 9.

The four empirical chapters are bound together to explain one phenomenon: the socio-spatial inequalities based on the distribution of transport infrastructures. Each empirical chapter has its own conceptual and theoretical background as well as a detailed methodology section and conclusions. In each chapter, a different issue raised from the literature review has been analysed. Chapter 5 generates a discussion on the socio-spatial inequalities in Istanbul based on its transport system while Chapter 6 evaluates the impacts of the Istanbul Metro from an economic point of view. Chapter 7 provides an evaluation of social impacts of the Metro by employing mainly the literature on social exclusion. Finally, Chapter 8 presents a political analysis in order to understand the role of decision making and

planning on the development of the Metro corridor with particular reference to inequalities emerging in such processes.

The outline of the thesis is as follows. Chapter 2 sets the theoretical framework, introduced in previous paragraphs, and outlines existing case studies. This chapter also engages with theories of social and spatial justice and examines issues of socio-spatial inequalities based on transport. The chapter is structured in two parts, 'deconstructing spatial justice' and 'seeking spatial justice in transport', which also sets the agenda for the empirical chapters. Chapter 3 provides a detailed description and rationale for including specific data types and sets as well as for the methodological approach of the thesis: mixed-methods. There is also a discussion of the difficulties in obtaining extensive quantitative and qualitative data used in the thesis as well as a critical examination of the quality of these data. Chapter 4 sets the stage for the empirical component of the thesis by establishing a connection between the literature review (Chapter 2) and the empirical chapters that follow. In this chapter, the historical and spatial development in Istanbul is explained to set the context of the case study. An attempt to understand socio-spatial inequalities in Istanbul is also made in this chapter to prepare the reader for the empirical chapters.

Chapter 5, the first empirical chapter, examines Istanbul's transport system as a whole and tries to establish a link between the socio-economic characteristics of its citizens and their physical mobility levels in the city by looking at the ways in which they travel by looking at transport measures such trip frequency and travel time. In doing so, issues of social exclusion and concepts such as motility (Kaufmann et al., 2004) are considered. This chapter not only sets the framework for the empirical study of this thesis as it evaluates the socio-spatial inequalities in Istanbul as a whole but also provides an important resource for the rest of the discussions on the Istanbul Metro.

Chapter 6, the second empirical chapter, engages with macro and micro economic theories related to transport. Here, the clustering impacts of transport infrastructures are

discussed as well as changes in property values resulting from transport infrastructure investments. The Istanbul Metro is examined at three scales: macro, meso and micro. Such an evaluation is based on Banister and Thurstain-Goodwin's (2011) assessment of the impacts of transport infrastructure investments at three different scales. In this chapter, this approach is modified slightly and an assessment is carried out using geographical scale as the criterion rather than the scale of economic impacts, based on the assumption that the Istanbul Metro is a local investment and thus, its impacts should be considered at the urban scale.

At the macro scale, employment and population changes around the Metro line will be evaluated in comparison with the rest of the city. At the meso scale, the impacts of the Metro in business clustering will be investigated and the growth in businesses and functional changes will be analysed. Finally, at the micro scale, the impacts of the Istanbul Metro on property and land values will be discussed. Overall, Chapter 6 tries to understand whether the Istanbul Metro has generated economic surplus, which in turn helped to enhance the economic development around the Metro stations and comments on possible consequences of the Metro in creating uneven geographies through accumulation of economic benefits in certain areas.

Following the discussions on the spatio-economic impacts of the Istanbul Metro Chapter 7, the third empirical chapter, provides an evaluation of the social impacts of the Metro focusing on social inequalities. It is assumed that as a result of the location choice of the Metro line, different activities in the city that the Metro connects, and restricted connections between the Metro and the majority of the transit system in Istanbul. For these reasons, the Istanbul Metro may have created its own user profile, an assumption, which is tested in Chapter 7 in order to understand whether the accessibility impacts of the Metro are distributed evenly in society or whether only certain groups benefit from this investment.

Thus, while Chapter 6 is focusing especially on spatial inequalities, Chapter 7 draws attention to the possibility of social inequalities generated by the Metro.

Chapter 8, the fourth and final empirical chapter, focuses on the socio-political meanings of the Istanbul Metro over space and time. In this chapter, social, spatial and economic processes created by different actors that have participated in the planning and decision-making stages of the Metro as well as the actors on the user side of this system are evaluated from a political point of view. The Istanbul Metro, therefore, is discussed through four main themes: plan adaptation, capital accumulation, images of the Metro and its role as a political platform.

In Chapter 9, the concluding chapter, conclusions from the four empirical chapters are drawn in order to construct an understanding of the socio-spatial, economic and political processes that transport infrastructures generate and the inequalities attached to these processes. Findings of this thesis are evaluated as a response to the research questions posed in the beginning of the study. They are also discussed for the value they add not only to the theories of transport geography and planning but also to theories from other relevant disciplines.

The spatial aspect of transport has been widely discussed, especially from an economic perspective, as well as from engineering and planning points of view. However, these discussions have lacked the social aspect of transport. Likewise, social approaches to transport have been less vocal in terms of the spatiality aspect. Yet, recently, there is a growing interest on the intersection of these two aspects of transport. Therefore, this thesis is a timely contribution to the understanding of socio-spatial impacts of transport that would enhance our understanding of inequalities related to transport and help to produce policies towards more just transport systems. Methodologically, this thesis provides a critical approach to determining socio-spatial inequalities in transport by mixing quantitative and

qualitative methods and basing the research on various resources. Both these factors make the thesis an important contribution to transport research.

Chapter 2

Transport and Spatial Justice: A Literature Review

2.1 Introduction

Spatial justice is relatively a new subject area. Its foundations have been laid in the emerging literature on spatial turn in geography, sociology and related disciplines, and the historical and contemporary debates of social justice. Having acknowledged the latest debates and disagreements on whether it is social or spatial justice that explains inequalities experienced especially in the urban context (see, for instance, Iveson, 2011) and the differences between approaches to social justice itself (Rawls, 1971; Sen, 1980; 2009), this thesis proceeds from the notion of spatial justice following Soja's (2011) comments on the mutuality of two terms and that thinking spatially (*seeking spatial justice*) adds to the search for social justice. Therefore, even though spatial justice takes the lead in this chapter, the interface between social and spatial justice and transport will be the focus. Furthermore, this chapter aims to bring social and spatial aspects together rather than separating them.

Although early contributions to spatial justice can be found in Lefebvre's *La Production de l'Espace* (1991 [1974]) and his earlier writings, and in Harvey's, *Social Justice and the City* (1973), the term has been first used by Pirie in 1983 and later on been developed by Soja (2010) over more than thirty years of research. Spatial justice, broadly speaking, explains socio-temporal and spatial processes that are produced and reproduced through human's interaction with space and with every element of it from other human and non-

human beings to goods, roads, objects at different scales from local to global and the emerging and reforming scales in between. Although theory of spatial justice has garnered the attention of scholars in a variety of disciplines, in transport this interest has been relatively small.

The spatial turn in transport has originated from other disciplines rather than from transport research itself. Although transport is spatial in its nature, the understanding of space has been quite superficial and two-dimensional until its interaction with these disciplines. Research on mobilities, mainly originated from research in sociology; analysis of agglomeration and network economies as well as labour markets has been developed by scholars mainly in economics and land use planning; the notion of the right to the city (and therefore, rights to mobility) has been largely discussed in geography as well as in arts, sociology, architecture and urban planning; environmental justice and the impacts of transport have been crucial to the research in health studies; the relationship between transport and gender has been quite important to the feminist geography. Transport research has made a considerable contribution in the area of social exclusion and accessibility studies that help us explain transport's impact on creating social and spatial inequalities. Nevertheless, there is a need for a deeper understanding of space and social justice in transport.

Therefore, the purpose of this literature review is to deepen the understanding of space in transport research and examine inequalities associated with it. This chapter addresses the following questions: what is the role of transport in generating socio-spatial inequalities and what are the key issues related to unjust applications of transport that the transport policy needs to address? In order to answer these questions, the literature review is composed of two parts: 'deconstructing spatial justice' and 'seeking spatial justice in transport'. In the first part, contemporary thinking on space is evaluated and the spatial turn occurring in geography in the last three decades of research is discussed. Following this, the

foundations of spatial justice within the social justice debate are investigated and the significance of spatial justice matters is discussed. This part of the chapter ends with some of the key issues and emerging topics related to this discussion.

Transport's role in creating uneven geographies is the focus of the second part of the chapter. Issues introduced in the first part are picked up in this second section to be evaluated with regard to transport. Here, an argument is established in relation to the fact that transport infrastructures are immobile elements that generate mobilities and flows of, for instance, money, information, people and images which are mobile in character and that also produce socio-spatial processes in which the injustices are embedded. Here, rather than exploring the outcomes of these unjust processes, the research has been extended to different theories and debates that target such issues and therefore, the focus is on processes more than outcomes. The chapter concludes with a discussion on how deconstructing theories of spatial justice in transport may help building a *just* transport policy agenda.

2.2 Deconstructing spatial justice

2.2.1 Space 'rediscovered' or the "spatial turn"

In the second edition of "Key Thinkers on Space and Place" (Hubbard and Kitchin, 2011), sixty-six theorists are included based on their role in shaping contemporary geography and advancing the "spatial turn" in social sciences. After years of research and 'thinking about space', Massey (2005) expresses that the spatial turn has been established as an important item in the agenda of human geography. Yet, due to its complexity and dynamism, thinking on space is an ongoing and evolving process rather than a finished project.

Discussions on space and time in geography have been supported by related disciplines such as sociology, anthropology, philosophy and economics. Among theorists of these disciplines, Bourdieu, Foucault, Giddens, Lefebvre, Urry, Sen, Sassen, Latour and Deleuze and many others can be mentioned as they have continuously produced theories of space-time and society. Even though many may not have directly written on geography, their

ideas have been elaborated geographically. For instance, Tim Cresswell's approach to Bourdieu's *habitus* has been important to understand the geography of social life and its relationship to the body and space (Cresswell, 1996; 2002). Similarly, even though Foucault did not directly publish his ideas on space or geography, it is possible to find his observations and concerns about spatial thought in his published interviews and lectures. Among those, in "Of Other Spaces" ("*Des espaces autres*", 1967, translation in 1986), a lecture that was published after his death, Foucault introduced the term 'heterotopias'. By using a series of examples Foucault (1986) presented space as composed of real places and utopian places and he pointed out the interchangeability between these spaces that belong simultaneously to placelessness and to reality. In an interview with the editors of the journal *Hérodote*, Foucault (1980) raised his concerns on how history has been more powerful than geography "Space was treated as the dead, the fixed, the undialectical, the immobile. Time, on the contrary, was richness, fecundity, life, dialectic" (Harvey, 2007 p.45)³. Moreover, Lefebvre's ideas on the production of space in early 1970s have created important debates that are ongoing even now (Harvey, 1973; 1990; 1996; 2000; 2006; Soja, 1980; 2000; 2003; 2010). Meanwhile, Sen's approach to social justice has been influential in a variety of areas from

³ Foucault's spatiality has been a widely debated area among geographers. Thrift (2007) notes that Foucault had a spatial sensibility and that can be found in his interviews. However, that sensibility did not occupy too much of his work. Therefore, Thrift argues, "it has been left largely to other authors to construct a Foucauldian spatiality" (p.55). Moreover, Elden (2001) discusses that, key questions remained unanswered, fundamental texts were left obscure and were inadequate. Nevertheless, Foucault has opened new debates in understanding different dimensions of spatial inequality. As Elden notes later on "Foucault's historical studies are spatial through and through, and that this is a fundamental legacy of his work to those interested in the question of space..." (p. 152). Moreover, Soja (2010) discusses that "Foucault saw all geographies, from those produced by what he called the little tactics of the habitat to the global realm of geopolitical confrontation and conflict, as filled not only with injustice and oppression but also with potentially emancipator and liberating opportunities" (p.103).

development (Alkire, 2002; Comim et al. 2008) to transport studies (Beyazit, 2011; Martens et al., 2012).

Manuel Castells' (1983; 1996; 1997; 1998) ideas on space and society are good indicators of how spatial thought in geography has developed. In his early writings by late 1970s space had a secondary importance for Castells, and it was simply conceptualised as a reflection of society (1977). Criticism from geographers working in the Marxist tradition caused Castells to rethink of the importance of space (Hubbard, 2011). Later on he noted that "space was actually not a reflection of the society, it is society" (Castells, 1983, cited in Hubbard, 2011, p.101). Similarly, in *The Rise of the Network Society* (1996) Castells articulated clearly that "space is the expression of society" (p.440).

Based on these discussions, it is possible to state that space has social meaning, or *meanings* (Massey, 1992). Space is a material product and cannot be thought outside its social meanings and relationships (Castells, 1996). It shapes social life but it is also shaped by it. According to Harvey (1990), "neither time nor space can be assigned objective meanings independently of material processes" (p.204). It is those material practices and processes that reproduce social life. Moreover, all individuals are spatial as well as temporal and social beings (Lefebvre, 1974). Similarly, Soja (2010) notes that "everything that is social is simultaneously and just as everything spatial, at least with regard to the human world, is simultaneously and inherently socialized" (pp.5-6). Therefore, space and time cannot be evaluated independent of social processes. Space brings together time-sharing practices that are simultaneous in time and that it is this simultaneity that allows face to face interactions, a lack of which may lead to a decline in social capital (Putnam, 2000). A focus on these interactions may help solve the problems of urban poverty, racial and social discrimination, and social exclusion. Enhancing these interactions may be seen as an important strategy to overcome inequalities based on transport (Urry, 2002).

Space is a dynamic process that is created by the dynamics of the social structure. According to Castells (1996) since our society is undergoing drastic changes, the ways in which space is formed and the processes related to it are also changing: “social processes influence space by acting on the built environment inherited from previous socio-spatial structures. Indeed, *space is crystallized time*” (1996, p.411, original emphasis). Similarly, Massey (1992) notes that space is “a moment in the intersection of configured social relations” it cannot be static (1992, p.81). For the same reason, due to the dynamism and simultaneity of these relations, space is not a flat surface.

An important debate on spatial inequalities emerges from the above discussion on the meanings of space and how space is formed. That is the production of space. According to Lefebvre (1974) space is produced and reproduced through human intentions. Moreover, space is likely to be produced by those who are more powerful in the society. Massey (1992) noted that space is “full of power and symbolism, a complex web of relations of domination and subordination, of solidarity and cooperation” (p.81). Massey referred to this as ‘power-geometry’ (1993). Moreover, using Harvey’s (1990) space-time compression, Massey (1993; 2001) discussed that a ‘power-geometry of space-time compression’ exists and can be related to the ability for different socio-economic groups to be able to move freely and access their needs. But more importantly, it is related to power in conjunction with the flows and movement (1993, p.62). These arguments have found ground in transport research and are discussed in the following section.

Based on these discussions it is clear that spatial thinking is accommodated in a variety of disciplines from geography to anthropology, sociology, economics and philosophy, all developing the spatial thought in their own ways. Therefore, there are several dimensions to it. Following this brief introduction to the contemporary understandings of space, spatial justice thought will be evaluated with regard to socio-spatial understandings of inequalities.

2.2.2 Exploring the foundations of spatial justice in social justice thought

Space, Harvey (2006) notes, “turns out to be an extraordinarily complicated word” (p.148). It is complicated in the sense that it has multiple dimensions, consists of a variety of meanings and its interaction with other notions such as time, justice, and politics makes it richer and even more complex. In this section, a discussion is carried out on how and when the notion of justice became spatial and in what ways socio-spatial causalities occurred and continued to do so. Here, spatial justice is elaborated as if it is a component of social justice but the importance of space to this discussion is highlighted without restraining the debate to spatial determinism⁴.

The majority of the writings on social justice and moral philosophy start with Aristotle’s *The Nicomachean Ethics* in which Aristotle identified justice as the greatest of all virtues (Fleischacker, 2004). In his writings, Aristotle discussed that having equal shares is a condition for persons to be equal. Moreover, for the distribution to be just there must be some allocation of merit. For Aristotle and other Greek philosophers justice and democracy were “definitely urban” (Soja, 2010 p.79). This feature of justice also became quite significant in the formation of city-states and also in the design of cities with *agoras* as places of public assembly and debates. Therefore, discussions on justice have been attached to a space whether it was the agora or the city-council, *bouleuterion*. Although an important part of the public was excluded from this democratic structure as they did not qualify as citizens, the idea of democracy, public participation and citizen rights and obligations were developed in this era as principles of these city-states. Soja (2010) highlights the close relationship between city, society and space by drawing attention to the different uses of Greek *polis* and Latin *civitas* in the English language: politics, police, policy, polite; civil, civic, citizen,

⁴ Soja (2010) argues that social scientists have been distant to space until about twenty years ago and have criticised Lefebvre for putting too much emphasis on space. He discusses that social scientists have been too cautious not to fall into spatial determinism in their arguments (ibid.).

civilisation and the city itself (p.80). He also goes on to say that as a consequence, the idea of city-state never disappeared even during the emergence of the nation-states and later on during the industrial capitalism which he prefers to describe as the *urban* industrial capitalism (ibid.).

Many philosophers followed Aristotle's teachings by developing his ideas not only on political equality but also on social and economic equality. Amongst the important figures in classical understanding of justice, philosophers such as Hobbes, Rousseau, Hume, Smith, Kant and Babeuf can be included (Pojman and Westmoreland, 1997; Fleischacker, 2004; Sen, 2009). The late 1700s witnessed an important amount of scholarly manuscripts on the issues of social inequalities which formed the basis for socio-political shift in Europe and sparked the French Revolution.

In this sense, Rousseau on human rights⁵ (Fleischacker, 2004) and Babeuf on moral philosophy (Pojman and Westmoreland, 1997) were influential figures in the French Revolution. Babeuf's ideas on fair education for all and his ideas against individual ownership of land were egalitarian thoughts and strongly influenced many others in the social justice thought. Meanwhile, in Britain, Adam Smith was the first to draw attention to the effects of poverty on the poor (Fleischacker, 2004). He introduced new methods for the distribution of wealth, such as taxing the rich more than the poor and using taxes in favour of the poor.

Historians of the French Revolution, especially the scholars from the Marxist tradition, agreed on the bourgeois origins of the Revolution (Hunt, 1986; Cobban, 1999). Although this bourgeois class was not homogeneous (Lefebvre, 2001), the influence of different classes in such an important event is crucial for our discussion on space, as it

⁵ Despite the fact that Rousseau consciously ignored women's rights (Wexler, 1976), he made important contributions by discussing equality issues in terms of being a good citizen and drew attention to the importance of taking responsibility in order to be active citizens.

consisted of people who were based in towns and/or cities. Moreover, there is no need to remind the reader that cities in France and in nearby countries have been influential during the French Revolution. Cities were hosts to places of assembly where social and political thoughts were produced and shared.

Another seminal moment in history that sparked new thoughts on social justice and also originated from cities (e.g. Manchester) is the Industrial Revolution. Distribution, commodities and urbanisation of labour emerged as central issues for social justice during this era. The new economy operated from British cities as hubs of economic exchange (Harvey, 1973) required changes in the structure of production which in turn transformed cities and regions. In this context, rural dwellers forced into cities and urbanisation “exploded as a seemingly uncontrollable force, impinging on existing urban settlements while creating new ones at an accelerating rate” (Power, 2012, p.42). This *abandoned* rural area made agricultural and industrial production possible to be reorganised. Labour became a commodity like everything else; its working hours, location and wages were controlled by the new system. Stobart (2009) notes that industrial revolution created spatial unevenness through capital accumulation and circulation, and an increasingly heterogeneous space-economy (p.378). It contributed to the creating of new economic regions of wealth and poverty.

Moreover, it is possible to state that the first analytical discussions on distribution and their impacts on society were introduced by the mid 1800s. Marx emphasized that distribution of the means of production should be treated first, before the distribution of products. According to Marx, distribution of land, tools and other capital tools on economic activity are more important than distribution of pure products and that the structure of distribution is determined by the structure of production. However, for Marx, there was no need for thinking of and introducing theories for social justice because there would be no equality discussion in his understanding of social state since everyone would be equal. As

Harvey mentions “if socially just mechanisms can be devised, then questions of achieving social justice in distribution will look after themselves” (Harvey, 1973, p.108).

The relationship between capitalism and the production of space has been widely explored by philosophers, sociologists and geographers. Henri Lefebvre discussed that capitalism has succeeded in achieving growth within the first hundred years of Marx’s Capital. He went on to say “we cannot calculate at what price, but we do know the means: by occupying space, by producing a space” (Lefebvre, 1976 p.21). Since early 1970s, a vast number of studies have been conducted to understand *at what price* capitalism has been successful. For instance, Soja (2010) emphasises rising inequalities as the costs of capitalism: “the production of space and especially urbanized space has been crucial to the very survival of capitalism since at least the mid-nineteenth century, when *cities all over the world exploded with unrest and frustration over existing socio-spatial injustices*” (p.98, my emphasis).

Transport has been a major part of this process. Introduction of steam power and the construction of rail all around Great Britain and later on in North America reorganised the space, brought places together and drastically changed the perception of travelling or *being mobile*. In *On the Move*, Cresswell (2006) notes that it was possible to reach most of England and Wales in about forty-eight hours in 1821 when it was only possible to travel from London to Bristol in that amount of time in 1750. Likewise, in the US 9,000 miles of rail track was extended to 70,000 miles in less than 20 years in 1869 (ibid.). One can discuss that the industrial revolution started the shrinking of spaces (‘shrinking continents’ in order to use the term of Spiekermann and Wegener, 1994 or ‘time-space compression’⁶ by Harvey, 1990).

⁶ Commenting on how the understanding of space and time has changed in the early 20th century in every part of daily life from work (e.g. introduction of the Fordist production line) to social life (e.g. first radio signals), Harvey (1990) points out that space has become more homogenous and that “the more unified the space the more important the qualities of the fragmentations become for social identity and action” (p.271). This shift in the society was later on followed by improved systems of communication, fast links of transport and money transfers at a great speed. Therefore, spatial

Furthermore, the idea of time has also changed. Cresswell (2006), quoting from Beard (1967), notes that, the perfection of clocks and introduction of watches have created a 'modern nervousness' as we were compelled to be precisely on time for appointments and trains etc.

Yet, changes in the perception of time and space in the last twenty years point out to even more compression in time and space. Development in communication technologies, fast and reliable transport systems, improved financial services and easy international collaborations in various areas such as education, economy, cultural events and politics bring places even closer to each other while excluding some that are not capable of addressing such changes. However, for global cities, becoming closer may also mean becoming isolated from the contexts they are in, as they can become a part of numerous enclaves from finances to media with other global cities and become isolated from their localities (Graham and Marvin, 2001). Hence, as discussed in the introduction chapter 'cities in-between' start emerging. In the second part of this chapter the emergence of the production of space and the production of mobilities by transport infrastructure and socio-spatial practices will be discussed.

2.2.3 On *many* theories of justice and why spatial justice matters

Of all the above formulations of justice considered, it is John Rawls who introduced the contemporary understanding of justice in his writings since the late 1950s. Rawls, who raised issues for a universal philosophical understanding of justice in his outstanding book, *A Theory of Justice*, discussed ways to reach a socially just society in terms of liberties and equalities. Rawls set two principles for achieving this. Firstly, each person has to have an equal right to the equal basic liberties similar with others and secondly, rearrangement of socio-economic inequalities is necessary to benefit least-advantaged members of the society

barriers collapsed, places become closer to each other than ever and the space and time have gained different meanings. Harvey calls these spatio-temporal changes the "time-space compression" (Harvey, 1990; 1996).

and to position opportunities for a fair equality (Rawls, 1971). Rawls's idea of justice is associated with egalitarian ideals which lead to the maximization of the utilities of the most disadvantaged individuals in society. Through his second principle of justice, he proposed a fair distribution of valued goods such as liberty, opportunity, wealth and self-respect.

Major contributions on social justice after Rawls have been as a response to his ideas. Therefore, in this section, discussions on social justice have mainly been formulated with reference to criticism to Rawls' ideas. The main criticism to Rawls' understanding of justice was on his focus on primary goods and the distribution of these goods. In *Choice, Welfare and Measurement*, Sen (1980) criticised Rawls for valuing the primary goods more than needed: "It can be argued that there is, in fact, an element of "fetishism" in the Rawlsian framework. "Rawls takes primary goods as the embodiment of advantage, rather than taking advantage to be a *relationship* between persons and goods" (Sen, 1980: 216). One could discuss that such a criticism also refers to the Marxist views of commodity fetishism. Although acknowledging Rawls' attention to the recognition of social differences, Sen (1980) argued that putting primary goods into the centre of the argument was not sufficient in determining fairness in distribution. Moreover, justice was determined by outcomes, by final achievements (i.e. income) of individuals. Yet, Rawls' idea did not consider the circumstances, the processes that create those outcomes and that may also be unjust.

Another criticism towards Rawls's idea of justice is on the explanation of justice through distribution of goods and values. In the *Critique of the Gotha Programme*, Marx explains the reason why focusing on distribution was a mistake: "... it was in general incorrect to make a fuss about so-called distribution and put the principal stress on it" (Marx, 1972 [1875] p.27). According to Marxist geographers such distribution would be meaningless since distribution itself would mean to accept the production of goods which in its nature is unfair. Moreover, as Young (1990) mentions, distribution may result in reallocation of goods, resources, income and wealth but may ignore the social and institutional structures that help

determine the distributive patterns. Researchers often consider the distribution of power within decision-making. However, Young believes that the researchers take the concept of distribution as if it represents a static situation, instead of a function of social relations and processes. Having acknowledged the fallacy of accepting distribution solely as a static process and that the distributional inequality may be used to explain the outcomes of these processes rather than the processes themselves, it is still “the most basic and obvious expression of spatial justice” (Soja, 2010 p. 47). Moreover, it is important to mention that even in a non-capitalist world, spatial distribution of services such as health and education and people’s access to these services would result in unjust geographies. Therefore, distributional inequality is inevitable to some extent. Regarding the position of distributive inequality in the issues of spatial justice, distributive justice has been taken as an important component of spatial justice.

Finally, Rawls’s work on social justice has been criticised for being *aspatial* and *ahistorical* (Soja, 2010). According to Soja (2010) Rawls’s distributive justice focuses on “the immediate moment or condition for individuals and therefore can only be weakly spatial and historical in a collective sense” (p.77). This is partly a consequence of putting too much emphasis on outcomes instead of processes but it is also a consequence of Rawls’s liberal egalitarian views that proposes the more advantaged should be contributing to meet the expectations of the least advantaged. Therefore, Rawls’s ideas on the distributive justice are criticised to be not inclusive of spatial and historical perspectives.

Since Rawls, a notable change has occurred in the theorisation of justice. The importance of social justice in spatial analysis has been recognised while space has been included in social thought. In his seminal book *Social Justice and the City*, Harvey (1973) discussed the importance of considering social justice in spatial analysis (Harvey, 2000; 2006). According to Harvey a theory of spatial or territorial allocation should be based on principles of social justice, and efficiency and distribution should be explored jointly. One of

the early contributions to spatial justice has been made by Pirie (1983) to whom “matching justice to notions of socially constructed space” was crucial (p. 472).

Lately, Soja⁷ (2010) argues that putting space first opens up new areas to discussion. He believes that understanding space “helps us make theoretical and practical sense of how justice is created, maintained and brought into question as a target for democratic social action” (Soja, 2010 p.2). Similarly, as Woessner (2010) proposes “to talk about spatial (in)justice is to acknowledge, first and foremost, that (in)justice is the product of spatial forces as much as social or historical ones. Why? Because existence itself, in addition to being both social and historical, is spatial through and through” (p. 603). After this brief introduction to spatial justice, three main issues of the spatial justice debate – production of space, production of scale and power and politics will be discussed.

2.2.4 Producing uneven geographies

Space, as discussed earlier, is produced and reproduced through spatio-temporal processes generated by human intentions and their interaction with other material and non-material entities. Lefebvre (1991 trans., 1974 orig.) suggests that space can be conceptualised in three ways: the triad of the perceived, conceived and lived. These concepts find their reflections in spatial terms as spatial practice, representations of space and representational spaces all of which bring an explanation to the production of space through the forces of production and the relations of production (pp.39-46).

⁷ Soja’s (1980; 1989; 1996; 2000; 2003; 2010) contribution to the spatial thought has been quite influential for urban planners, architectures and designers, if not for geographers. Soja has been largely criticised by geographers both from the left and the right for not showing enough appreciation to feminist geography, historical discourses of capitalism and denying any disagreements on space (Barnett, 1997). Nevertheless, a devoted issue of the *City* on Soja’s latest book *Seeking Spatial Justice* (2010) proves the importance of Soja’s work in theorising spatial justice and its impacts on thoughts on urbanism.

Although further derivatives of Lefebvre's work have been introduced (Gregory, 1994 in Gregory et al., 2009; Harvey, 2006), one of the most important outcomes of these contributions is that inequalities based on individual socio-spatial differences generate uneven geographies which can never be equalised across space. Moreover, as Soja (2010) expresses space is "actively involved in generating and sustaining inequality, injustice, economic exploitation, racism, sexism, and other forms of oppression and discrimination" (p.4). Although it is a common understanding that inequalities will exist in any case (Soja, 2010), the spatial dimensions to these inequalities have recently been brought to the research agenda of urbanism, and spatial justice is still a new subject area compared to the vast literature on social justice. Therefore, exploring these inequalities in different fields, such as transport, would enhance our understanding of uneven geographies.

Redistribution of benefits and losses has been regarded as an important tool in reducing these inequalities. As explained earlier, "for Marx, distributive justice was essentially a diversion from the main problems of capitalist society" (Soja, 2010 p.87). Therefore, justice could be achieved by a radical transformation in market and labour systems. Harvey (1973) puts the issue of distribution in the core of his theorisation of social justice, and yet, this distribution is also spatial. According to Harvey (1973), the main principle of social justice can be described with the concept of "a just distribution justly arrived at" (p.98). Harvey suggests that a just distribution should be based on common good and merit and defines three conditions for reaching territorial social justice (pp. 116-117):

The distribution of income should be such that (a) the needs of the population within each territory are met, (b) resources are so allocated to maximize interterritorial multiplier effects, and (c) extra resources are allocated to help overcome special difficulties stemming from the physical and social environment.

The question of redistribution is grounded largely in the social justice debate as discussed earlier with regard to the Rawlsian approach. Moreover, utilitarian and welfare approaches have largely been discussed as alternatives (Sen, 1980) amongst other approaches based on

capabilities of individuals (Nussbaum and Sen, 1993; Sen, 2009). Yet, new challenges exist for advancing spatial justice.

In the production of space debate, the relationship between capitalism and space is important in terms of the form of production and the distribution of the produced. Although the position of capitalism in spatial justice debate shifts from one scholar to another (Harvey, 2005; Soja, 2010)⁸, it is clear that capitalism has the power to transform space, settlements and territories (Smith, 1984). As mentioned earlier, Lefebvre (1976) writes that capitalism has succeeded in achieving “growth” by occupying space, by producing a space (p.21). Moreover, Harvey (2000) recalls Lefebvre’s remarks that the very survival of capitalism depended on the occupation and production of space (p.31).

Yet, capitalism creates its own crisis. Capital needs physical investments but also some ‘open frontier’ to develop further. Therefore, previous infrastructure investments may act like a barrier for the economy to prosper under capitalism. Moreover, the capitalist system tends to shift from production to investment on these fixed infrastructures which in the long term may mean locking excess investment in specific areas that leads to the accumulation of resources. Harvey (1981) names this process as the spatial fix, which he describes as one of the shortfalls of the capitalist system. Furthermore, explaining the 2008 financial crisis, Harvey (2010) points out how the crisis was generated as a result of capital accumulation in the form of the property market mainly in the US cities. Although the property market has played a minor role in the history of capitalism, after 1970s this role has changed as this new and unfettered sector was profitable for capitalism (Lefebvre, 1974). Therefore, the property market has emerged as an important component of capitalism and as

⁸ While for Harvey if capitalism actually “*is uneven geographical development*” (Harvey, 2005 p. 115, original emphasis) then a development in theory is needed to restrain this fact; Soja (2010; 2012) believes that capitalism on its own cannot explain spatial injustice but it is the dominant force shaping space.

a form of produced and reproduced space. Lefebvre notes, “‘real property’ (along with ‘construction’) is no longer a secondary form of circulation, no longer the auxiliary and backward branch of industrial and financial capitalism that it once was. Instead it has a leading role, albeit in an uneven way, for its significance is liable to vary according to country, time or circumstance” (1974, p. 335). This theory will be discussed later on in terms of transport infrastructure as means of capital accumulation in cities and regions.

2.2.5 Scale matters

Understanding scale is crucial to the debate on spatial justice. Social and political power relationships, uneven geographies and environmental risks are embedded within local and global scales and the scales in between. According to Massey (1992) it is possible to talk about a coexistence of social interactions at all spatial scales from local to global (p. 80). Likewise, Swyngedouw (1997) notes,

“Scale, it seems to me, is both materially and metaphorically central in structuring processes of the kind illustrated in the preceding examples (*collapse of Barings, job losses in Germany, bankruptcy of the Orange County so on*). [...] Scale, both in its metaphorical use and material construction, is highly fluid and dynamic, and both processes and effects can easily move from scale to scale and affect different people in different ways, depending on the scale at which the process operates. Similarly, different scalar narratives indicate different causal moments and highlight different power geometries in explaining such events. Scale is, consequently, not socially or politically neutral, but embodies and expresses power relationships” (p.140, my notes in italic).

Scale, similar to space, is not fixed, it is continuous and it can be produced and reproduced (Harvey, 2006). It can be seen as a moment (Massey, 1992; Swyngedouw, 1997), it is a dynamic process (Smith, 1984) where power, social control and relationships are negotiated through all scales. According to Swyngedouw (1997) that is why scale is “both a result and the outcome of social struggle for power and control” (p.141). The dynamism of scales can be seen in the example of changing borders, established supranational organisations, expanding urban agglomerations and so on.

As scale is fluid and dynamic, seeing the world in rigid scales such as urban, regional, national and international, would result in incomplete explanation of the uneven development of the capital (Smith, 1984): “it is difficult to comprehend the real meaning of “dispersal,” “decentralization,” “spatial restructuring,” and so forth, without a clear understanding of geographical scale” (p.180). Therefore, it is important understand the ways in which scales emerge, merge and diminish. Scale cannot only be explained by all the traditional division of scales between global and local but also with these changing and converging spaces and contexts. Soja (2010) notes, “recognising the cross-scalar connections between globalisation and urbanisation and acting to change their interdependent spatial injustices are a vital product of a critical regional or mesogeographical perspective” (p.57).

Although understanding scale and the power relationships across scales is important in order to grasp the full knowledge of space and spatial injustices, scale is only one dimension of uneven geographical developments. The causality of various elements within the space has many other dimensions which have been discussed in previous sections. Nevertheless, as Soja suggests, we may come across unjust geographies that are “the battlefield for struggles over spatial justice *at every scale* from the global to the local” (2010, p.33, my emphasis). Therefore, what is happening in urban areas and in the globe can be considered parallel to each other since issues in global scale can be explained through happenings in the urban⁹. Smith (1984) insists on the necessity to understand geographical scale in full order to fully comprehend capitalism and its consequences such as uneven development. In order for capitalism to maintain its existence and increase its efficiency, power must be established at all scales. Capitalism and politics do not have any preference of space but rather prefer to be dominant in a blend of scales. Therefore, understanding spatial justice depends largely on understanding the production of scale.

⁹ Here, the emphasis is on the urban areas and not cities alone.

In terms of transport, the importance of scale is mainly discussed at the empirical level. In chapters 5 and 6, socio-spatial and economic impacts and consequences of transport have been elaborated at different scales in order to understand the relationships between different issues regarding transport in Istanbul. Moreover, the thesis has been structured in order to address the issue of scale. In each empirical chapter different scales have been used to help understanding transport inequalities. In this sense, socio-spatial inequalities related to transport in Istanbul have been elaborated at various scales from individual to urban.

After this review of the literature on socio-spatial discourses, before setting the context for the rest of the thesis, it is important to discuss the reflections of these discourses on cities and how issues of social and spatial justice are handled in contemporary cities. The next section will put forward debates on the right to the city while exploring notions of power and politics in cities.

2.2.6 Power, politics and ‘the right to the city’ or *city awakenings*

Power has not only been an issue of geography, but also has been a matter of sociological, philosophical and anthropological questions that in turn have fed the discipline of geography. Here, it would be ideal to turn to Foucault in order to understand the foundations of thinking on power and its relevance to geography. Foucault (1976) starts his discussion on power by asking the reason why the Western society thought conceives power in a restricted and negative manner. The answer according to Foucault goes back to the Middle Ages to the shift from feudal powers to monarchic power and the law system attached to this change: “the West never had a system for the representation, the formulation and the analysis of power other than law and the system of law” (p.155). Therefore, analysis of power (and justice) until recently was left to law. In order to understand not only the representation of power but of real functioning of power, Foucault suggested to distance ourselves from the earlier conceptions of power based on rule, law and prohibition (p.156).

Moreover, according to Foucault, based on Marx's Capital, we cannot speak of power if we want to analyse power, we must speak of *powers* that function *locally* and *regionally*. In this debate, the issue of scale becomes inevitably important. As Swyngedouw (1997) states, "clearly, relative social power positions will vary considerably depending on who controls what at which scale" (p.141).

According to Foucault (1976) power on space becomes tangible not only through the power of infrastructure or planning but also through a range of political techniques that regulate vast populations. Likewise, Castells (1997) expresses that power "is no longer concentrated in institutions (the state), organizations (capitalist firms), or symbolic controllers (corporate media, churches). It is diffused in global networks of wealth, power, information, and images, which circulate and transmute in a system of variable geometry and dematerialized geography. Yet, it does not disappear. *Power still rules society; it still shapes, and dominates, us*" (p.359, original emphasis). Soja (2010) suggests that the global justice movement when grounded in cities creates more "tangible and achievable targets than simply organising against neoliberal capitalism, globalisation, or global warming, especially as all three are primarily generated from and made concrete in the major city regions of the contemporary world" (p.59).

According to Harvey (2006) the clash of political and economic powers creates uneven geographical developments as territories, which can open their boundaries to capital flow, can benefit from it and increase their competitiveness. However, they are more likely to become places of overaccumulation, therefore centres of global crisis. This relationship not only partially explains the global crisis we are facing, but also provides an important base for the discussions on the power of the urban, since urbanised areas are the centres of such accumulation and territorial power.

Such struggles in cities and territories especially in the economic environment of the late 1960s prepared the right conditions for city movements. The 1968 uprisings in France

inspired Lefebvre to write *La Revolution Urbaine* (The Urban Revolution) in 1970 (Lefebvre, 2003) within two years of the publication of *Le Droit à la Ville* (The Right to the City, 1968). Since its introduction by Lefebvre, the term “Right to the city” has become the manifestation of democratic spatial justice. It is possible to find numerous organisations, NGOs and blogs that use this term to define their struggles over the city. Lefebvre’s writings have also influenced many scholars (Harvey, 2003; 2006; 2008).

In the last version of *The Right to the City*, Harvey expanded his views on justice in relation to free market, capital accumulation and “the conception of rights embedded in it” and his views on the importance of utopias in creating action (2003), to a new level of understanding urban as a source of injustices at the global level (2008). Harvey defined the right to the city as “not merely a right of access to what the property speculators and state planners define, but an active right to make the city different, to shape it more in accord with our heart's desire, and to re-make ourselves thereby in a different image” (2003, p.941).

This manifestation, inspired by Lefebvre’s early writings, sparked a growing interest amongst academics on the issues of urban struggles and understanding these struggles within the notion of public space. For example, Don Mitchell (2003) writes: “In public space – on street corners or in parks, in the streets during riots and demonstrations – political organizations can represent themselves to a larger population and through this representation give their cries and demands some force. By claiming space in public, by creating public spaces, social groups themselves become public” (p.122). According to Mitchell, public space “is material” and it “constitutes an actual site, a place, a ground within which and from which political activity flows” (p. 134, also quoted by Harvey, 2006: 148). Such struggles are experienced in various contexts and places. Chapters 4 and 8 investigate these struggles in Istanbul in depth.

Soja (2010) brings forward an important point on how cities reclaimed their importance in the debates of power, democracy and social justice: “After centuries during

which the national state defined citizenship and human rights, the city is seen again to be a special space and place of social and economic advantage, a focal point for the workings of social power and hierarchy, and therefore a potent battleground for struggles seeking greater democracy, equality, and justice” (p.96). In this context, we can talk about city awakenings, realisation of the position of the city in the debate of all forms of justice.

As briefly mentioned above, support of the academics to the right to the city movement and the growing resistance to unjust implementations within urban regions can be seen as an example of the interaction between the scholarly work and societal actions. What has once started in cities (uprisings), and influenced the academia (the right to the city) has been developed by academics and reintroduced to society. For instance, during a series of meetings of the World Social Forum in 2005, the World Charter for the Right to the City was constituted. The right to the city has become a political practice in cities, and has not remained as an abstract debate. Moreover, struggles over geography continue to enhance solidarity and unity (Soja, 2010). Such struggles create a degree of awareness in the society. Harvey (2008) describes the right to the city as a common right rather than an individual right, and it is “far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city” (p.315). In terms of freedoms and human rights, Harvey finds the freedom to make and remake our cities and ourselves as a neglected area. Debates on power, democracy and the right to the city are picked up again in the second part of this chapter in terms of transport. Moreover, it is largely discussed in Chapters 5 and 8.

2.2.7 Future challenges

In an interview with Isabel Capeloa Gil from Lisbon Consortium, Soja (2011) discussed that although there are not many future disciplinary challenges in the area of spatial justice, the main challenge can be formulated as the need for extending spatial justice thought and breaking the resistance to it amongst geographers. He believes that there is a need to engage

more thinkers and get them involved in spatial thinking. Cultural, economic and social geographers should engage with spatial thinking and study the spatial turn more deeply.

Another challenge originates from the interaction between social justice and spatial justice. Close links between the two areas requires them to be theoretically entwined. At the moment, while spatial justice thought is trying to claim its place in geography and urbanism studies, social justice is developing continuously. In the last twenty years, in social justice research, a new theory, the Capability Approach (CA) has been developed (Nussbaum and Sen, 1993; Sen, 1999a, 1999b; Nussbaum, 2000, 2006; Sen, 2009). The capability approach considers notions such as quality of life, opportunities, functionings, alternatives and freedoms of individuals in understanding social justice. Instead of focusing on societies as a whole, CA explores justice at the individual level. Moreover, it focuses on the process through choices, wants and abilities of people. Oxford University's Poverty and Human Development Initiative (OPHI) has been organising workshops in developing or undeveloped countries since 2007 in order to extend the knowledge on measuring social justice by using the capability approach.

The CA has a variety of applications in different areas such as health, education, employment, human development, gender issues and poverty (Sen, 1999b; Alkire, 2002; Comim et al., 2008) that are also important struggles of spatial justice. However, a spatial reference is missing from the discussions of the capability approach and that CA has found its ground more at the individual level. Scale emerges to be a crucial component of it since the injustices the CA is dealing with are created in every scale from global to local before they become effective at the individual level. Moreover, its approach to freedom can be applied to different areas (its use in transport will be discussed later on). Therefore, while the spatial justice research may provide input in extending the CA, the CA may help the socio-spatial dialectic to extend its application at a more local level.

Such an exercise on linking the idea of social justice and the idea of spatial justice would open new areas for research as well as creating balance between social and spatial causality. Moreover, social justice would be conceptualised in spatial terms. If the function of critical geography is to put geographical knowledge to use in political action in order to be able to create “alternative forms of geographical practice, tied to principles of mutual respect and advantage rather than the politics of exploitation” (Harvey, 2001 p.233), then surely these alternative forms can be developed through more interaction between social and spatial justice theories.

2.3 Seeking spatial justice in transport

Infrastructure plays an important part in the production of space and socio-spatial processes. Based on the discussions on space above, transport infrastructure, along with other infrastructures such as communication and electricity produce and reproduce space by facilitating flows and mobility. Therefore, they are seen as prerequisites of capitalism that establishes itself through flows of all kinds: information, money, labour, commodities and services. In this section, the relationship between transport and these processes are evaluated from a social/spatial justice point of view. Transport infrastructure is considered as a commodity that produces socio-spatial processes through flows and mobilities (Figure 2.1). Following the tradition of Marxist analysis of space, rather than focusing solely on this commodity, the social and spatial relationships of its production will be discussed through theories from various disciplines along with related issues (Figure 2.1). As seen on Figure 2.1, mobilities are also a product of transport infrastructures. However, mobility, as Cresswell (2006) discusses is also a “socially produced motion” (p. 3). Therefore, social circumstances that produce mobilities are discussed in proceeding sections as well.

Approaching the production of mobilities and socio-spatial processes related to transport from different disciplinary points of view and aiming to understand the actors and structures of these processes, would prevent creating an abstract categorisation of the

impacts of transport infrastructure investments such as provider-based and user-based (Markovich and Lucas, 2011) and also prevent the use of categories which presuppose relationships between people, land use, social impacts and transport (Geurs et al., 2009). Such categorisations have a tendency to simplify complex relationships that occur in societies (Kaufman et al., 2004). Moreover, these categories often overlap. Furthermore, conceptualising transport infrastructure and mobilities as commodities helps us to understand spatial justice in transport. Alternatively, this thesis presents an approach to understanding social and spatial inequalities in transport by looking at a variety of theoretical approaches (Figure 2.1). Such formulation tries to incorporate some of the missing dimensions in previous research and allows deepening the understanding of inequalities in transport by consulting a range of theories from different disciplines.

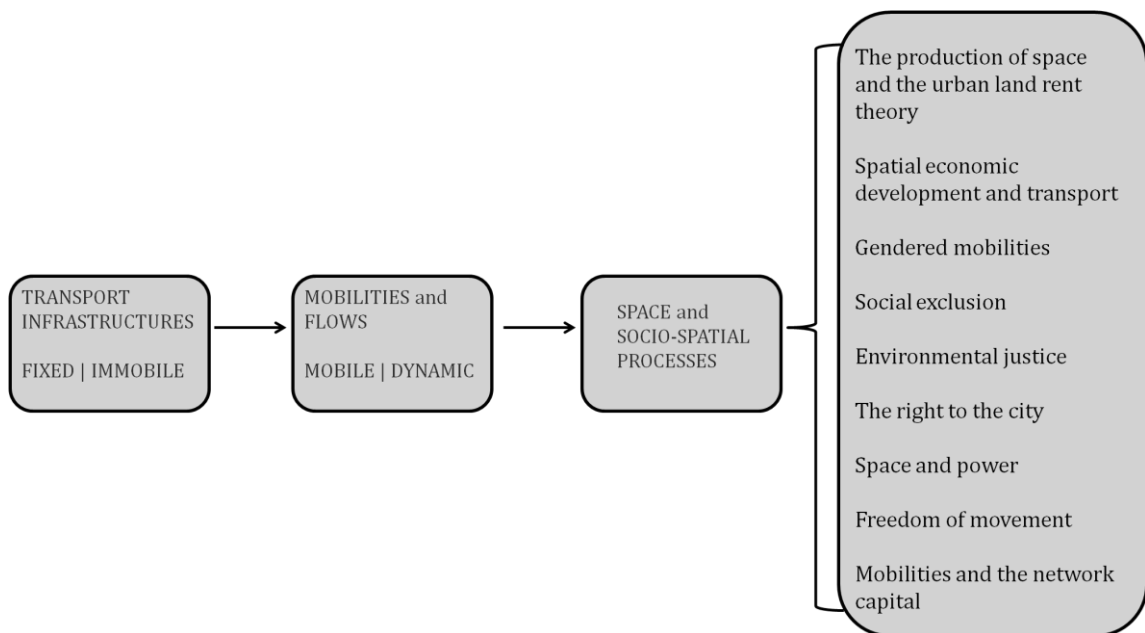


Figure 2.1 Transport infrastructure is a commodity producing socio-spatial processes. The table shows theories and research from various disciplines that these processes have been discussed within.

2.3.1 The production of space through transport and the urban land rent theory

Transport systems produce physical spaces through infrastructure networks. Transport infrastructure forms segments and pathways; enclaves and fragments which may create isolation, exclusion and/or connectivity and fluidity. Graham and Marvin (2001) discuss how

transport infrastructure within contestable markets creates spatial unevenness in three ways. According to Graham and Marvin this unevenness is created when the providers of the contestable markets of unbundled infrastructure build new infrastructure or provide new services between 'valued users' and "literally bypass the least valued users, districts and cities" (pp.166-177). The first form of bypass, the local bypass, generates through the construction of entirely new infrastructure that operates in parallel with existing public networks but only between valued zones. In terms of transport examples are pedestrian systems linking valued areas such as skywalks and private transport systems such as toll highways. A second form of local bypass occurs when different segments of public networks are operated by different providers who supply fast links between chosen areas.

Glocal bypass (Graham and Marvin, 2001) is generated when the local segments of cities are connected with global networks. This can also be seen as a prerequisite of being a global city (Sassen, 2001) as these cities step to the fore and are the economic and cultural pioneers of their countries through their competitiveness and their connectivity with other global centres, almost skipping the hierarchy of their countries. TGV, the Channel Tunnel and airports that give fast and reliable service between localities and global networks are examples of glocal bypasses (Graham and Marvin, 2001).

Finally, the third form of bypass, the virtual network bypass, supports both local and glocal bypasses, it controls and allows new entrants to join these bypasses and access to other users. Whoever controls these unbundled infrastructures in different contexts also determines whether the users of the system and the places are connected or not (ibid., p.177). Since this splintered structure of cities made of networked or unbundled infrastructures connects or segregates societies and produces fragmented spatialities, the theory behind it is important in order to understand spatial inequalities.

Secondly, urban land rent theory is crucial to the debate on spatial inequalities and related to the spatial impacts of transport infrastructures. Urban land rent theory as well as

the notion of commodity and its use and exchange values, is based on a Marxist analysis of economy and economic relationships and draws mainly on Marx's explanation of the agricultural production in the third volume of the *Capital* (Marx, 1990). David Harvey has largely used Marxist land rent theory in order to explain the urban phenomena like socio-spatial inequalities in his early writings in *Social Justice and the City* (1973) as well as in his later work in order to understand the recent economic crises which he believes to have generated in urban areas due to excessive capital accumulation (Harvey, 2006; 2011; 2012; Soja, 2010). According to Harvey, use of land, the regulation on land, thus land rent, is a necessary condition for capitalism (Harvey, 1985) which has also been discussed by many others in terms of the production of space (Lefebvre, 1976; Castells, 1996; Soja, 2010).

Urban land rent theory is used in this thesis to explain the plan amendment process and the importance of transport infrastructure within this process in Istanbul. Chapter 8 employs this theory to explain the exclusive construction rights given to the plots that are within close proximity to the Istanbul Metro and explains the structure of this process as well as the actors involved in it. Yet, in order to understand this process to a greater extent, urban land rent theory is explored in detail in this chapter.

Urban land rent theory suggests three types of rent (yet, further groupings have been defined by Marx, Engels, Harvey and Ricardo, cited in Edel, 1991, p.69): Absolute rent (in Marxist terms), Monopoly rent (in Engels' terms) and Differential rent. Monopoly rent relates to the monopoly price that the landowner charges the buyer who is willing to pay even though the production of the commodity is different (Harvey, 1973). Marx believes that the monopoly rent is not very important to agriculture but it is crucial in the case of urban and land property (ibid.). According to Marx, "there may be conditions, particularly in densely populated areas, in which house and land rents are "only explicable" as monopoly rents" (ibid., p.179). However, it is not entirely possible to suggest that monopoly rent exists in urban areas. For instance, according to Evans (1983), monopoly rent is difficult to obtain by

the sellers as the seller attributes an economic value to the land based on his/her personal value system that is usually different to what the buyer is willing to pay. In this case, the use value would exceed the exchange value which would be unacceptable by the buyer. Therefore, Evans (1983) notes that monopoly rent could occur in circumstances where a single owner has the monopoly over a large amount of land in a single urban area that produces “distinctive, scarce and valuable” product (Evans, 1999 p.2111). Otherwise, in most normal conditions monopoly rent does not exist.

Harvey believes that absolute rent can better explain the urban condition. Although the difference between monopoly rent and absolute rent is not entirely clear, Harvey (1973) mentions that the former operates at the individual level while the latter “arises out of the general conditions of production in some sector” (p.182). Having discussed the peculiarity of absolute rent to Marxian economics, Evans (1999) notes that the concept of absolute rent points to the minimum rent asked by the landowner and mainly relates to the landlord’s behaviour on the transaction of his land the fact that they might be unwilling to sell it at a low price which eventually reduces the available land and the capital investment.

Finally, differential rent arises out of the difference between “the individual production price of a particular capital and the general production price of the total capital invested in the sphere of production concerned” (Marx, 1894, cited in Harvey, 1973:180). In other words, differential rent results from the varying productivity of equal amounts of capital invested in equal areas of land of different fertility (Marx, 1990 [1894]). Thus, it is related to the quality of land. In terms of urban rent, differential rent is the rent at one site where, in the absence of any rent payment, the profit would be higher compared to other areas due to its better location or other attributes (Evans, 1999 p.2111).

Marx (1990 [1894]) discusses that two types of differential rent exist: Differential Rent (DR) I and II. The difference between the two is that the DR II occurs in sites where additional capital investment and improvements are made. Therefore, it diverts from DR I

which arises from the original features of the land. Jager (2003) calls the latter as the 'intensive differential rent' and discusses that socio-spatial changes in cities, as a result of processes such as gentrification and construction of new office or commercial complexes in run-down areas, have become a tool for investors and developers to capture the DR II. Political decisions enabled the reproduction of space in such a way that a new institutional context has emerged that is based on changing building and planning rights and decisions. As Jager (2003) notes, this situation can be interpreted in the "context of a change in the dominant strategies of accumulation" (p. 245).

Likewise, Harvey (1973) discusses that "if differential rents dominate [the determination of land value at central locations] then it is use which determines land value" (pp.187-188) in which case social and spatial inequalities occur. Harvey goes on to say that in such circumstances authorities need to provide policies in order to sustain the dominance of absolute and monopoly rents as a result of which the land value would determine the use (ibid.). This argument is central to Chapter 8 as in the case of plan amendments on public and private land, it is the use that determines the value. Harvey (1973) mentions that in contemporary metropolitan cities, such as London, the differential rent theory is unlikely to explain the source of rent as the city has already been affected by improvements, such as transport, and therefore absolute and monopoly theories are more useful. In Istanbul the situation is understood to be different. Since Istanbul's infrastructure network continues extending and commercial and residential areas continue developing, DR II continues occurring.

2.3.2 Spatial economic development and transport infrastructures

As discussed earlier, transport infrastructure is a commodity, a 'land improvement' that produces space and socio-spatial processes. Therefore, any improvement resulting from transport infrastructure investment or development would affect use and exchange values of the space and create economic surplus. The primary reason for this is the increased relative

accessibility of locations within the improved area based on the direct benefits of transport infrastructure improvements such as reduced travel time, cost and distance. Changes in accessibility can foster economic growth if sufficient conditions such as market externalities, production and an amenable labour market are present (Banister and Berechman, 2001). In this section, indirect economic impacts of transport infrastructure investments are discussed as they are closely linked with socio-spatial changes. Yet, as it is discussed in the following paragraphs, these benefits emerge as a result of direct impacts of transport infrastructure investments.

Indirect benefits or co-benefits, lately referred to as non-transport benefits (Banister and Thurstain-Goodwin, 2011) or wider economic impacts (OECD, 2008; Graham, 2008; Vickerman, 2008), of transport infrastructure have been very influential in decision-making processes especially in the last decade. These benefits are not captured in standard cost benefit appraisals and have recently been included in more comprehensive assessments of transport infrastructure projects. For instance, Department for Transport (DfT) in the UK suggests wider economic impacts as a sub-objective of transport appraisal. Moreover, Banister and Berechman (2000) point out that many transport investment decisions would not have been made “if only the transport benefits had been considered” (p.257). In Chapter 6, the wider economic benefits of the Istanbul Metro have been evaluated after ten years of its opening. Although these impacts are mainly at the meso scale such as business growth in the area, here other non-transport economic impacts such as property values are considered. Moreover, these impacts are evaluated in macro, meso and micro scales.

Amongst the macro and meso impacts of transport infrastructure, improvements to labour markets (Banister and Berechman, 2001), their relationship with public transport links (Chatman and Noland, 2011) and transport infrastructure’s impacts on employment density (Hensher et al., 2012) have also been well discussed. Low travel costs and availability of efficient (reliable and fast) transport infrastructure increase the “pool of labour available

to firms” (Chatman and Noland, 2011 p.731) and also increase the employment density within easy reach of the firms.

The relationship between transport and agglomeration has been on the agenda of economists for a long time. However, discussions on agglomeration economies as well as increasing returns in economic theorising have been widely extended after Krugman’s contribution to the discussions of new economic geography (Krugman, 1991; 1998). An important determinant of agglomeration economies is the reduction in travel time. It not only increases connectivity between firms and households but also increases spatial density, thus gives a boost to the number of firms clustering around network nodes (Chatman and Noland, 2011). Fast and cheap travel, therefore are important determinants for location choices of firms (Mejia-Dorantes et al., 2012). For example, in a study investigating the impacts of the subway on agglomeration, it has been found that the metro has helped to strengthen the economic links between municipalities and the capital city (ibid.) Reduced travel time and cost may also change how much inventory the firms hold and where their warehouses are located (Chatman and Noland, 2011). In order to fully understand the impacts of transport infrastructure investments and transport improvements, sources of agglomeration mechanisms should be studied further (Graham and Van Dender, 2009).

Finally, going back to the discussions on land rent in the previous section, we can discuss the micro economic impacts of transport infrastructure investments. These impacts can be generalised as changes in land use including activity relocation and property values. In the context of this thesis, the main focus is the impacts of railway systems (subway, LRT, commuter rail), however impacts of other transit modes are acknowledged. Research on land use and land value impacts of transport infrastructure demonstrates that office development (Cervero and Landis, 1997) and land values (Cervero and Duncan, 2001) increase as well as residential and commercial property prices (Cervero, 2003; Debrezion et al., 2007) within close proximity to transit stations. These arguments are further discussed in Chapter 6.

2.3.3 Gendered mobilities

Even though women's mobility experiences can be seen as a form of social exclusion based on transport, due to the extensive literature on gender and transport this issue needs separate evaluation. This thesis does not particularly focus on gendered mobilities at the individual level in empirical chapters but elaborates this issue at higher scales e.g. the entire city (Chapter 5) and the users of the Istanbul Metro (Chapter 7). In order to discuss the mobility experiences of women even at larger scales, it is important to understand the socio-spatial processes creating mobility differences between men and women.

Some of the most important contributions to the debate on the socio-spatial impacts of transport that create unequal consequences have been developed by feminist geographers. As Cresswell (2011) points out no group other than the feminist geographers has been "more attentive to the variety of mobile experiences and the power dynamics afforded by mobility" (p.554). Criticising transport researchers for being blind to gender issues, feminist geographers discussed women's relationship with the transport element since late 1970s and began to distinguish women's mobility from men (Law, 1999). Law (1999) pointed out two streams of thought in feminist geography. While one group of geographers focused on sexuality, fear and women's abuse, a second group, drawing on the Marxist tradition, concentrated on the women's role in households and their relationships in the workplace.

Pointing out the results of the British Crime Survey, Pain (1991) discusses how women felt unsafe outside their homes, while walking in parks and alley ways, and thus felt restricted while using public space (also see Yavuz and Welch, 2010). Moreover, she argued how man-made environment dominated the daily lives of women. A similar argument has been raised by Doreen Massey, in *Space, Place and Gender* (1994) where the limitations to women's mobility are discussed: "[...] women's mobility, for instance, is restricted - in a thousand different ways, from physical violence to being ogled at or made to feel quite simply 'out of place' - not by 'capital', but by men" (Massey 1994, p.148). Likewise, Hanson (2010)

discussed how learning to ride a bike in the 19th century could be seen as means to challenge the male dominance, a way to build up women's confidence and character and to question norms of masculinity.

The second stream of research discusses women's different roles in daily life ranging from being a mother, a housewife to a breadwinner and their daily mobility patterns (or immobile lives) whilst maintaining these roles. Women's journey to work was one of the focus points of early studies (Grieco et al., 1989). Research shows that there are significant differences between the daily travel patterns of women and men and that the former is usually more complicated and include shorter trips (Uteng and Cresswell, 2008; also see Dobbs, 2005). Moreover, it has been stated that women use public transport more than men (ibid.). However, it has also been discussed that public transport is not always a solution to women's transport problems (Dowling, 2000). Public transport does not necessarily provide off-peak, suburban travel and easy ways to travel with small children to more than one destination. Therefore, a growing number of women own cars and make trips by car.

However, for women, who cannot afford a car, cannot drive or their rights to driving are restricted by law (e.g. Saudi Arabia), travelling by public transport or travelling with their spouses according to the law are the only options. This concern is also observed between different ethnic groups in developed countries and even between men and women belonging to the same ethnic group (Uteng, 2009). As Uteng and Cresswell (2008) point out, "how people move (where, how fast, how often etc.) is demonstrably gendered and continues to reproduce gendered power hierarchies" (p. 2). As pointed out earlier, Chapters 5 and 7 discuss whether there are gender-based differences in terms of physical mobility in Istanbul.

2.3.4 Social exclusion

Similar to the literature on gender and transport, the issue of social exclusion is taken into consideration within Chapters 5 and 7. Especially in Chapter 5, social exclusion is largely discussed in terms of travel time and trip frequency. In Chapter 7, choice of transport mode

and the use of the Istanbul Metro are considered in terms of exclusion from specific transport modes.

Transport poverty dates back to the early years of mass transit in 1950s¹⁰. The famous case of Rosa Parks, when she refused to give her seat to white citizens, became inspirational for civil rights movements. Although the problem is not new, academics' interest in this issue is relatively new. The relationship between socio-economic status and groups with low mobility as well as the availability of affordable and efficient transit systems has been on the agenda of the academics since the 1990s. The establishment of the UK Social Exclusion Unit in the last decade of the millennium and their widely recognised report *Making the Connections* in 2003 attracted even more interest and resulted in a vast number of publications on *social exclusion*.

Although there is no single meaning of social exclusion on which the scholars have a consensus, the term may refer to "the loss of an ability (by people or households) to both literally and metaphorically connect with many of the jobs, services and facilities that they need to participate fully in society" (Church and Frost, 1999 p.3). Factors contributing to differential access to mobility relate to age (Banister and Bowling, 2004), gender (Dowling, 2000; Dobbs, 2005; 2007; Uteng and Cresswell, 2008; Uteng, 2009), physical well-being (Casas, 2007), wealth, race and nationality. The relationship between lack of mobility in terms of access and use of transport have been widely discussed in the transport geography and social exclusion literature (for publications looking at different aspects of social exclusion see for example, Banister, 1994; Church and Frost, 1999; Church et al., 2000; Lucas et al., 2001; Social Exclusion Unit, 2003; Hine and Mitchell, 2003; Sanchez et al., 2003; Rajé et

¹⁰ Transport poverty based on income, social status and gender is likely to be as old as the formation of first cities, even as old as early nomads. Despite the lack of evidence, it is known that for example in the medieval age only certain socio-economic groups in the society could leave their cities and travel to another city.

al., 2004, Lucas, 2004; McDonagh, 2006; Farrington, 2007; Preston and Rajé, 2007; Ohnmacht et al., 2009).

Looking at the variety of subjects included within the social exclusion research and the volume of published papers, it is possible to state that the problem is multi-dimensional and multi-disciplinary. Moreover, social exclusion research investigates both social processes that the individuals go through and the outcomes of those processes (Lucas, 2012). Amongst the issues of social exclusion income division is the most common. In both developed countries and developing ones, income is seen as an important constraint for accessibility. Debrezion et al. (2007) state that since low-income groups usually rely more on public transport, proximity to stations and bus stops is of higher value to them than it is to high-income groups. Lucas (2012), examining research based on access to cars in developed and developing countries, discuss how income, age, gender, ethnicity and physical wellbeing matter for one's ability to drive a car and even having access to it regardless of living within a developed or a developing country.

Social exclusion research has had important contributions to the understanding of social issues related to transport. Thanks to a variety of publications, social aspects of transport are now more widely explored and the impacts of transport infrastructure investments are understood at a more disaggregate level. Social exclusion research has also had important policy implications especially in the UK. Having established the first social exclusion unit within governmental bodies, social issues have entered decision makers' agenda. Moreover, the Department for Transport in the UK has paid particular attention to the issues of social exclusion since 2004 by providing policies in order to overcome exclusion related to transport (DfT, 2004).

2.3.5 Environmental justice

In terms of empirical analysis, environmental justice is outside the scope of this thesis. Nevertheless, it is important to discuss this concept in order to fully understand and unpack

the socio-spatial processes and inequalities related to transport. Environmental movements around the world appeared in the late 1960s when the negative impacts of human actions on the planet started to become more visible due to oil spills and the use of Dichlorodiphenyltrichloroethane (DDTs). Rachel Carson's famous book *Silent Spring* (1962) drew attention to these issues and initiated the ban against the use of pesticides. By early 1970s non-governmental environmental organisations such as Greenpeace, WWF and many others started to be established and have become *advocates* of the earth.

In 1987 the United Nations World Commission on Environment and Development published *Our Common Future*, a report on sustainable development also known as the Brundtland report. Here, for the first time sustainable development was defined as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987 - Chapter 2). Also, intergenerational equity was considered (Litman, 2002). Following this, the first Rio Summit in 1992, the UN Habitat II Conference in 1996, Kyoto Protocol 1997 and Rio +20 in 2012 are only four of a vast amount of conferences and meetings that attracted decision makers' attention to the issues of climate change, human rights, animal rights, housing conditions and other issues of sustainability and forced them to sign agreements for protecting resources and eliminating negative impacts of consumption. However, there are still important issues to be solved and important steps to be made since some countries are reluctant to follow the protocols. As Harvey (1996) pointed out in early 1990s the chief economist of the World Bank and also a high rank official at the US parliament could speak of encouraging the migration of dirty industries and wastes to less-developed countries which then became an example of "toxic colonialism" (p.367).

Environmental justice is closely linked to the discussions of social justice as it demands an equal distribution of environmental benefits and disadvantages across different social and economic groups (Harvey, 1996). It can also be a subfield of spatial justice as it

focuses on the geographical distribution of environmental advantages and burdens and aims to create an even spatial development (Soja, 2010). In both cases, it is related to space, production of space and its impacts on different social groups.

Many issues of environmental justice are urban in character (Harvey, 1996). From household, commercial and industrial waste to air pollution due to heating and traffic and to extreme consumption of natural resources, urban areas create important health problems. Transport is amongst the major reasons for such health issues as it produces a quarter of CO₂ emissions in the world (ITF, 2007). For instance Freund and Martin (1993) pointed out that the taxi drivers in New York City have such extreme levels of carbon monoxide in their blood that they cannot make blood donations. This example shows that environmental injustice is distributed spatially as well as socially in urban areas. It is not only the vulnerable groups such as the low-income groups, immigrants or illiterate people that suffer from environmental problems in cities, but it is whoever resides, works, does shopping, goes to school or accesses health care within urban areas. Nevertheless, the situation is different in the outer parts of the city centre as it is mainly low income groups that reside near main roads, waste collection areas or industrial estates. Residing adjacent to road transport not only leads to health problems and premature deaths due to air pollution but also causes high amount of traffic accidents and lowers neighbourhood quality (Pennycook et al., 2001).

Other issues related to transport such as accessibility, dependence on automobiles and lack of public transport that have been previously discussed within the environmental justice literature (Lucas, 2006) are more likely to be issues of social exclusion and spatial justice, therefore, will not be repeated here. Yet, policy approaches to overcome these issues such as congestion charging, zero-emission cars and car clubs, accessibility planning and public transport improvements should nevertheless be mentioned (ibid.). These policy measures shift the debate towards the measures needed for liveable cities where walking,

cycling and public transport are promoted through a series of design and policy measures (Lennard and Lennard, 1995).

2.3.6 The right to the city

One of the prerequisites of liveable cities is the availability of public spaces that would allow social interaction, public debate and the formation of community. Although these needs are to an extent now met through social media, spaces of physical gathering are still important for democratic participation in urban and rural life. Transport infrastructure is important in two areas: participation in urban life and participation in decision making.

First of all, it is the transport element that brings people physically together in squares, streets, pavements and even in different modes of transport. Therefore, the way the infrastructure is planned, its integration with the transport network, the availability of alternative transport modes and their affordability are important conditions for enhancing the rights to mobility and to democratic participation in daily life. Urry (2007) states that mobilities make links between people and enable conversations. These meetings, gatherings and conversations are enabled via these public spaces and it is a matter of rights to participation in democratic life which should be enjoyed equally: “all social groups around the world should be able to ‘meet and talk’, to be able to exercise positive freedom” (Urry, 2007 p.207). Moreover, referring to Sheller’s (2006) concept of ‘civic freedom and mobility’, Urry (2007) points out people’s need for experiencing “sufficient travel so that the pleasures of meeting and talking to people are sustained and developed”. Likewise, according to Sager (2006), who discusses the notion of freedom and its links to transport, “the freedom is in knowing for certain that transport opportunities are available” (p. 474). The relationship between freedom and mobility will be explained in the following sections. However, it is important to mention that the desire for face-to-face meetings increases the demand for travelling, therefore, creates unsustainable transport (Banister, 2005). Policy measures in order to improve sustainability in transport have been widely discussed by Banister (2008).

Second, as seen in decision making processes of city plans and projects; transport planning and project development also requires a democratic platform where these improvements can be discussed. Therefore, participation of the NGOs, businesses, public, academics, local and national authorities to the planning processes is of high importance and is necessary in order to be able to 'practice' the right to the city. In the UK, community and expert participation to transport planning has been on the agenda since the late 1990s (Bickerstaff and Walker, 2001). The Transport Act 2000, which is the act in force, requires local transport authorities to consult various stakeholders (e.g. bus, rail operators and county councils) as well as disability groups and environmental organisations when formulating policies and plans (DfT, 2009 p.9). Moreover, it requires authorities to involve citizens in local decision making. The Department for Transport's guidance on Local Transport Plans (LTPs) also ensures that genuine opportunities to influence decisions and delivery will be given to local representatives. Finally, DfT advises ways to sustain this participation at different levels. It is suggested that "as well as undertaking formal written consultation, authorities may wish to consider using representative working groups, forums, ongoing market research and questionnaires, as a means of reaching and involving a wide range of stakeholders" and also should consider consulting visitors and people who work in the area and not only the local businesses and residents (ibid. p.30). In order to sustain such a participatory process in the UK the local transport plans (LTPs) are structured in order to allow participation of different actors at different stages. For instance in the third LTP of Oxfordshire, consultation was carried out with various conservation groups, with 250 stakeholders and finally with the public.

2.3.7 Discourses of space-power in transport

Power is taken as an essential element in this thesis not only for explaining unequal mobilities in Chapters 5 and 7 but also for understanding the power of politicians in decision making and planning processes (Chapter 8). Therefore, in this section, first the relationship between planning and transport is evaluated. This is followed by a discussion on the unequal

mobility experiences of different socio-economic groups. Finally, the link in-between these two issues, forced evictions, as consequences of differential power in decision-making processes and their outcomes such as mobility deprivation are briefly discussed.

According to Foucault (1994) [1976] every political debate in the eighteenth century onwards included discussions on urbanism, architecture and facilities of common life. Although the idea of controlling cities and nations via planning is as old as the city-states in Greece, one of the most famous examples to this is the Haussmann's plan of Paris in the second half of the nineteenth century. This plan brought immense demolitions in Paris, 'cleaning' of the alleyways and the opening of wide boulevards where it was perceived that riots were less likely to occur. About fifty years later, the situation was quite similar as the first half of the twentieth century witnessed projects and plans that also aimed to control and expand the idea of the nation-state (Graham and Marvin, 2001; Steinberg, 1987). States can only control where they can reach; therefore, connecting every part of countries with seamless transport links is essential for different reasons from maintaining national security to declaring the power of the state. According to Graham and Marvin (2001) (technology and) infrastructure are "more than materially affecting 'things'. They emerge, rather, as embedded instruments of power, dominance and (attempted) social control" (p.213).

Transport's relationship with the issue of power also originates from the differences of the mobility levels of different socio-economic groups. Some are more mobile, capable and freer to move than others and this creates unequal mobilities (Manderscheid, 2009). As the world became more connected and the speed of daily life increases, seamless transport becomes increasingly crucial. Those who can afford or can adjust to these changes, mainly business and leisure travellers are the most powerful ones in this new world. Borrowing from the German philosopher, Peter Sloterdijk, the famous architect Rem Koolhaas calls these people the "kinetic elite", a notion that is closely linked to Harvey's space-time compression (see section: 2.2.2): "These are the people whose personal lives are entirely

subordinated to business demands, who travel hundreds of thousands of miles every year, who need not a home but a home base, a comfortable and convenient nest in which to recuperate while waiting for the next flight. It is an elite whose status is proportional to what they sacrifice in ordinary human satisfactions” (Wolf, 2000 p.1). Returning to the unequal mobilities debate it is possible to conclude that such status is gained by being free and able to move. As Sheller and Urry (2006) state: “moving between places physically or virtually can be a source of status and power” (Sheller and Urry 2006, 213).

Massey (1994) adds to this debate and points out that while disadvantaged groups contribute to increasing mobility levels in different ways, they might not be the ones who are benefiting from their labour in the end. Thus, unequal mobilities is not only a question of unequal distribution or a comparison between mobility levels of different groups, but it poses more of an issue that some groups can actually weaken other people’s ability to be mobile (ibid., p.150). This issue is picked up again in terms of mobility capital in section 2.3.9.

Finally, the link between transport and discourses of power and space to be discussed here is the issue of forced relocation and displacement. Transport infrastructure development is rarely the reason for forced eviction and relocation in the developing world (Markovich and Lucas, 2011). Analysis of such examples from India and Tanzania can be found (Ndezi, 2009; Patel et al., 2002). In fact, the most important impact of transport on displacement is the after effects of forced relocations. That is when the issues of social exclusion start to occur. Households who are evicted from their houses and relocated outside their usual neighbourhoods or villages face important challenges to re-establish their lives, their relationships, their access to schools and health services and, more importantly, access

to their jobs. Therefore, transport and mobility become the most *powerful* elements in their lives¹¹ (also see Chapter 4).

2.3.8 The freedom of movement

Freedom of movement is identified as a fundamental right. In the United Nations Universal Declaration of Human Rights (UDHR), the first paragraph of Article 13 declares that ‘everyone has the right to freedom of movement and residence within the borders of each state’ (UN, 1948). Freedom of movement has been recognised through three rights: to leave any country, including one’s own; to return; to have freedom of movement and residence within the borders of each state. Although not empirically explored in this thesis, freedom of movement is yet another important issue to understanding socio-spatial inequalities based on transport. Moreover, freedom of movement is also associated with power relationships, and therefore is an important aspect to establishing socio-spatial justice. Hence, this issue is discussed in the literature review.

Sager (2006), applying Sen’s thoughts on freedom of mobility, focuses on the opportunity and the process dimensions of freedom. The first aspect concerns our pursuit of opportunities while the latter is about having control of one’s own actions (Sager, 2006). Sager (2006) employs these concepts and defines the first concept as the desire for mobility and calls it the potential mobility and the second as the rights to pertaining mobility (p. 468). Sager also mentions that if we were to accept Sen’s understanding of freedom and capabilities, which is based on people’s abilities, desires and the processes they go through in life rather than outcomes and incomes, then no individual could have any rights: “freedom as mobility cannot be enjoyed as a right in democratic societies” (p.476). Nevertheless, Sager

¹¹ Such evictions have been experienced in Sulukule, Istanbul. Residents of Sulukule, whose livelihood was based on performing Roma music in taverns of the old quarters of Istanbul, were forced to live more than 30km away from their workplaces. Their new living space has not been served by public transport till late hours. Consequently, the community has been dispersed due to high rates of mortgages. The issue of forced evictions in Istanbul is briefly discussed in Chapter 4.

believes that there are important lessons to be learned from the liberal formulations of mobility as freedom, one of which is “the unreasonable conclusion that policies should maximise transport in order to enhance freedom”. Moreover, Sager proposes to use ‘mobility as potential transport’ rather than ‘mobility as freedom’ as the latter also may include the option of not moving. Finally, he believes that other aspects of freedom are more important than the concept of mobility as freedom.

The discussion on freedom of mobility naturally leads to control and the discipline of mobility. ‘Mobility as potential transport’ can be easily contaminated and limited by some control mechanisms, mainly by states. Even though the UN UDHR suggests freedom of movement, states largely control who can move to what extent and where. As Urry (2007) points out “states routinely hold that there are good movers and bad movers and that the latter should be limited, penalized, extradited or thrown into prison” (p.205). States can and do legitimise their actions for monitoring, regulating and limiting people’s mobility since terrorism, entry of illegal immigrants and illegal trade of weapons and drugs are amongst growing global trends.

States monitor people by using different methods and tools from surveillance cameras to visas, to identity numbers where all the information about a person is contained. Although there are different assessments as to whether we are becoming panoptic societies or not through such interventions to private and societal life, Koskela (2000, p.243 cited in Wood, 2007, p.252) believes that the panoptic technology of power is making our cities enormous panopticons. Moreover, as one of the tools of monitoring, databases emerge, not only as containers of recorded sections of our lives but also in the form of electronic ‘panoptics’ (Wood, 2007). As briefly mentioned earlier, citizen identity numbers is an example of panoptic data bases. For example in Turkey, the use of citizen identity numbers became mandatory in 2008. These numbers are used almost everywhere, from applying for a bank card to buying an airline ticket and contain every single piece of information about

citizens. Although privacy of private life is secured by the constitution in Turkey, in practice the situation might be different. As Sager (2006) points out “the electronic tracks people leave when travelling can be exploited to threaten freedom as mobility” (p.469). He also adds that this “surveillance is intense at the hubs, terminals, and transfer points where the potential for freedom is highest” (ibid.).

Another method used by states that restricts freedom of movement is the use of codes that are not necessarily written regulations but expected to be applied depending on the context. According to Amin and Thrift (2002), “nearly every urban practice is becoming mediated by code” (p. 125). Walking-codes, cycling-codes, driving-codes etc. differ from one society to another and have been embedded in our life styles since early years: they range from learning how to cross to street to how to behave in a public transport vehicle. We also continue learning these practices as we travel and learn ‘mobility codes’ (Jensen, 2009) of other cities and countries. Also, we expand our knowledge as the technologies of these codes change. Our mobilities are regulated constantly by these social codes and by those who make them.

2.3.9 Mobilities and network capital

It is evident in the transport literature in the last decade that we do not only travel for specific purposes, to reach a destination or access an activity but we also travel for the sake of travelling. Therefore, transport (or travel) is not only a derived but also a valued activity (Mokhtarian et al. 2001; Sager, 2006; Cresswell, 2006; Banister, 2008). Discussing the role of ICT in replacing an important amount of our trips (for work or other purposes such as shopping), Banister (2008) points out that travelling is emerging as a way to compensate our declining quality of life and to get away from daily routines. Travel can be enjoyed as a valued activity by almost every group in society regardless of their income level since income is not always an indicator of being mobile. However, here the main issue is the amount of leisure

time and whether individuals cannot only financially but also socially afford to take some leisure time.

Schlich et al. (2004) explain that the leisure time in developed countries has increased significantly in the last fifty years when the working hours reduced and leisure budgets increased. For example, in the US, the average weekly working time decreased by 9.5 hours between 1965 and 1995 while in Germany a similar deduction occurred from 48.3 hours to 38.1 (ibid., p.220). Moreover, time spent carrying out housework has reduced with the help of technology and accessibility to activities has increased. Therefore, people started travelling further distances in a shorter period of time and were able to take vacations even if only for short periods of time. However, the performance of leisure activities is partially dependent on income, thus, performing mobilities is again not equal.

In order to extend the discussion on the varied meanings of travel, it is important to mention the schools of thoughts that have been influential in this debate. In the last decade, first sociology, then geography followed by related disciplines, developed a deeper understanding of what mobilities actually mean, represent and contain and how they produce and reproduce socio-spatial life. For instance Urry (2000) draws on an understanding of walking and demonstrates how walking and movement around cities has been “mediated by power relations and that determine where, and when, different social groups are able to walk” (p. 54). The new mobilities paradigm, therefore, examines these interactions between space, humans (as mobile entities) and time at different scales from that of the body to the globe (Sheller and Urry, 2006; Cresswell, 2010).

The new mobilities paradigm draws our attention to the practices, spaces, subjects, meanings and politics whilst on the move (Cresswell and Merimann, 2011; Adey, 2010) or even while staying still (Cresswell, 2011). Scholars discuss how our mobility experiences create not only interactions with others (Axhausen, 2005) but also *affective* geographies (Bissell, 2010), broadly speaking, socio-spatial interactions purified from emotions.

Mobilities can be experienced in two main ways: by personally performing it (as in walking, cycling and driving) and by moving with others (Bissell, 2009).

One of the dominant forms of individual mobility is automobility.

"The term automobility works off the combination of autonomy, and mobility. In its broadest sense we can think of many automobilities – modes of autonomous, self-directed movement. [...] The promise here is for self-steering autonomy and capacity to search out the open road or off-road, encapsulated in vehicles which afford not only speed and mobility, but act as comforting protected and enclosed private spaces, increasingly a platform for communications media, that can be enjoyed alone or in the company of significant others" (Featherstone, 2004:1-2).

The act of driving, the relationships that the driver establishes with his/her environment i.e. with other passengers, pedestrians on the road, other cars, or the surrounding built environment or nature, visual elements, music on the radio or other pleasant or unpleasant sounds, ideas and other elements of mobility construct the important daily interactions of a driver. Thus, the driver and the car form a hybrid assemblage (Featherstone, 2004). Likewise, Thrift mentions how the automobiles become more and more hybrid entities and that the separation between the human and machine becomes blurred (Thrift, 2004). Therefore, the driver – the owner – attributes different meanings to his/her car and sees it as an object that symbolises his/her social position and 'being' within the society. Urry (2007) discusses that automobility is a source of freedom. Having access to a car makes other forms of travel look inflexible and fragmented as for example public transport can never be as seamless as car travel (ibid.).

Urry (2007) recognises the importance of access, as one of the mobile processes, in creating social inequalities. However, he discusses that there are many dimensions of such access, different forms of capital, one of which is network capital. Network capital is about being able to engender and sustain social relationships with others. "So network capital points to the real and potential social relations that mobilities can afford" (p.196). Therefore, similar to Marx's and Marxist geographers' approach to the commodity, it is the social

relations that mobilities create that matter, not only the means of mobilities. Not everyone needs to have access to a car or a yacht as long as they can experience and maintain their social relationships with other people. Thus, the main subject of unjust mobilities should be the unjust social interaction caused by the lack of mobilities and/or the way that mobilities are practiced.

In this context, Kaufmann et al. (2004) refer to mobility as a form of capital and they call it 'motility'. According to them, motility, like other forms of capital, can be exchanged and can probably be produced and distributed (although not specifically mentioned by the authors). Kaufmann et al. (2004) explain this argument further and add that "movement can take many forms, that different forms of movement may be interchangeable, and that the potentiality of movement can be expressed as a form of 'movement capital'" (p. 752). Regarding mobility and access as different forms of capital, once again, brings the issue of inequalities into the discussion. In Chapter 8, the motility capital is discussed in terms of the role of the Istanbul Metro in increasing the mobility capacity of certain groups and therefore, accumulating motility in certain areas with better accessibility to the Metro.

2.4 Concluding remarks

Space, as David Harvey articulated clearly, is an extremely complicated concept and when the transport element is added to it, it gets even more complex. This review has demonstrated the multidimensionality of the space-power-society triangle from a transport and equalities point of view. Moreover, it has provided important ground for further discussion of these issues through empirical analysis.

First, a discussion has been sustained on how the discourses of space and time have changed in geography and related disciplines. In the last three to four decades, more emphasis has been put on the relationship between space and society than before. Space has become a key word in explaining worldwide issues of economic crisis, poverty and environmental issues which had been left only to historical analysis in the past. Moreover,

based on the Marxist analysis, space is also seen as a commodity and such an approach helps us understand the inequalities produced by space and socio-spatial processes.

Second, the relationship between space and transport has been explored. The second section has tried to establish an understanding of how spatial inequalities generate in the transport context. Given the complexity of the subject there are different approaches to understanding inequalities in transport developed within different disciplines from sociology to transport geography. Based on the discussions given in the first part of the literature review, an argument has been established on transport infrastructure and mobilities as commodities. Since it is a challenging task to avoid spatial and commodity fetishism, the focus has been on the processes, that is, the socio-spatial practices that are created during people's interaction with the transport element, space and the society. These processes have been analysed by employing a wide range of scholarly arguments from the economic impacts of transport to social exclusion, from democratic participation to the city to the debates on freedom of movement.

Based on the discussion above, it is possible to state that the way that mobilities are performed and people's capabilities to perform those mobilities, as well as the distribution and availability of flexible, affordable and efficient transport networks are crucial to the debate of mobility inequalities. Mobility becomes a commodity, "a resource to which not everyone has an equal relationship" (Skeggs, 2004 p.49). Moreover, inequalities *spatialise* when the transport element is added to them. Transport infrastructure may create uneven geographic development via increases in land values, connected/disconnected areas, and bypassed geographies. In order to prevent such impacts of transport infrastructures it is important to establish policies that are based on in-depth understanding of inequalities in transport and promote *just* distribution of transport improvements.

How should the distribution be done? – It is a difficult question to answer as it largely depends on socio-economic and spatial circumstances of the countries and regions in

question. Discussions in the previous section have been organised around nine main issues. These issues include a wide range of discussion on the relationship between transport, mobilities, society and space. These are proposed as the issues that need to be investigated while deciding on policies regarding the distribution of infrastructure investments and policy improvements. Therefore, instead of developing a generic agenda for an equal transport policy, this reads like a package of policy suggestions that should be considered for transport investments rather than a finished product imposing a number of criteria.

Transport is spatial in its nature, yet, it is also social. However, the connection in between these two areas is weakly developed in the literature. Theories on space, the city, society, justice and transport cover a variety of issues and the volume of material is immense. However, empirical analyses putting socio-spatial inequalities in the centre of transport studies require further development. In this sense, there are two main emerging themes that have not been discussed widely in transport research¹².

The first issue is the issue of accumulation. Transport plays an important role in accumulating capital and mobilities in specific areas. Although from an economic perspective, this can be considered as a positive impact of transport due to reduced costs, clustered firms, accessibility to labour market and increased employment opportunities, from a spatial point of view, this situation creates uneven geographic development as a result of accumulated financial and mobility capital in certain areas. In order to understand transport's role in generating spatial inequalities, the issue of accumulation needs to be evaluated via empirical work. Along with other issues discussed throughout the literature review, accumulation of capital and mobilities is crucial to the discussion found in Chapters 5, 6 and 7.

¹² Although issues such as gendered mobilities, social exclusion and environmental justice emerge as crucial topics, these issues have been widely discussed in the literature as expressed earlier.

The second issue is on transport's relationship with democracy and participation to urban life and to decision-making processes. This issue emerges from the right to the city debate discussed in this chapter. In the first decade of the 21st century, the demand for equal rights to the decision making process and equal roles within it has become a common ground for urban movements all around the world. As Soja (2010) discusses the right to the city needs to be considered in spatial terms more explicitly than before. The role of transport in bringing communities together, and creating spaces of assembly that form spaces of action and debates for such urban movements, needs further attention. In relation to the debates on power and planning and the dominance of national and local authorities in these public spaces brings a new dimension to the discussion. Moreover, the consequences of urban transformation projects such as displacement and relocation, highlights transport's importance in the right to the city debate in terms of right to accessibility, mobility and right to remain in one's own place. Chapter 8 provides an extensive discussion on the right to the city debate.

Overall, drawing on the literature review, this thesis focuses on how transport infrastructure is distributed spatially and what type of socio-spatial processes they create. Each empirical chapter looks at the problem at a different scale and from a different point of view. In addition to the themes mentioned above, Chapters 5 and 7 analyse the issues of social exclusion, gendered mobilities and accessibility while Chapter 6 explains wider-economic impacts of the subway system in Istanbul and discusses its impacts on creating uneven spatialities. Finally, Chapter 8 discusses the discourses of space, power and politics over the example of Istanbul's subway system. Such an investigation is based on a deeper understanding of space in transport that has been developing in the transport literature in recent years. This thesis provides important observations through its empirical analysis and brings depth to debates on space, justice and transport.

Chapter 3

Methodology: Assessing socio-spatial justice in transport

3.1 Introduction

In this chapter, the rationale behind the methodological approach of the thesis is explained. Although in each empirical chapter the applied methods are explained further, in this chapter the relationship between these methods and different chapters are discussed in detail. Moreover, the reasons for choosing the case study approach as a research strategy are demonstrated. Case studies are important tools in defining and discussing contemporary and complex phenomena. Investigating the processes creating uneven geographical developments is a complicated task and needs a carefully selected and designed case study. The rationale for selecting the case study is discussed in the following section.

This research is based on a combination of quantitative and qualitative methods. The complexity of the problem on socio-spatial inequalities related to transport requires various methods supplementing each other at different levels. Therefore, multiple methods have been employed, ranging from secondary data collection in different areas, from social, economic, demographic and transport related data, to conducting semi-structured interviews with experts in different fields, collecting images, news, caricatures and pictures. Moreover, the difficulty of obtaining data and the limitations that the data bring to the study are discussed.

3.2 Case study as a research strategy

Yin (1994) identifies case studies as necessary processes to understand complex social phenomena. He discusses that a case study is a research strategy when a 'how or why' question is being asked about a contemporary set of events over which the investigation has little or no control. The case study represents a research strategy such as an experiment, history or simulation (Yin, 1981). Moreover, as stated earlier, it helps to examine "(a) a contemporary phenomenon in its real-life context, especially when (b) the boundaries between phenomenon and context are not clearly evident" (ibid. p.59). Likewise, Verschuren (2003) adds that a "case study [...] is especially suitable for studying phenomena that are highly complex and/or embedded in their cultural context" (p.137).

Transport research is a very complex area. For instance, investigating the complexity of America's transport sector, Cervero (2003) discusses a range of issues from demographics to shifting economies, technology, urbanisation patterns, connections and the complexity in political and institutional landscape. It is these issues and more that transport research needs to deal with while investigating the impacts transport has on societies. That makes understanding equality with regards to transport even more of an ambitious task, as the complexity of the problem may extend the boundaries of the research outside the scope of a doctoral thesis. Therefore, in order to understand the complexity and causalities related to the uneven implications of transport, a detailed case study is determined as the main research strategy.

The case study is a part of the research methodology that combines theoretical discussions in this area with a variety of methods. Hartley (1994) discusses that case studies are linked to the theoretical orientation of the subject rather than the research methods and are important in understanding and explaining the processes alongside the contexts of the complex phenomena. She adds further that without a theoretical framework, "a case study may produce fascinating details" about the researched area "but without any wider

significance” (p. 324). Therefore, the case study approach benefits from the theoretical discussions presented in the literature review.

Drawing on the importance of case study research, Flyvbjerg (2006 & 2011), clarifies the misunderstandings about case study research. According to Flyvbjerg (2011) misconceptions of the case study approach can be summarised as follows: (a) theoretical knowledge is more valuable than concrete, practical case knowledge; (b) one cannot generalize from a single case, therefore the single-case study cannot contribute to scientific development; (c) the case study is most useful for generating hypotheses, whereas other methods are more suitable for hypotheses testing and theory building; (d) the case study contains a bias toward verification; and (e) it is often difficult to summarize specific case studies. He then goes on to clarify these five misunderstandings about case study approach in order to “clear the ground for a use of case study in research” (Flyvbjerg, 2011 p. 302).

First of all, Flyvbjerg (2011) mentions that case studies have been around as long as recorded history and much of what we know about the empirical world has been produced by case study research (p. 302). Concrete, context-dependent knowledge is important to allow people to develop as experts. Moreover, in the study of human affairs, context-dependent knowledge is the only type of knowledge in creating epistemic theory. Second, Flyvbjerg (2011) mentions that it is incorrect to conclude that one cannot generalise from a single case. This largely depends on how the case is chosen, and whether it fully represents the research or not.

Moreover, Flyvbjerg draws our attention to overvaluing scientific generalisation. Drawing on the preconditions of science presented by Thomas Kuhn, Flyvbjerg (2011) discusses that generalisation is just one of the practical skills that researchers have. “[F]ormal generalisation is only one of many ways by which people gain and accumulate knowledge” (p. 305). Even though it is not generalisable, knowledge may be transferable and

a case study without any attempt to generalise can be of value. Therefore, it would be wrong to limit scientific inquiry to a formal generalisation.

Third, Flyvbjerg explains that case studies are not only useful for generating a hypothesis but also for testing it and building the theory. Referring to George and Bennett's (2005) evaluation, Flyvbjerg (2011) notes that case studies tackle issues of causality, develop historical explanations, understand the sensitivity of concepts to context and form new questions to study, better than other methods. Fourth, case studies can be used for falsification of a theory; therefore, they are important for theory development. Finally, Flyvbjerg (2011) mentions that instead of summarising and summing up a case study, authors should choose to value the diversity of a case study while drawing their reflections on it. Moreover, the authors may also choose to relate their studies to more than one theory of academic specialisation and make their studies open to broader philosophical positions. That way it would be possible to draw diverse conclusions (p. 312).

After this brief discussion on the use of case studies as a research strategy, it is important to further discuss Flyvbjerg's (2011) second comment on single-case study approach. Using a single case study can be seen as problematic; therefore, a clarification on the use of single case studies in research is needed. Flyvbjerg (2011) discusses that the quality of research using a single case study depends on the case selected and how it is chosen. The case study needs to reflect the questions asked in the thesis. Moreover, "case studies can employ an embedded design, that is, multiple levels of analysis within a single study" (Eisenhardt, 1989, p. 534; Yin, 1984).

The case study selected for the purpose of this thesis is the Istanbul Metro. It has been decided to conduct the research in Istanbul: first, due to personal reasons (knowing the city well); second, lack of studies investigating the relationships between transport infrastructures and socio-spatial processes in Istanbul and the rest of Turkey; and third, the city providing rich and dynamic socio-economic and spatial relationships and complexities.

Having evaluated the major transport infrastructure investments in Istanbul (included in the upgrade report), discussions led the thesis to focus on the Istanbul Metro as a case study.

First of all, the Istanbul Metro is a complete but at the same time an ongoing project. The main line consisting of seven stations opened in 2000. Between 2005 and 2011, construction for new stations followed and five new stations opened between 2009 and 2011. Construction of new stations continues since the main aim is to link the Metro with the Marmaray project in the south (Figure 3.1). Although some of the post-impacts of the Metro can be analysed already, other impacts are yet to be discovered. Therefore, research on the socio-spatial impacts of the Metro can be influential for future studies in this area.

Second, there is a lack of interest on the ex-post analysis of infrastructure projects in Turkey. Ex-post studies include the impacts of transport infrastructures on urban pattern (Tezer, 2004); on the polycentric urban development and labour market (Alpkokin, et al. 2005; 2008); mobility changes (Gerçek and Demir, 2008); and on the environmental impacts of transport infrastructures (Tezer et al., 2010; Demirel et al., 2008). However, these studies remain at a very broad level and lack a comprehensive understanding of the social, spatial and economic processes. Therefore, investigating a completed infrastructure in Istanbul offers an opportunity to comment on these issues. Chapters 6 to 8 investigate the economic, social and political impacts of the Metro with regard to socio-spatial inequalities.

Third, the Istanbul Metro is Istanbul's first modern subway. It was a long-awaited infrastructure system for a city like Istanbul that has a population reaching almost fifteen million. It is a mass transport system with an expected high demand. For example, in a feasibility report prepared for the extension of the line (Gerçek and Demir, 2007), it is mentioned that the initial line carried 140,000 passengers a day, and was expected to carry over one million passengers a day after the opening of the northern end (2011) and the connection is made to the Marmaray (ongoing) (Figure 3.1). Based on the data gathered from the Ulaşım A.Ş., at the moment, the Istanbul Metro carries 200,000 passengers per day;

however, its capacity is more than its current use¹³. Therefore, the reasons for the low usage require further investigation. For this purpose, Chapter 7 evaluates the connectivity of the Istanbul Metro with the rest of the transport network, as well as the urban system, based on land uses. Moreover, it explores the user profile of the Metro.



Figure 3.1 Metro lines in Istanbul. Red line – Airport LRT (opened in 1989); Green line – Istanbul Metro (opened in 2000); Blue line (North – West connection, opened in 2006); Purple line – Kadikoy-Kartal (opened in 2012); Dark blue line demonstrates the Marmaray connection <http://www.istanbul-ulasim.com.tr>

Finally, being located underneath the main road of the Central Business District (CBD), and having access to the old and the new CBD, the Istanbul Metro generates socio-spatial processes that are affected by a range of externalities. The main difficulty is to differentiate these processes from the impacts created by the Büyükdere Avenue, the main road running through the CBD. Therefore, analysing the impacts of the Istanbul Metro in

¹³ The stations of the Istanbul Metro were designed to accommodate eight vehicles (IBB, 2011A) that can carry 250 passengers in one direction every 1.5-2 minutes. Based on this calculation, the Metro has the capacity to carry 60,000-80,000 passengers in one direction per hour which is almost half of the current daily ridership by this system.

relation to the Büyükdere Avenue contributes to the methods of understanding varying impacts of different transport systems serving similar spatial units.

3.3 Research design and the use of multiple methods

It is a common approach to combine different methods in research where case studies are used as a research strategy. Case studies can employ an embedded design of multiple levels of analysis within a single study (Eisenhardt, 1989; Yin, 1984). A detailed research design is needed in order to use the chosen case study to its full extent. Table 3.1 demonstrates the research design of the thesis. According to this, each empirical chapter has been devoted to one research question for which appropriate methods and data have been chosen. Each question has been answered within related disciplines and in conjunction with the literature review in Chapter 2.

Such a research design that breaks the case study into different components allows us to understand the causality between different socio-spatial and economic elements and the externalities that are generated in different contexts, yet affecting the selected case. Not just the case study but also the components of the case study have variations in terms of the scale and the data used. This way, a detailed investigation of the case can be conducted. While research on different scales provides a more comprehensive look to the issue of causality, the diversity of the data helps the analysis of different issues.

	THE RESEARCH DESIGN									
Chapters	Research question	Hypothesis	Unit	Discipline	Theory	Main Research Strategy	Research strategies	Method	Source of Data	Unit Being Characterized
Chapter 5	Is there a relationship between the physical mobility levels of the residents of Istanbul and their socio-economic status?	Inequalities generate due to the physical mobility levels of different socio-economic groups	Istanbul	Transport geography Sociology	Mobilities	CASE STUDY	Travel diaries	Quantitative	Household transport surveys Travel matrices	City as a whole
				Urban planning	Land use Accessibility					
				Geography Philosophy Sociology	Spatial justice Social justice					
Chapter 6	What are the in-direct economic benefits of transport infrastructures? To what extent, do they foster uneven economic growth through accumulation of impacts in certain areas?	Uneven geographies are generated due to the agglomeration of the surplus created by transport infrastructures	Istanbul Metro	Transport geography	Macro and micro economic theories		Archives	Quantitative	Census Number of firms opened annually Land registry Property values	Catchment areas of the Istanbul Metro stations
				Transport economy	Agglomeration economies, Network theory, Labour markets					
Chapter 7	Who are the users of transport infrastructures? Is it possible to discuss the existence of specific user-profiles for different modes of transport?	Distribution and accessibility of transport infrastructures may cause social exclusion for some members from the society while including others	Istanbul Metro	Transport geography	Social exclusion Accessibility		Travel diaries	Quantitative	Household transport surveys Travel matrices	Users of the Istanbul Metro
Chapter 8	What are the socio-political meanings of transport infrastructures? In what ways can we discuss democratic rights to the city in terms of rights to transport and mobility? Is there a need for transport planning and policy to reformulate itself in order to include issues of inequalities in transport? If so, how can this objective be achieved?	Transport investments are used in order to attract investments	The surroundings of the Istanbul Metro	Planning Geography Economy	Power and planning Urban politics Urban land rent theory Spatial justice		Expert interviews	Qualitative	Interviews Reports Court documents Media files Images Caricatures	Transport infrastructure and its surroundings
		Politicians use transport infrastructures in order to increase their popularity								

Table 3.1 Research design

Mixed method approach, or multiple-methods approach, as Philip (1998) insists, has been used in this thesis. A methodology combining quantitative and qualitative methods is relatively new to social and human sciences (Creswell, 2003) despite the fact that unreported uses of this approach can be found in the field of Geography in the 1950s (Philip, 1998 p. 271). However, debates on the use of mixed methods go back to early 1990s when the possibilities of combining quantitative and qualitative approaches were discussed in Human Geography (Philip, 1998). "The multiple-methods approach", Philip (1998) describes, "represents a polyvocal approach to research, where employing a range of methodological strategies means that the researcher does not necessarily privilege a particular way of looking at the social world" (p.261).

Recently, use of multiple-methods approach has become more common in geography. For instance, Kwan and Schwanen (2009) stress that the authors contributing to one of the volumes of the *Environment and Planning A*, seek to advance mixed-method approaches in order to overcome the quantitative-qualitative binary. Strauss (2009) argues that multi method approaches are "appropriate for research that seeks to integrate different epistemological positions" (p.304). Likewise, quoting from Cook and Crang (1995), Philip (1998) discusses the opportunities of cross-referencing and maintaining consistency in research by employing combined methods. In this way, errors can be reduced. Moreover, research questions can be extended in research that uses mixed methods, since combining methods would enhance a wider understanding of issues. An important point is not to privilege one method over another (Philip, 1998; Creswell, 2003). With all of the above reasons acknowledged and the complexity of the research topic considered, this thesis employs a multiple methods approach.

3.4 Fieldwork

The main part of the fieldwork was conducted in Istanbul between June and September 2010. In this period, data was obtained from different divisions of the Istanbul Municipality

(Department of Transport, Department of Planning and the Department of Mapping), Istanbul Metropolitan Planning Department, Şişli District Municipality Planning Department, Beşiktaş District Municipality Planning Department, Istanbul Transport Company (ULAŞIM A.Ş.), Turkish Statistical Institute, Chamber of Urban Planners and the Chamber of Commerce. These data have been used throughout the empirical chapters (Chapters 5 to 8).

Apart from obtaining secondary data from various institutions in Istanbul, initially the research plan included a focus group study with the residents of the neighbourhoods in which the Metro line was being extended. In order to reach community organisations and local groups, the Chamber of City Planners and the Solidarity Studio¹⁴ were contacted. Between the end of June and July 2010, three local meetings were followed in Pınar neighbourhood in Sarıyer district, and representatives of the community were met. Meanwhile, two events took place in Istanbul that gave opportunities to meet representatives of local communities, activists and academics working in the field of urban transformation. First one was the Urban Movements Forum, held in 26-27 June 2010, where the attendees proposed a declaration of rights to the city and formed a platform with the same name of the Forum. Second, this group and many others attended the European Social Forum (ESF) on 1-4 July 2010.

During the ESF, not only were issues of urban transformation and rights to housing discussed, but historical and natural conservation and transport were also amongst the main issues. The latest plans proposing a third road bridge over the Bosphorus Strait, going through the Northern forests in Istanbul; a road tunnel that is expected to attract increased car traffic in the historical areas of Istanbul, increasing air pollution through its ventilation system; and, last but not least, the Metro Bridge crossing the Golden Horn that will block the

¹⁴ Solidarity Studio is a voluntary based organisation aiming to supply technical and social planning expertise to neighbourhoods in Istanbul that are going through urban transformation processes. A more detailed description of their activities is made in Chapter 4.

skyline of the old city, which is on UNESCO's World Heritage List. Considering all these upcoming issues, an activist platform ("Istanbul SOS") has been established composed of planners, academics, artists, lawyers and residents of Istanbul. Although establishing Istanbul SOS was not a part of the fieldwork, this platform has formed an important link between the theory and the practical. Through the platform's website, Twitter account and Facebook group, the issues emerging in Istanbul that threaten democratic rights, rights to housing, natural and historical conservation of the city and the socio-spatial impacts of transport projects are being discussed with a wider public (www.istanbulsos.com; twitter.com/istanbulsos; www.facebook.com/istanbulsos).

While the social platform mentioned above generated valuable discussions, the attempt to include focus groups in the research did not provide similar outcomes. Following three meetings held in the Pinar neighbourhood, the first focus meeting was conducted with members of the neighbourhood association after their weekly meeting. The purpose of the meeting was to introduce the subject and discuss the use of Metro by the members of the neighbourhood, and whether the construction of the new Metro station in their neighbourhood had changed their daily commute or travel for leisure purposes. From the discussion, it was learned that the members of the Pinar neighbourhood did not establish strong relationships with the Metro. Due to their commuting patterns and the destinations they travelled to, the Metro was not a convenient transport mode for the residents of the neighbourhood. They mainly preferred the minibuses that ran through their neighbourhood, or the buses, as they provided a cheap and almost door-to-door service. Moreover, the residents of the neighbourhood mentioned during the meeting that they had put a proposal to the municipal council to have a more frequent ferry service in Yeniköy, Sarıyer district, which they could access by minibus or by walking downhill.

The neighbourhood association was asked for help in conducting follow-up meetings with the wider community. However, due to their lack of interest in the subject and the

problems they were (and are) facing in terms of urban transformation, the focus group study had to be terminated. However, it has provided some valuable insights from a neighbourhood association that advocates their opposition to leaving their houses and to displacement due to urban transformation projects. Meetings with this group have demonstrated that the Metro is not used by these low-income groups who live in squatter housing, even though they are in close proximity to a new Metro station. Since the focus group discussions have not provided all the necessary information needed to establish a relationship between the residents of Pinar neighbourhood and the Metro, the focus group approach was abandoned.

Following this unsuccessful attempt at focus group discussions, expert interviews have been selected as a research strategy. Between October and December 2011, interviews were conducted with five experts from different fields. Experts included two academics from the fields of Urban Planning and Transport Planning, one representative from the Chamber of Urban Planners, one decision maker and one real estate developer. The academics were chosen from different departments and separate institutions in order to cover expertise in different fields. Interviewees were chosen mainly through personal links. Formal semi-structured interviews¹⁵ were conducted via three different methods, due to logistics and time issues. These methods were: receiving comments by email (with the real estate developer and one of the academics); having a meeting on Skype (with the representative of the Chamber of Urban Planners and one of the academics); and a face-to-face interview (with the decision-maker). Although it is acknowledged that as the number of interviews increase the level of detail and the content of the discussions expand, the discussions carried out with interviewees are believed to have generated crucial discussion topics. These interviews are the basis of Chapter 8.

¹⁵ Although formal/recorded interviews were generated through these methods, informal discussions were held at various points in time during the dissertation with at least three of these interviewees.

Even though the main part of the fieldwork has been carried out over a certain period of time, this thesis largely draws on life-long experiences of living in Istanbul and using the Metro since its opening and involvement in a variety of planning and activist platforms in Istanbul. Moreover, informal discussions with various planners, academics, activists and decision makers over the course of the urban planning education and the doctoral thesis, transformed this research. Therefore, it is possible to state that the fieldwork was spread over a long process supported by formal and informal discussions.

3.5 Data

The nature of this thesis requires various data that would provide an understanding of the social, spatial and economic impacts of the Istanbul Metro. Although the data collection has been a difficult process, mainly due to the reluctance of officers to provide data¹⁶, the result has been satisfactory. Table 3.2 shows the list of data collected during the course of the study. Table 3.2 also shows how quantitative and qualitative data have been used in conjunction with each other in various chapters. This section of the chapter explains what type of data has been used in which chapters of the thesis. Moreover, it gives information on the sources and quality of the data and critically examines the data collection process in Turkey.

¹⁶ Even though formal applications were made for each piece of data, the officers had control and decided themselves on which parts of the data could be released for research purposes. Furthermore, the managers, some of whom were willing to share the available data, left the decision to their officers. Therefore, the data collection process went through stages of negotiations and ongoing requests sent to various institutions.

Data	Source of Data	Chapters	Description	Quality	Spatial Unit	Time
Istanbul Household transport surveys (Travel diaries)	Istanbul Metropolitan Municipality, Transport Department	Chapters 5 and 7	Quantitative Travel diaries collected for the purposes of the Third Istanbul Transport Master Plan	Good	Istanbul // Users of the Istanbul Metro	2006-2007
Istanbul Travel Matrices for HBW purposes	Istanbul Metropolitan Municipality, Transport Department	Chapters 5 and 7	Quantitative Travel matrices for 451 traffic analysis zones in Istanbul	Very good	Istanbul	2006-2007
Census: population, education and employment	Turkish Statistical Institute	Chapter 6	Quantitative Official census records	Very good	Istanbul & Catchment areas of the Istanbul Metro	1990; 2000; 2007
Number of firms opened annually	Istanbul Chamber of Commerce	Chapter 6	Quantitative Officially registered businesses	Very good	Istanbul; Büyükdere Avenue and Catchment areas of the Istanbul Metro	2000 – 2010
Property prices in square metres	District municipalities: Beyoğlu, Beşiktaş, Şişli, Kağıthane, Sarıyer	Chapter 6	Quantitative Square metre prices for properties determined by municipalities	Good	Catchment areas of the Istanbul Metro	1990; 1994; 1998; 2002; 2006; 2010; 2012
Planning Decisions (Beşiktaş, Şişli, Istanbul)	Istanbul Metropolitan Municipality, Planning Department; Beşiktaş and Şişli District Municipalities Planning Departments	Chapters 6 and 8	Qualitative Decisions in urban master plans, district plans and council decrees	Very good	Istanbul Municipality; Beşiktaş and Şişli District Municipalities	1980s onwards
Court suits applications and decisions	Istanbul Chamber of Urban Planners	Chapters 4 and 8	Qualitative Court suits by chamber of urban planners, architects	Very good	Metro catchment areas	2004 onwards
Expert interviews	Two academics, one decision-maker, representative of Chamber of Urban Planners, one real estate developer	Chapter 8	Qualitative Semi-structured interviews with urban and transport planners, decision makers and NGO representatives	Good	Istanbul Metro	2011
Media files: news, cartoons, adverts	Online sources, Ministry of Culture, comics magazines	Chapter 8	Qualitative News and images about the Istanbul Metro	Good	Istanbul Metro and its surroundings	2000 onwards
Photos	Personal photos	Chapter 8	Qualitative Photos taken in and around the Metro stations	Very good	Istanbul Metro and its surroundings	2010-2012
Aerial photos	Istanbul Metropolitan Municipality website	Chapters 4 and 6	Quantitative Aerial photos used to understand the urban development	Very good	Istanbul Metro and its surroundings	1966-2006

Table 3.2 Data

The first set of data is Household Transport Survey data, containing surveys that were conducted for Istanbul's third Transport Master Plan (2011). Compared to the previous plans in 1987 and 1997, the 2011 plan was based on a larger population sample of 2.2%, meaning that more than 70,000 households and over 250,000 individuals completed the survey in 2006 (IBB, 2008). The surveys were conducted in two periods, spring-summer and autumn-winter, in 2005-2006. Five independent survey firms were recruited by the Istanbul Metropolitan Municipality for five different areas in the city and their field areas were swapped over in the following term.

As a whole, the city was divided into 451 traffic zones, comprising one or more neighbourhoods. A neighbourhood was taken as the smallest unit in order to sustain knowledge transfer between studies of other institutions (e.g. the Census Bureau). As a result of the sampling study, the number of surveys to be conducted in each neighbourhood was decided on. Although some neighbourhoods were very small in terms of population compared to others, and requiring only two to three surveys to be conducted in these areas, the planning team decided to keep ten surveys as a minimum number for each neighbourhood.

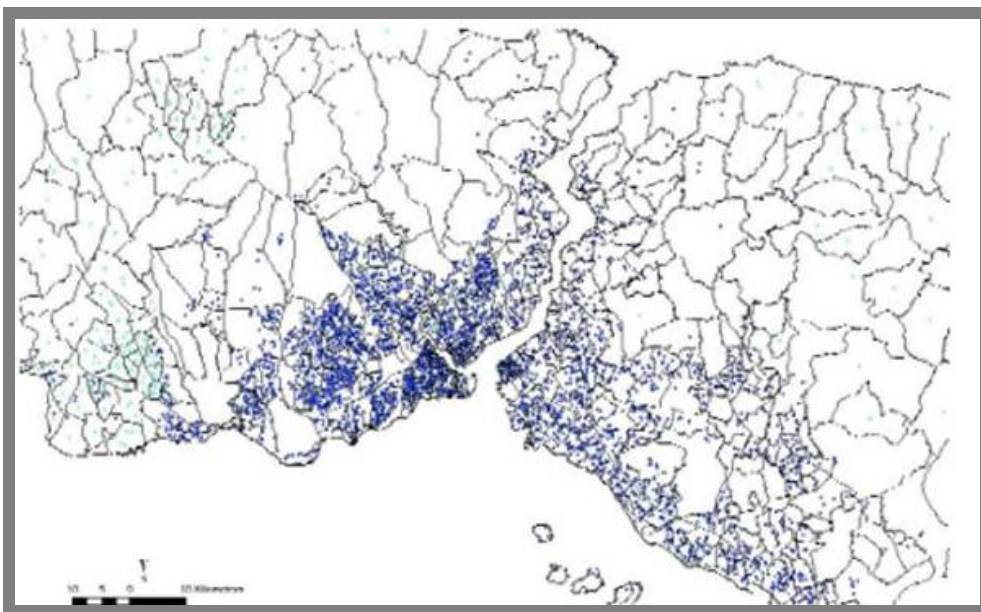


Figure 3.2 Spatial distribution of the primary sampling units

The primary sampling method, which was used to choose 90 households from each neighbourhood, was random sampling, while in the secondary sampling phase systematic sampling was used to select 30 households. Out of a total of 987 neighbourhoods¹⁷ in the study area, 4,079 Primary Sampling Units were determined. In each primary sampling unit, the buildings were numbered up to 90 and based on a previously determined walking route; these numbers were then given new values between one and three systematically in order to determine the secondary sampling units. Every member of a selected household took part in the survey. The survey was completed with a ratio of 20% unanswered or incomplete surveys, achieving an 80% response level (IBB, 2008).

For the purpose of this research, the Transport Department of the Istanbul Municipality agreed to provide just 1,000 randomly selected surveys. The reasoning for offering such a low number was the ongoing planning process. After the plan was completed and the reports were made public, a second request was made to access the rest of the surveys. This time 2,596 randomly selected surveys were provided that the municipality had used as a sample set, to test the reliability of their research. The reasoning for not allowing access to the complete survey was to protect the planning outcomes from possible critics from academia. This example shows the lack of transparency in planning and politics in Istanbul and Turkey. Nevertheless, based on the methodology in sampling and the geographical representativeness of Istanbul Transport Surveys and the Travel Diaries collected from respondents, results from 2,596 surveys give a good indication of the relationship between socio-economic characteristics of citizens and the way in which they practice mobilities. Therefore, transport surveys and travel diaries can be regarded as quality data.

¹⁷ The problem of Modifiable Areal Unit is acknowledged and discussed in Chapter 5.

Unlike transport surveys, travel matrices were easier to obtain. Although only the travel matrices for Home Based Work (HBW) purposes were provided by the municipality, since 32% of all trips are HBW trips, this information covers an important amount of the total mobility levels. The number of trips¹⁸ between zones in Istanbul was modelled by the municipality according to the surveys conducted in 2006. All household members, except children aged six and under, were asked to record trips carried out on the day before the survey. As a result, about 360,000 trips were recorded by 263,768 individuals. After the modelling exercise, the number of total daily trips was found to be 20,924,133, 49% of which consisted of walking trips. As seen in Chapter 5, a travel matrix for 7,936,917 trips was used in order to find the mobility patterns between different traffic zones for HBW purposes.

Trips for all purposes have been identified as good quality by the Transport Master Plan team based on the level of expertise during the survey and the modelling process. However, the travel diaries do not include detailed information on different legs of trips meaning that the different locations visited between origin and destination of a trip were disregarded. Moreover, only the primary transport mode for each trip has been recorded. Therefore, even though this information is sufficient and provide good quality for the purposes of this thesis, had it been used at as activity-based modelling exercise, it would be insufficient. Yet, the travel data provided for this thesis is regarded as high quality.

The third set of data is the census data obtained from the Turkish Statistical Institute (TSI). The TSI, formerly called the State Statistical Institute, has collected census data since 1927 and every five years from 1935 until 1990. The latest general census was conducted in 2000 after which the methodology changed and census information was annually updated, digitally, since 2007. However, this meant that extensive data, including employment,

¹⁸ A trip is defined as movement from one activity place to another for different purposes. A more detailed explanation is given in Chapter 5.

household details and housing conditions that had been collected in previous years, could not be included in the new system. In order to make the data coherent with previous years, population data was obtained from the TSI and used at the neighbourhood level in Chapter 6. In order to understand the employment changes, previous Transport Master Plan reports have been consulted to and information on employment based on working place has been obtained for 1985, 1996 and 2006 at the district level. The census data as well as the employment data can be regarded as high quality data.

Following this, the Chamber of Commerce was contacted to access data on the number of companies that opened and closed annually in Istanbul. By July 2010, during the fieldwork, the data set, comprising 283,627 opened firms and 254,316 closed firms in Istanbul between 1980 and 2010, was obtained including company location and activity. According to the Law of Union of Chambers and Stock Market Exchanges, owners of companies need to register their new enterprises with the Chamber of Commerce in the city where their company is located. Therefore, the information gathered from the Chamber of Commerce reflects real changes in the market¹⁹. Although the data suggests a range of analysis that can be conducted in order to understand the impacts of the Metro on business growth and sectoral changes (Chapter 6), it is more difficult than it seems to be. The data is not geo-coded but rather contains open addresses. The activity codes were changed after 2007 and the new codes do not necessarily correspond with the old ones. Moreover, some activity coding has not been done correctly as the code and the real activity of the firm occasionally do not match.

¹⁹ Except from illicit or unregistered production and jobs

Since there were problems with the data set, a decision was made to limit the study and fix the data manually. Consequently, only the firms opened after 2000²⁰ were taken for analysis on all catchment areas of the Metro, supported by a case study in two Metro station areas, including firms opened between 1990 and 2010. From the list of firms opened after 2000, the ones within the catchment area of the Metro (500m) were selected. First, the Google Maps application was used to determine the catchment area of the Metro stations. Second, the lists that contained the firms were examined according to their addresses (i.e. street names and neighbourhoods) to find whether they were located within the catchment area. Later on, their addresses were checked once again since some street names appear in other parts of the city.

After preparing this new data set which then included 6,239 firms opened between 2001 and 2010, two further data sets were prepared, to include the firms opened throughout the whole city and within close proximity to Büyükdere Avenue. For the latter, if the area where the firms were located is closer to Büyükdere Avenue than any other main road, the firms in these areas were taken into account as a part of Büyükdere's catchment area. As a result, it became possible to make comparisons between the type of business development around the Metro stations by the Büyükdere Avenue and in Istanbul as a whole. Chapter 6 explains these areas, supported by images and further information. Despite these difficulties this data is of high quality as it includes every registered business in Istanbul.

Another difficulty was to obtain the data on residential prices. In Turkey, no existing governmental or private institution holds regular information regarding the market value of properties. Regular values are only determined by the Valuation Commissions and consist of information on land values per square metre for each street in each neighbourhood. These

²⁰ Since the Istanbul Metro opened in September 2000, 2001 is taken as the starting year for the analysis of the Metro in this thesis.

values are designated every four years by valuation commissions formed at every district municipality, mainly for the property tax which is collected by the district municipalities twice a year. The values have been made available recently on an annual basis adjusted to inflation between two four-year evaluation periods. Square metre values for properties are based on the sum of land values designated by the commission itself and the construction costs determined by the Treasury and the Ministry of Environment and Urban Planning. During the transaction of a property, both the buyer and the seller pay an amount of tax based on these values. Although square metre values are important indicators of property values in different areas in cities, they can be below or above the actual market values. Therefore, they are not fully sensitive to socio-spatial changes such as changes in transport, built environment and demographics. Nevertheless, since they provide annual information based on house and area characteristics and local knowledge, they are commonly used as a basis for property value analysis, therefore can be regarded as good quality data. These values have been used in order to determine the changes in property values regarding the Istanbul Metro. All values have been adjusted to the year 2012 by using inflation indices.

Planning decisions were another important issue to look at in order to understand externalities affecting the socio-economic changes in the area and to differentiate these impacts from the possible impacts of the Metro. Planning decisions were accessed through various plans including those from the Metropolitan Master Plans of Istanbul (1995 and 2009) and the Transport Master Plans (1987, 1997 and 2012). Moreover, the decisions of the City Council were searched in order to capture any decision that might have affected the surroundings of the Metro. The City Council's decisions after 2004 are available on the Municipality website. Moreover, Şişli and Beşiktaş District Municipalities' planning departments were visited in order to find out changes carried out by these municipalities as the majority of the Metro line runs through these districts. Planning decisions have been mainly used in Chapters 4, 6 and 8.

As explained earlier in the fieldwork section, expert interviews were conducted between October and December 2011. The Skype face-to-face meeting method gave the best results. The reason for this is mainly that the correspondents were based in the comfort of their houses and could spend more time on the interview. Two interviews (with one of the academics and one of the representatives of the Chamber of Urban Planners) were carried out using this method. The second method included emailing the questionnaires to the respondents. The answers were much shorter than expected considering the purpose of semi-structured questions is to generate more discussion on the subject and allowing the interviewees to show their expertise and concerns about the issues raised. As the responses were not fully satisfactory, the respondents were approached for face-to-face meetings. Although the real estate developer quoted lack of time, it was possible to meet the second academic for a face-to-face interview and expand the discussion. Finally, another face-to-face meeting was held with the decision-maker. Although time was limited to 15 minutes, a satisfactory interview was carried out. These interviews are used in Chapter 8.

As it is discussed in Chapter 8, another approach was to include media files (i.e. news, adverts and caricatures) in the analysis of socio-political meanings of the Istanbul Metro and how the Metro is perceived by different actors (such as by politicians from different backgrounds, by artists, members of the public and news reporters). These materials were collected throughout the study by scanning both digital and hardcopy archives of national newspapers and magazines and also by being notified by social media, platforms and email lists of different organisations (Istanbul SOS, Solidarity Studio, Urban Movements Platform, Sulukule Platform, Streets are Ours [Sokak Bizim] Association, Taksim Platform). Moreover, caricatures relating to the Metro in newspapers and comic magazines were collected. Finally, graffiti and posters on streets were photographed.



Figure 3.3 A security guard trying to stop the photography process before seeing the 'on duty' card issued by the main security office, having submitted permission documents.

In terms of photographing the Istanbul Metro, although the surroundings of the Metro stations were photographed at different stages during the fieldwork, systematic work was carried out inside the Metro stations in December 2011 after a permission was granted by the Ulaşım A.Ş.. Photographing or making recordings in stations are not allowed for security reasons (Figure 3.3) so special permission is needed. This can be obtained only after submitting an application explaining the purpose of the study, supported by official documents. Taksim station was photographed in order to demonstrate ticketing features, decorations, music and food stands, station design, information boards and signs. Some of these photographs are used in Chapter 8. Finally, aerial photos are used in Chapters 4 and 6 in order to evaluate changes in urban patterns and urban growth.

Overall, this thesis benefits from social, spatial and economic data obtained from various sources. The lack of regularly collected data, for instance on mobility, property

market or demographics, and the lack of transparency in institutions, often forces researchers to obtain the necessary data from different sources. In this study, data sets are brought together to complement each other and adjustments have been made where necessary (e.g. generating spatial reference for both office data and property values) in order to create coherence between different sources. Although this thesis consults to diverse sets of data and some sources are better quality than others as discussed above, there is enough evidence to rely on the data and make precise judgements based on it. Where the data is detected to be unreliable, the source has been controlled and if the error can be fixed, then this data is used, otherwise, it has not been used at all. Therefore, it can be stated that the data used in this thesis can be used confidently and it is capable of developing an understanding of socio-spatial inequalities based on transport in Istanbul, and particularly inequalities in relation to the Istanbul Metro. Having stated that, as it will be discussed in Chapter 9, qualitative sources can be used more in future studies as it has also been initially intended in this study. Moreover, diverse source of data makes it easier to fulfil gaps of each data set, therefore, increasing the strength of the research. This good quality data, as explained above and demonstrated in Table 3.2, help to understand the socio-spatial inequalities based on transport in Istanbul and, particularly, inequalities in relation to the Istanbul Metro.

3.6 Analysis

Analysing socio-spatial processes and inequalities generated by transport systems is a very complicated task and this complexity has been discussed in the literature review in detail. Such analysis requires a careful examination of a variety of factors influencing each other at different scales and phases. Therefore, this thesis includes layers of analysis when answering each research question. The main strategy for analysis was determining what kind of data was needed in order to answer each question and how this data could be analysed in order to provide answers to particular questions. Therefore, this section is structured around

questions. Analyses are explained for each research question. Yet, it is important to note that each empirical chapter includes an extensive methods section.

1. Is there a relationship between the physical mobility levels of the residents of Istanbul and their socio-economic status? (Chapter 5)

This question has been evaluated with regard to the entire city. In Chapter 5, the physical mobility levels of the residents of Istanbul and their socio-economic and demographic status have been examined. In order to establish the relationship between these issues two data sets have been used. The first includes spatial reference based on daily HBW trips in the entire city. The second data set uses travel diaries in order to understand whether socio-economic characteristics of individuals determine their mobility levels, i.e. travel time and trip frequency. For this purpose, non-parametric tests such as Mann-Whitney and Kruskal-Wallis were used. As a result, differences between gender, education, employment and age groups were found, based on their travel time and trip frequency.

2. What are the in-direct economic benefits of transport infrastructures? To what extent, do they foster uneven economic growth through accumulation of impacts in certain areas? (Chapter 6)

Research on the wider economic impacts of transport infrastructures is an emerging area in transport research as discussed in Chapter 2. In Chapter 6, these impacts are investigated for the Istanbul Metro. In order to distinguish the impacts of the Metro from the Büyükdere Avenue, the strategy applied in Chapter 6 has been to analyse these impacts at different scales: macro, meso and micro. At each level a different analysis has been carried out.

While basic descriptive analysis was used as a method when analysing the macro (population and employment) impacts of the Istanbul Metro, non-parametric tests were applied to the business data in order to understand the impacts of the Metro on business development at the meso scale. Here, a chi-square test was employed. Chi-square testing

does not provide information on whether the relationship is positive or negative, but it helps to demonstrate the strength of the relationship between variables. Therefore, it is to some extent explanatory. Thirdly, at the micro scale, changes in residential values were investigated first by looking at the changes in minimum, average and maximum values of properties over the years. This was followed by a regression analysis using distance from the Metro station as independent variable and property values as the dependent variable in two station areas. Chapter 6 describes these methods in detail.

3. Who are the users of transport infrastructures? Is it possible to discuss the existence of specific user-profiles for different modes of transport? (Chapter 7)

By posing a question about the users of the Istanbul Metro, this chapter explores the role of the Metro in creating physical connections and therefore increasing accessibility. It aims to understand the actual use of the Metro line and in this way provides a discussion on the spatial distribution of accessibility benefits of the Istanbul Metro. In order to do this, the chapter uses 2005-2006 travel diaries and determines the neighbourhoods with highest and lowest number of trips made by the Metro. The origin and destination neighbourhoods of these trips are mapped in order to understand the accessibility of the Metro in the urban space. Furthermore, this chapter makes a comparison between the use of the Metro with other transport systems in Istanbul in terms of user profiles and identifies the role of socio-economic differences such as gender, education, age and employment in using different transport modes in daily urban transport. Chi-square analysis was applied to different categories of socio-economic characteristics and the use of various transport modes in order to find whether a relationship exists between these parameters. Chapter 7 explains these methods further.

4. What are the socio-political meanings attached to transport infrastructures? In what ways can we discuss democratic rights to the city in terms of rights to transport and mobility? Is

there a need to reformulate transport planning and policy in order to address issues of inequalities in transport? If so, how can this objective be achieved? (Chapter 8)

In order to uncover the socio-political processes produced by the Istanbul Metro, a series of qualitative analyses were used and are shown in Chapter 8. Five in-depth (majorly), semi-structured expert interviews were analysed by identifying initial themes and concepts; sorting these themes; identifying different elements and dimensions; detecting patterns between interviews; and finally developing explanations and discussing them within the broader standpoint of the thesis. Here the approach taken was the analytical hierarchy described by Spencer et al. (2003). Explanations given by participants were mainly interrelated. However, these accounts have been carefully discussed in order not to overvalue them. Moreover, the meanings embedded in socio-spatial processes generated by different actors in society were explored using caricatures (from various artists), adverts (by the Ministry of Tourism) and news reports (of national newspapers). The ways that these actors interpreted various changes in the Metro line (e.g. the opening, extension, damages occurred in the line) were questioned and the different meanings of the Metro for the city and its citizens have been discussed. The last two questions posed here are answered in Chapter 9 based on the outcomes of all empirical chapters and discussion in the literature review.

3.7 Conclusion

It would be useful to conclude this chapter with a brief reflection on the methodology. First of all, in this thesis, case study is taken as an approach, a research strategy, rather than a study of a single event or an object (Verschuren, 2003). The case study approach allowed a holistic investigation of the complex phenomenon of socio-spatial inequalities regarding urban transport. In this sense, the Istanbul Metro was explored at various levels, from individual to urban, and changing and overlapping scales in-between, complementing each other. Moreover, the Istanbul Metro was investigated within economic and social contexts and

within urban, regional, national and international politics and economy, all making important contributions to developing an understanding of social and spatial inequalities regarding the Istanbul Metro. In this sense, the case study provided a systematic approach which has been a powerful tool for this research.

Second, establishing the research design of this thesis on a mixed methods approach provided a better understanding of the socio-spatial inequalities generated by the Istanbul Metro than focusing on solely qualitative or quantitative methods. Using qualitative and quantitative data together has provided comprehensive empirical evidence about the case study. Moreover, obtaining the data from various resources helped develop an understanding of the actors involved in the planning and decision making processes and their attitudes towards these processes. In this sense, various institutions and individuals have contributed to this thesis. Furthermore, this diverse data is believed to have increased the reliability of the outcomes of analyses as it has allowed checking the results of one analysis with another.

Having stated that the strength of this thesis is due to its case study approach, its use of mixed methods and a variety of qualitative and quantitative data complementing each other, it is acknowledged that more emphasis on qualitative research could have been made. Although an attempt was made to include this research strategy, as explained earlier, the concerns raised by the members of the public in one of the minor case study areas resulted in abandoning this method. The outcomes of the analyses in Chapters 5, 7 and 8, point to the issues that need to be explored further with the help of a qualitative approach.

In this context, more intensive involvement of the researcher in the case study area is crucial. That being acknowledged, however, being personally involved in urban movements as a founder member of the Istanbul SOS Platform and several past involvements in activist groups working against unjust implementations by local and national authorities in cities have all affected the epistemological positioning of the thesis.

Chapter 4

Setting the framework for the case study

4.1 Introduction

Cities are places of accumulation: population, capital, flows, and infrastructures. As Harvey (2010) suggests, it is partly this accumulation that regularly leads to economic crises in the last decades and these crises are generated from localities and spread globally. Since cities are the places of positive but also negative accumulation, such as environmental pollution, dense living areas and lack of jobs, they are also places of social and spatial injustices.

Having been the capital of three civilisations and on the crossroads of trade routes between East, West, North and South, Istanbul has historically been an important city, not only within its own geography but also within a larger web of connections. For the last four decades, the aim of being a world city has been on the agenda of Istanbul²¹. However, as

²¹ See for example the master plans of Istanbul since 1980s. All three of them (1980, 1995 and 2009; also the 1994 plan which was repealed by the following local government in 1995) prioritise globalisation and the city's integration with the global economy. The purposes of the master plans can be explained briefly as follows: 1980 Master Plan aimed to *increase the significance of the city at the international level*; 1995 Master Plan proposed Istanbul to become *“a city that unites the economic structure of the world and the region [...] while embracing the history it carries at the universal level and [...] the status of a world-known city today as it is in the past [...] while achieving its place among the ranks of world metropolitan cities in the process of world's economic development”* and finally, 2009 Master Plan mentions that *a comprehensive structural transformation of Istanbul is needed so that it becomes stronger in the global scale* (IBB 1980; 1995; 2009a).

Robins and Aksoy (1996) discuss, the aim of reclaiming its role as a world city comes with consequences. Such a globalisation project would change (in fact, *is* changing) the socio-economic and spatial structure of the city, and therefore its impacts need to be considered within its cultural and political geography, within the Turkish context. Istanbul presents different circumstances compared to the other global cities of the world, as in Sassen's (2001) elaboration of New York, London and Tokyo.

In this sense, Istanbul can be seen as an empirical laboratory due to being the economic locomotive of Turkey, an important social and economic hub. Although it provides important challenges for researchers with a rapidly changing demography, economy and socio-spatial structure, it also provides unique problems like any other global city. There is a growing literature on the socio-spatial development of Istanbul that is establishing an extensive bibliography in the international literature (Dökmeci and Berköz, 1994; Çağdaş and Berköz, 1996; Dökmeci et al., 1996; Ergun, 2004; Alpkokin et al., 2005; 2008). However, these studies fall short of explaining the inequalities that such socio-spatial processes generate. Erkip (2000) notes that Istanbul needs to be examined further in order to understand problems of inequalities and injustice, and the fragmentation of Istanbul citizens into different segments.

In this chapter the development of Istanbul and its transport system is evaluated with reference to the theories discussed in the literature review. Nevertheless, this chapter should not be considered as a detailed discussion of the literature review over the case of Istanbul as such an approach is taken in the proceeding chapters. This chapter aims to connect the literature to the case. In this sense, the development of Istanbul is explained with reference to the development in transport. In doing that, a combination of spatial and historical approaches is taken rather than purely a historical approach in explaining the development of the city.

In this context, first, changes in governance and politics are discussed with reference to socio-spatial processes in the city and infrastructure investments in Istanbul are elaborated upon. This is followed by a brief discussion on the history of activism in Istanbul as a way of expressing one's self especially when democratic rights in the city are under threat or decisions are not made for people but for global and local forces, investors or politicians. Finally, the case study is introduced and evaluated for its location within the Büyükdere Avenue.

4.2 Seeking spatial justice in Istanbul

In this section, the socio-economic and spatial development of Istanbul is assessed with reference to the development in its transport system since the mid-1800s. However, the elaboration is not only based on the historical development of Istanbul but also on its spatial development. Therefore, five periods are determined according to the most important spatial changes in the city, although each of these periods corresponds with some of the significant changes in the political system, the migration waves within the country and economic crises or changes in the economic system in Turkey and in the rest of the world. Figure 4.1 presents a brief timeline of important events in relation to the development of Istanbul and its transport system as well as planning practices. This timeline will be followed in this section of Chapter 4 and each period will be evaluated according to political and socio-spatial processes. The main purpose of this elaboration is to understand whether inequalities have generated through Istanbul's history and, if so, in what circumstances. By doing this, it will be possible to make connections with the wider context that shapes the socio-spatial processes of Istanbul in the next four chapters.

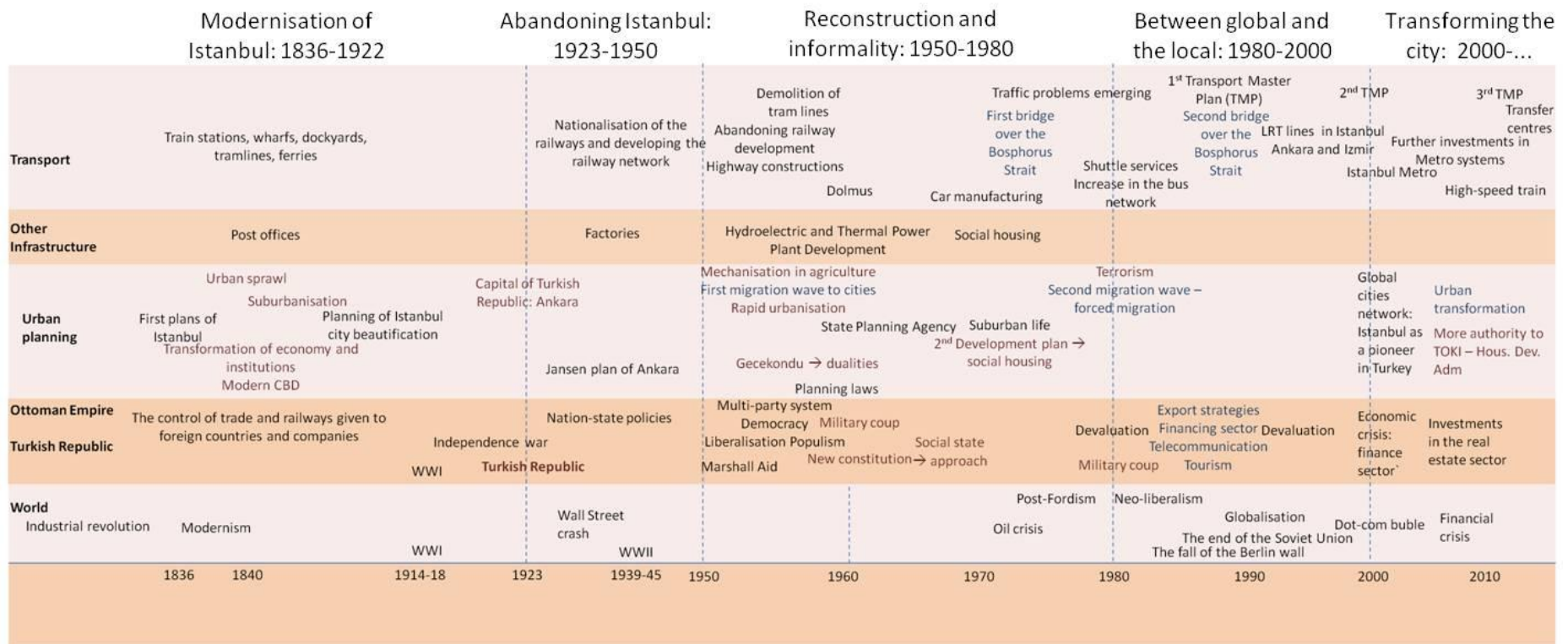


Figure 4.1 Timeline of major events affecting socio-spatial and economic changes in Istanbul between mid 19th century and 2010

4.2.1 Istanbul: the *modern* capital of a falling empire (1836-1922)

This period is when a vast amount of restructuring took place in the Empire in both politics and infrastructure, but the majority of these changes took place in the capital, Istanbul. By looking at the outcomes of these reforms and examining the social groups to whom these reforms addressed, we can refer to this period as the *Westernisation* or *Modernisation* of the city. Tekeli (2009a) calls this process “the shy/modest modernisation of the Ottoman period²²” (pp. 137-143).

Politics and governance

In politics, two main affairs determined the course of urban development in Istanbul. First, in 1838 the Anglo-Turkish Commercial Treaty was signed between Britain and the Ottoman Empire allowing European goods into the Ottoman land with a tax rate much lower than what the Turkish tradesmen would have paid (Çelik, 1993). Although this treaty was not the first agreement on trade rights given to foreigners, as these rights go back to the sixteenth century (*Capitulations*), the Anglo-Turkish treaty had a high impact on its industrialisation process within the Empire causing the Ottoman state not to experience an industrial revolution like their European counterparts. Local products circulating in the empire were taxed while foreign goods were taxed only upon entry and on leaving the Ottoman land. In order to overcome the adverse impacts of this agreement, a number of state-run facilities were opened in the south west of Istanbul by the Marmara Sea. In these manufacturing facilities a variety of goods were produced ranging from iron, swords and cannons to textiles and cotton stockings (ibid.). Moreover, new boatyards were opened. In 1863, the first international exhibition took place in Istanbul. However, mainly goods and machinery from Europe were exhibited. Therefore, the local economy did not have the chance to extend its

²² “Osmanlı Doneminin utangac modernitesi”,

boundaries to other cities and to Europe. As the economy went downhill, taking loans from European countries became a common practice by the 1850s.

Secondly, a political transition occurred when the Tanzimat Charter was signed in 1839, a document defining the relationship between the sultan and his people for the first time in the history of the Ottoman Empire (Çelik, 1993.). Moreover, for the first time concepts such as equality, liberty and human rights were used in Ottoman politics. Although these concepts did not serve the locals in the empire, rather becoming effective for foreigners living and working in the state, the ideas that were developed in the charter brought many structural changes to Istanbul and fostered the modernisation of the city. Moreover, the empire declared its first constitution in 1876 along with opening the first parliament which was closed by the sultan a couple of years after its opening and brought back in 1908 after the revolution of the Young Turks.

The main contribution of the constitution to socio-political life was the abolishment of the division between the ethnic and religious groups in the empire and naming everyone as *Ottoman*. In terms of urban affairs, changes in urban administration took place as the *kadi* (similar to a mayor) was no longer responsible for solving public disputes and the administration of the city quarters. First, a commission was set up responsible for the order of the city, straightening, widening and paving the main roads; construction of pavements, water and sewage systems; and the cleaning and lighting of streets (ibid.). Second, a municipal model, based on the European cities and mainly Paris, was adopted (Figure 4.2). The city was divided into fourteen districts, and this was declared in a report published in the official newspaper in 1857 (ibid.).



Figure 4.2 Istanbul districts in 1857. Ayasofya/Hagia Sofia (1); Aksaray (2); Fatih (3); Eyüp (4); Kasımpaşa (5); Beyoğlu/Pera (6); Beşiktaş (7); Emirgan (8) and Büyükdere (9) in the European side and Beykoz (10) and Beylerbeyi (11) in the Asian side are located in far north. Kadıköy (13) is in the southeast of Üsküdar (12). The fourteenth district was the Princes' Islands in the Marmara Sea (Çelik, 1993).

The structural changes in Istanbul during this period, which are discussed in the next section, were the consequences of these two main political situations. The commercial treaties and efforts for establishing a parliamentary state structure not only brought some physical changes in Istanbul but also changed political discourse from informal to formal by bringing a centralised and state-controlled administrative system rather than keeping the traditional, personalised, informal system. In that sense, this period also reflects the foundations of a political and economic transformation from informal to formal which can be later on observed in the period after the 1980s.

Socio-spatial changes and transport infrastructure investments

The Ottoman Empire had a diverse cultural structure with a population consisting of different ethnic and religious groups. Towards the end of the nineteenth century this diversity flourished even more with more and more foreigners moving into the state. In 1885, 44% of the empire's population was composed of Ottoman Muslims while around 40% was Ottoman non-Muslim and almost 15% of the population was composed of foreigners (Çelik, 1993). In Istanbul the ratio of foreigners reached up to 47% in the district of Pera²³ while in Istanbul²⁴ this ratio was 10%. By this time, Istanbul was not only a multi-cultural city but also a city where socio-spatial changes were taking place faster than before. While the foreign population was increasing in certain areas of the city, upper-class Ottomans were also moving to northern parts of Istanbul, trying to adopt a European lifestyle. Moreover, the palace moved to the north, to the shores of the Bosphorus, from the old city where the monarchy lived for centuries. The palace officials and related social groups moved out of old Istanbul. It is possible to state that if the Ottomans had lived homogenously previously, this period could be marked as the start of a fragmented life in Istanbul.

Meanwhile, the new charter and foreign migration to Istanbul brought up issues of planning and the beautification of the city. Istanbul was initially developed as a pedestrian city with narrow streets and a few villages by the Bosphorus where rowing boats would run in between. First, a regular steamboat service was established in 1851 in order to organise the traffic on the Bosphorus which was becoming chaotic due to an increased number of rowing boats (Tekeli, 2009b). One of the aims was also to provide services between the old

²³ Pera is the old (European) name for Beyoglu, situated in the north of the old Genoese neighbourhood, Galata. Two stations of the Istanbul Metro, Sishane and Taksim link the two ends of the Grand Rue de Pera, Istiklal Avenue, the main road in the area with commercial and administrative facilities on both sides.

²⁴ Here, 'Istanbul' represents the old city established in the Historical Peninsula where both Byzantium and the Ottoman palaces were based. The city was (and still is) surrounded by a city fortress both on the land and the sea sides.

CBD (in historical Istanbul) and the Bosphorus villages so that wealthy foreigners and Ottomans could go to their summer houses or live outside the city for longer periods.

Although the water transport system was established in order to improve life for the bureaucrats and the Europeans, scheduling in 1881 demonstrates how this service became a public transport system (Çelik, 1993). Later on, policies on different charging rates for soldiers, children and students were introduced. Moreover, the comfort of the passengers was taken seriously. The interior of the boats had a contemporary design for their time, coffee/tea service was done by nicely dressed waiters and maintenance was highly important. Steamboat and ferry transport services became successful public transport services. The steamboat system made drastic changes in the spatial development of the city. As it became easier to travel on the Bosphorus, the number of people living along the shoreline increased and city development moved to the north of the city.

Second, the Istanbul Tram Company was established in 1869 in order to build and operate trams connecting business areas and neighbourhoods and developing the land transport system while sea transport was simultaneously improving. Tram lines were established in both Galata and Istanbul districts and along the Bosphorus. However, there were differences in the quality of service and the construction speed of the tram lines. For example, quoting from a Turkish author of the time, Çelik (1993) explains that the level of efficiency of the trams and the image of tram cars running in the Istanbul district were not comparable to other trams running in areas where the foreigners, embassies, officials and high-income groups lived. Thus, public transport brought several inequalities with it. Nevertheless, the tram has been another successful transport project in Istanbul, running uninterrupted until the 1950s.

Third, by 1875 Istanbul had encountered a new transport mode, the Tünel (Tunnel), a steam-operated underground funicular. Built by a French architect, who had established his company in Britain under the name of The Metropolitan Railway of Constantinople, Tünel

was the second underground system in the world after the London tube. The tunnel, still in operation, runs between Galata, where the finance related companies were gathered, and Pera, where business, social life and diplomatic relationships were generated. In the opening ceremony of the Tünel, Europeans made a toast both to Sultan Abdüllaziz and Queen Victoria as the company was established in England and the Sultan had given an imperial decree for its construction in Istanbul (Çelik, 1993). Moreover, the distinguished guests of the opening ceremony expressed their feelings on the value of investments such as the tunnel and how these investments addressed their common interests in the universal mission of civilisation and progress (ibid., p. 97, quoting from The Levant Herald). Therefore, it is possible to understand that in the second half of the nineteenth century, the power of finance, merchandise and even politics belonged to the English and to other Europeans. The main reason for investment was not to provide a better service for the public, but to facilitate the lifestyles and trading needs of foreigners.

The final years of the Ottoman Empire witnessed more infrastructure and planning investments around the state. While city beautification and transport infrastructure development continued at a pace in Istanbul, train lines were established to connect the west and east of the Ottoman land. The investment was mainly foreign. Moreover, other harbour cities like Izmir were also being transformed. Banks, hotels and insurance companies started to located themselves in the centre of these cities followed by the construction of train stations, harbours, wharfs, warehouses and post offices (Tekeli, 2009a). Following the banlieu (suburban) trains, the suburbanisation of the city started. Assessing the changes in Ottoman cities, Tekeli (2009a) discusses how this period brought different uses of space in cities, a change in the social organisation and finally a differentiation between classes emerged in addition to the community-based differentiation in neighbourhoods. Moreover, this *fast-forward* modernisation created a different understanding of space for people who had lived in their small communities for centuries.

4.2.2 Istanbul: the abandoned city (1923-1950)

In 1923, after World War I and the Turkish Independence War (1919-1922), the Republic was established. As a result of a politically and geographically strategic decision, the capital of the new state was moved to Ankara from Istanbul. Ankara was in the geographical centre of the new state boundaries. Compared to Istanbul, it was closer to less developed areas in the east and therefore it was easier to make physical connection with these areas. It was inland and thus had a better militaristic protection. As Ankara became the new capital, high-rank officials and the majority of elites, educated groups, writers and newspaper publishers moved to Ankara. As a result of two major wars and emigration, the population decreased from over a million to under 700,000 and Istanbul was nearly abandoned.

Politics and governance

The new republic was influenced by the idea of the nation-state that had started to flourish in the world before the fall of the Ottoman Empire. The new government saw this idea as a way to create a Turkish identity and to therefore create a sense of belonging. Moreover, as a result of the Balkan War, World War I and the Independence War, Turkish communities from all over the Empire fled back to Asia Minor, and the majority of other ethnic groups started settling in new countries established in the previous fifty years, such as Yugoslavia, Bulgaria, Armenia and Georgia. Therefore, for the Turkish population, being larger than before, the idea of creating a Turkish state was at that time a strong project. The new government also assured the division of powers, democratic rights for all citizens, women's right to vote and to be voted and introduced the code of civil law. However, the ideal of creating a nation-state has been taken too far by successive governments after the 1950s and has generated social and political problems which Turkey still faces today. Nevertheless, in the early years of the Republic, such an approach helped to improve the post-war economy and to establish new connections with remote parts of the country.

Socio-spatial changes and transport infrastructure investments

In this period, the new government, having inherited a great debt from the Ottoman Empire, managed to invest in a variety of plans and infrastructure projects. First of all, the existing railway lines which had previously been run by foreign companies were nationalised. Second, new lines were constructed in order to connect existing lines to remote parts of the country. In a marching song celebrating the tenth anniversary of the Republic, special emphasis was placed on railways crossing the entire country, among other accomplishments of the Republic. Third, factories were built along with complexes of schools, houses and health centres in small towns all around the country in order to provide housing and other needs for labour, but also to spread the production and the wealth to deprived areas (Tekeli, 2009a). These complexes were established in close proximity to railway stations (ibid.). Fourth, major investment was made in the area of education. In every settlement in Anatolia (Asia Minor), education facilities, called Public Houses (Halk Evleri), were founded in order to teach reading and writing and to give new skills to people who were no longer of schooling age. Finally, an important development took place in the area of planning. Not only Ankara but major cities of the country were planned according to the principles of a modern city. The main aim of this period was to sustain equality in the country in egalitarian terms and to spread the idea of modernism throughout the country via the planning of cities.

In this period, even though the majority of the members of the government and state officials such as diplomats, civil servants and teachers moved out from Istanbul, the planning of the city continued in order to make it a modern city. Bilsel (2011) states that “[f]or the young Republic, the modernization of the old capital city was a task as imperious as the construction of its new capital” (p. 100). A planning competition for Istanbul was organised only a decade after the foundation of the Republic and Henri Prost, a French architect and planner, was invited to draw up plans for Istanbul.

Between 1936 and 1951 Prost produced several plans and studies including the Master Plan for the European side of the city (1937), Master Plan of the Asian side (1939) and the plans of the two coasts of the Bosphorus (1936-1948) (ibid.). Although the population of Istanbul had decreased from 1.2 million in 1914 (Tekeli, 2009a), to less than 700,000 in 1927 (TUIK, 2011) it was mainly located in the central areas and along the Bosphorus Strait making an urban sprawl unavoidable. Therefore, the main idea was to concentrate the sparse and dispersed population in the central areas of the city in order to prevent the ongoing sprawl (Bilsel, 2011).

Although not implemented fully, Prost's plan tried to solve this issue and also aimed to provide an integrated public transport for the city, improve the hygiene through removal of the industrial areas from the city centre and create a more aesthetically designed city with parks and squares. To some extent the plan was successful. It created a series of green areas and parks linking to each other in the European part, it helped to conserve the structural heritage and the silhouette of the city and it established a more integrated urban transport. However, it has been criticised for creating a city that was suitable for cars, with new roads, large boulevards and viaducts, and also for removing industrial areas from the city centre, causing a loss of jobs especially for people living in the historical parts of the city.

Nevertheless, Istanbul generally benefited from the plan as it made improvements in transport and historical and natural conservation (i.e. Archaeological Park). Transport companies in Istanbul were nationalised and new transport policies were introduced. For instance, the ferry company (Sirket-i Hayriye) tried to increase the number of ferry passengers by introducing low ticket prices, offering a free service carrying construction materials for those wishing to build their houses by the Bosphorus along with a three-year pass, and building a primary school in one of the Bosphorus villages (Tekeli, 2009b p.42). Moreover, the ferry company opened beaches, fish restaurants and started publishing a

magazine called Boğaziçi²⁵ in order to make this area more attractive for its citizens (ibid.). Moreover, the state railways offered a 90% discount on commuter train services resulting in an increase of 250% in the number of passengers (ibid.). Furthermore, in order to support the street tram, first main roads of the city were opened (London Road and the Ataturk Boulevard). During this period, the population of the city remained almost unchanged. After the first census in 1927 the population increased by only about 300,000, reaching a million in 1950 (TUIK, 2011).

The main aim of the Republic was to generate an even geographical development based on egalitarian approaches. This aim was brought to life through economic, social and physical planning. Moreover, there were attempts to abolish informalities, which then resided at every level in the Ottoman Empire, in order to create a modernist and Westernised state. Although this mission succeeded to some extent, informal formations could still be found during this period. In the area of transport in Istanbul, one of the most striking examples of these informalities was the birth of *Dolmuş*²⁶ as a form of transport. The idea was initially developed by some businessmen in Istanbul when they started sharing their private cars in order to reduce the amount of money spent on the increasing petrol prices in the 1930s. However, later on *Dolmuş* became a business mainly run by new immigrants living in *gecekondu*²⁷ areas (Tekeli and Okay, 1980). The notion of *Dolmuş* is discussed further in the next section as it became largely effective in 1950s. Here, a brief comment can be made that throughout the term after the foundation of the Republic, the power of planning was used in order to regulate the informalities embedded in the state's pre-Republic period. However,

²⁵ Boğaziçi may be translated as Inner Bosphorus, as *Boğaz* is the name given to the Bosphorus Strait and *îçi* means inside. It also refers to the villages by the Bosphorus Strait.

²⁶ Dolmuş are shared taxis like jitneys. Although operation of Dolmuş started as an illegal enterprise born out of necessity in the mid-1930s, it has claimed its place as a form of transport as public transport was unable to meet the needs of the growing population.

²⁷ Etymologically, *gece* means "night", and *kondu* means "landed". Therefore, the term can be translated as "built in one night" (Yalcintan and Erbas, 2003. For a more detailed explanation of the term see authors' paper on the impacts of gecekondu on the politics of Istanbul).

where planning fell short of regulating daily life, these informalities occurred as a result of social configuration in space and produced new mobile spaces and socio-spatial mobilities as discussed in Chapter 2.

4.2.3 Rediscovering Istanbul I: reconstruction and informality (1950-1980)

The end of World War II marked the start of a new political and economic global era. Neo-Keynesian economics dominated the agenda of developed countries while developing countries went through a decolonization process. In the early 1950s the US Government formed a large-scale funding programme in order to help European countries to recover their economies after World War II. The European Recovery Program, known as the Marshall Plan in Turkey after the US Secretary of State George Marshall, not only aimed at forming economic bonds with Europe but mainly tried to prevent the spread of communism and was successful in doing that. As Hogan (1989) notes, the Marshall Plan was cheaper than the likely event of recruiting an army against the success of the Soviet Union and other communist countries. Therefore, the plan had the aim of protecting capitalism against the success of communism and thus it was developed for America's self interest. The consequences of the Marshall Plan for Turkey are explained in the next sections.

The post-war period in Turkey generated similar processes to those being experienced by the developing world, as the country focused on economic growth based on rapid industrialisation and increased the size of the manufacturing sector. Changes took place in a variety of areas, from politics to infrastructure development; from agriculture to demographic structure of urban and rural areas. During this period, Istanbul experienced the highest impact of all large cities in Turkey. It can be stated that Istanbul's socio-spatial character was rewritten in this period. The city went through a long-lasting reconstruction cycle directed mainly by informal processes and politics.

Politics and governance

After the World War II, the cry for democracy got louder in Turkey and resulted in fundamental changes in the parliamentary system. In 1946 the Turkish Parliament adopted the multi-party system once more, not to be changed again. In 1950, the Democrat Party won the elections and formed a new government after 17 years of supremacy of the Republican Party, the first political party of the Turkish Republic. This new parliamentary system brought in populist approaches to policy making. Liberal economic principles were adopted along with more emphasis on the private sector and trade. This change did not cause the abandonment of the idea of modernisation but made it more sensitive to populism (Tekeli, 2009a). Despite starting their political life with the idea of democracy, the new ruling party brought limitations to public life as well as to the opposition party, which led to unrest and conflicts throughout the country resulting in the fall of the government to a military coup in 1960.

Even though the 1961 Constitution is a product of the military coup in 1960, it is regarded as the most democratic constitution that ever took effect in Turkey. The 1961 constitution introduced the idea of the social state, gave priority to the construction of affordable housing and to planned development. Urbanisation continued but at a slower speed as a result of promoting rural enterprises and migration to the European countries, mainly to Germany (Tekeli, 2009a). Moreover, DPT (State Planning Institution) and TUBITAK (Scientific and Technical Research Institution of Turkey) were established in this period providing planned growth and more innovative research at universities. Political thinking became a part of the university youth and flourished during the 1968 student protests that took place in other countries. Spaces of knowledge production became spaces of socio-political discourse, and new ideas spread to cities and towns. By the end of the 1970s, Turkey became a place where conflicting ideas were having an impact on space evidenced by violence on streets, in towns and in cities that led to a second military coup in 1980.

Socio-spatial changes and transport infrastructure investments

The Marshall Plan had tremendous effects not only on the Turkish economy but also on the organisation of space in Turkey at every scale from national to urban but also at emerging scales in between rural and urban. The main reason for emerging scales is mass migration from rural areas to cities. Cities like Istanbul and Ankara attracted high volumes of migration from rural areas as a result of mechanisation in agriculture. As a part of the Marshall Plan, the import of tractors from the US caused many farmers to lose their jobs and seek opportunities in cities. The national government was not ready for such high levels of migration, and infrastructure and housing did not have the capacity to accommodate an increasing population. In Istanbul the population increased from just over 800,000 in 1945 to 1.2 million in 1955, 2.1 million in 1970 and 2.7 million in 1980 (Figure 4.2). As a result of this rapid increase in population and lack of housing stock, migrants started settling on treasury/state land and built their own houses, which are later to be termed *gecekondu* (squatter). While the number of *gecekondus* was about 8,500 in the whole city in 1951, by 1957 this number had reached 26,000 just in the Zeytinburnu area (South Istanbul) that had gained district status by that time. Informality had become an important determinant for the production of socio-spatial processes in Istanbul.

Another important effect of Marshall Aid was on road construction, since the main part of the aid was directed for this purpose. By the 1950s, the railway network in Turkey reached almost 8,000 kilometres which was double the size of the network in 1923. As a consequence of abandoning rail policy after the 1950s, between 1950 and 2004 only 1,000 kilometres were added to the rail network. However, in the same period, asphalt roads extended from 1,447 kilometres to 6,1814 kilometres (Babalik-Sutcliffe, 2007 p. 488).

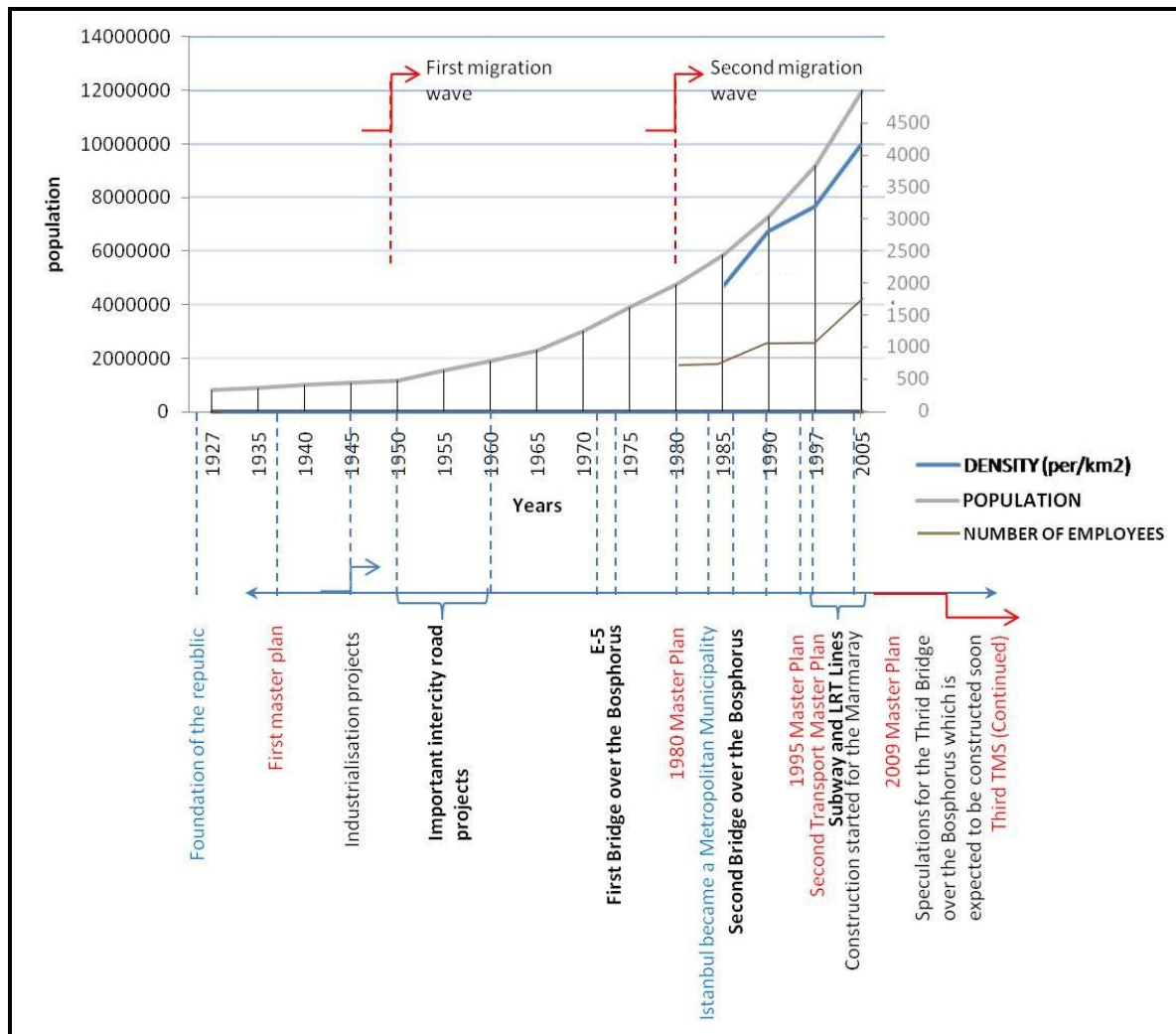


Figure 4.3 A brief timeline of changes in population in Istanbul 1927-2005 (Source: Turkish Statistical Institute, TUIK). Figure also includes a timeline for major transport projects and plans in Istanbul (developed by the author)

This macro policy on road construction had an impact on cities as well. By 1950, Istanbul's railway lines had reached 130 kilometres (around 60 kilometres of tram line and 72 kilometres of suburban train track). They were then taken apart in order to develop the road network and by 1966 they were completely out of service. In addition to this, old quarters of the city were demolished and the coastline was filled in, in order to create new open spaces for roads. Two other important investments in Istanbul were the first bridge over the Bosphorus Strait and the city's ring roads which were constructed in 1973, drastically changing the urban form of the city. It is important to note that the central government and the Prime Minister Adnan Menderes had a high degree of political influence on the spatial development of the city through the construction of roads, bridges and

demolition of old city walls. According to Tekeli (2009a), Prime Minister Menderes (1950-60) commissioned major construction works, especially on road infrastructure, in order to disguise the economic crisis that Turkey was going through in mainly the second half of his leadership.

Tekeli (2009b) lists 20 major road construction projects in Istanbul in that time: ten in the historical peninsula, eight in Beyoglu (the growing Central Business District) and two on the Asian side (pp.56-57). The number of passengers using a car for daily transport increased from 7,200 in 1945 to 42,000 in 1955 (ibid. p.80). Likewise, the number of bus passengers increased from about 55,000 to 230,000 in 1955²⁸, whilst trams were completely withdrawn from the system in 1966. Moreover, the number of ferries carrying cars increased. In this period, Istanbul entered its 'car-age' with developments in the road transport network.

Despite all this, the economic crisis and the demolition of the tram lines put a burden on the bus network. In 1960-65, the Istanbul bus company (IETT²⁹) could not extend its bus fleet and lost about 100,000 passengers (ibid.). In 1961 when the Koç Holding Company started to manufacture Ford minibuses, there was an important shift in the number of passengers to those minibus services. Tekeli (2009b.) points out that 605 buses carried 367,000 passengers in 1965 while 1,700 minibuses carried 425,000 passengers. Minibuses were the counterparts of *Dolmuş* as they both had similar characteristics in terms of their operation. Owned and run by individuals, they were not dependent on a timetable, only operated when they were full, and flexible on stops and routes. Based on their operation it can be stated that the *dolmuş* and minibuses were a form of business that create equalities

²⁸ Sum total of passengers on buses that were owned and operated by private entrepreneurs but regulated by the municipality (Halk Otobusu) and on municipality-owned and operated buses.

²⁹ IETT: Istanbul Electric Tramway Trolleybus Company

among those who owned and operated them. There was no mechanism for distribution of revenue, thus every driver kept their own takings. As the vehicle only operated when full then the revenue on a certain route is always distributed evenly among the drivers.

Moreover, there is a relationship between the urban poor and the use of *dolmuş*/minibuses. In their extensive evaluation of the history of *dolmuş*, Tekeli and Okay (1980) investigate the relationship between the emergence of *gecekondu* and *dolmuş* as well as many other issues. They mention that after the emergence of the *dolmuş* in the 1930s in Istanbul, as briefly discussed earlier, as the *gecekondu* areas started to emerge and spread in Istanbul (as well as other cities) the minibuses became a form of transport that connected the *gecekondu* areas with work places in the city (Tekeli, 2009b p.60). This was a result of the local governments not approving the *gecekondu* development (yet allowing it) and trying to avoid supplying public transport services to these areas. As a result of lack of infrastructure development and the rapid spread of the *gecekondu* areas, Istanbul developed a dual structure. As Tekeli (2009a) points out, this is a consequence of a city having two distinctive parts within: one developed with respect to the modernism and the other one developed with its own motives, without any regulation.

The dual structure of Istanbul does not only refer to a dual spatial structure but also to social, cultural and economic structure. Socio-spatial fragmentation was generated on streets, in shops and on public vehicles as newcomers had difficulties in adapting to urban life and the existing citizens of Istanbul did not make this process easy. Robins and Aksoy (1996) note the contradictions that emerged during this migration process and discuss how newcomers were ‘unwanted’ in the city and that the ‘white Turks’ regarded others as “uncultured and ignorant, incapable of assimilation, and as a threat to their established way of life” (p. 21).

However, such segregation was not only generated between ‘the others’ (the newcomers) and the old city inhabitants but also between the newcomers themselves. The

inhabitants of the squatter areas in Istanbul and other major cities were mainly clustered in the city of their birthplace, where they originally migrated from. Exploring the reasons behind the unwillingness of residents of Esenyurt, a *gecekondu* neighbourhood in Istanbul, to move to a brand-new modern settlement, despite all the efforts of the mayor, Aksoy and Robins (1997) discuss how “the people were grouped according to their village identities, thereby contributing to fragmentation and insularity in urban culture [...]” (p. 29). Having a village culture in a city like Istanbul was very important for the new migrants. It made it easier for them to find a ‘plot’ to build their house on, receive help while building it and get support until they found a job, after which they could bring in their families left behind in their hometowns. Thus, solidarity was reinforced in these areas (Danielson and Keles, 1985).

Moreover, the *gecekondu* residents maintained strong connections with their hometowns as they visited, sent money and provided help to friends and relatives from the same community who wished to follow them (Karpas, 1976 cited by Saab, 1977). Furthermore, political, religious and ethnic clustering occurred within the *gecekondu* neighbourhoods when socialists and nationalists and right wing groups started to form their own settlements, as well as Alevis and Sunnis, Kurds and Turks³⁰. Consequently, a small model, a patchwork of Turkish towns, emerged in clusters in major cities like Istanbul, thus creating a fragmented city.

Later on, a shift in urban politics occurred as the Social Democrats took Istanbul’s administration from the right wing party in 1973. Until the military coup in 1980, the Social Democrat mayors made investments in the public transport system, extended the bus fleet, reduced traffic on the main roads with dedicated bus routes and increased public transport

³⁰ An example to the ethnic and political divisions is the Gülsuyu neighbourhood where the residents became politically and socially organised, first to stand against the demolition of their houses, and second, to distribute empty land in their neighbourhood to ones who did not own a house or land in the late 1970s (Bozkulak, 2005).

ridership by introducing discounted travel cards (ibid.). Therefore, there was an attempt to reduce inequalities based on the lack of transport infrastructure and services.

4.2.4 Rediscovering Istanbul II: between global and the local (1980-2000)

Neoliberal political views that started to dominate the world's political agenda in the beginning of 1980s impacted many developing countries as well as Turkey. An important effect of this change in state politics, parallel to the changing economic climate in the world, was that cities had become more powerful than they ever had been. As Sassen (2001) points out, "the transformation in the composition of the global economy accompanying the shift to services and finance brings about a renewed importance of major cities as sites for certain types of production, servicing, marketing and innovation" (p. 87). Major cities all around the world became important hubs of development and started to act independently of the countries they were in. Sassen (2001) discusses how they became 'de-nationalised' centres for management, of international capital, finance and the property market (p.87).

Politics/governance

The 1980s mark the beginning of a new era for Istanbul. A second military coup that lasted the three years between 1980 and 1983, introduced the 1982 Constitution which limited the right to form democratic organisations and had an impact on labour organisations (Oktem, 2005). Therefore, political motivation for neoliberal policies was prepared and it created the right environment for the ANAP to come to power as a party combining liberal, right wing and religious views (ibid.). With ANAP coming to power in 1983 the statist policies were abandoned, exchange rate flexibility was adopted, trade policies were altered to become export-led, privatisation became a part of government plans and foreign investment was welcomed.

Conversely, the growing threat of terrorism in the east of Turkey caused many villages to be abandoned. Following the military coup in 1980, people living in remote rural

areas in the east were forced to flee from their hometowns and settle in large cities, Istanbul being one of the main destinations during this period. It is possible to observe the dramatic increase in population after the 1980s in Figure 4.2. Such an increase in population generated several socio-spatial problems due to lack of affordable housing and jobs, especially in a city that had been transforming its economy to a service-based one, from industry and commerce. Therefore, informality continued both in housing and employment.

Moreover, in Istanbul, as a reason of the military coup, the planning bureau and its 1980 master plan based on 20 years of extensive work were both abolished and Istanbul was left without a plan (Ekinici, 1994). Following this, the 1983 Bosphorus Act was published and several areas in Istanbul overlooking the Bosphorus were given construction rights. Consequently, villas and buildings with superb views started to emerge on the hills of the Bosphorus (ibid.). Additionally, another act on tourism was formulated during the military coup allowing single plots to be declared appropriate for tourism purposes and giving exclusive construction rights to these areas (ibid.). As a result, the first skyscrapers started to appear on Istanbul's skyline. Changes in laws and regulations increased monopoly rents (Chapter 2) for some areas but not for the others. Therefore, the city started to become fragmented due not only to the different building heights and sizes but also the economic surplus some landowners gained while others did not. Such policies laid the foundations of a socially and spatially fragmented city.

As discussed earlier, the focus of urban policies in Istanbul was bringing the city up to a social, cultural and economic level where it could compete with other cities in the global arena. The dominant statement of the ANAP government for Istanbul was to make the city the centre of commerce, culture and finance in Europe and the Middle East (Öktem, 2005). In order to do that, a comprehensive construction plan was brought to life by Bedrettin Dalan, the Mayor of Istanbul from 1984 to 1989. The principles of the previous master plan were disregarded and development was directed to the north of the city with the headquarters of

Turkish and, later, international banks moving to the new CBD. According to Öktem (2005) the owners of the land in the north of the city easily obtained planning permission for their land since they were amongst the groups holding the majority of the capital in Turkey. Consequently, new central and local governments created a *nouveau riche* in Istanbul. On the other hand, the old middle class residents of Istanbul and the *gecekondu* residents were ignored, and a gap between the rich and the middle class and the poor enlarged significantly.

Socio-spatial changes and transport infrastructure

The opening of two bridges in 1973 and 1988 drastically changed the urban form of the city and determined the direction of urban development (Tezer, 2004, Figure 4.4). The city started to expand to its north, and as a result remote *gecekondu* areas became the inner parts of the city. They not only became economically more valuable than before but also changed the electoral geography of Istanbul. However, since the majority of citizens were unhappy with the ANAP government, the next elections were in favour of the socialist party, SHP (Yalcintan and Erbas, 2003). Sozen, the socialist Mayor of Istanbul, was known for his populist but also idealistic policies. On one hand he started long term projects such as the Istanbul Metro and prepared a long term master plan for the city, but on the other, applied populist policies as he had a welcoming approach to *gecekondu* areas and tried to help low-income citizens further by distributing free milk and food. Unfortunately, due to a corruption case (in which he was found not guilty), he could not be reelected (ibid.). However, since his populist policies alienated voters from ANAP, they paved the way for RP's³¹ victory in 1998.

³¹ Welfare Party – conservative and religious. RP was shut down due to their attitude towards the secularist state and Ataturk's legacy. Their followers established the AKP (Justice and Development Party) that has been running the government since 2002.

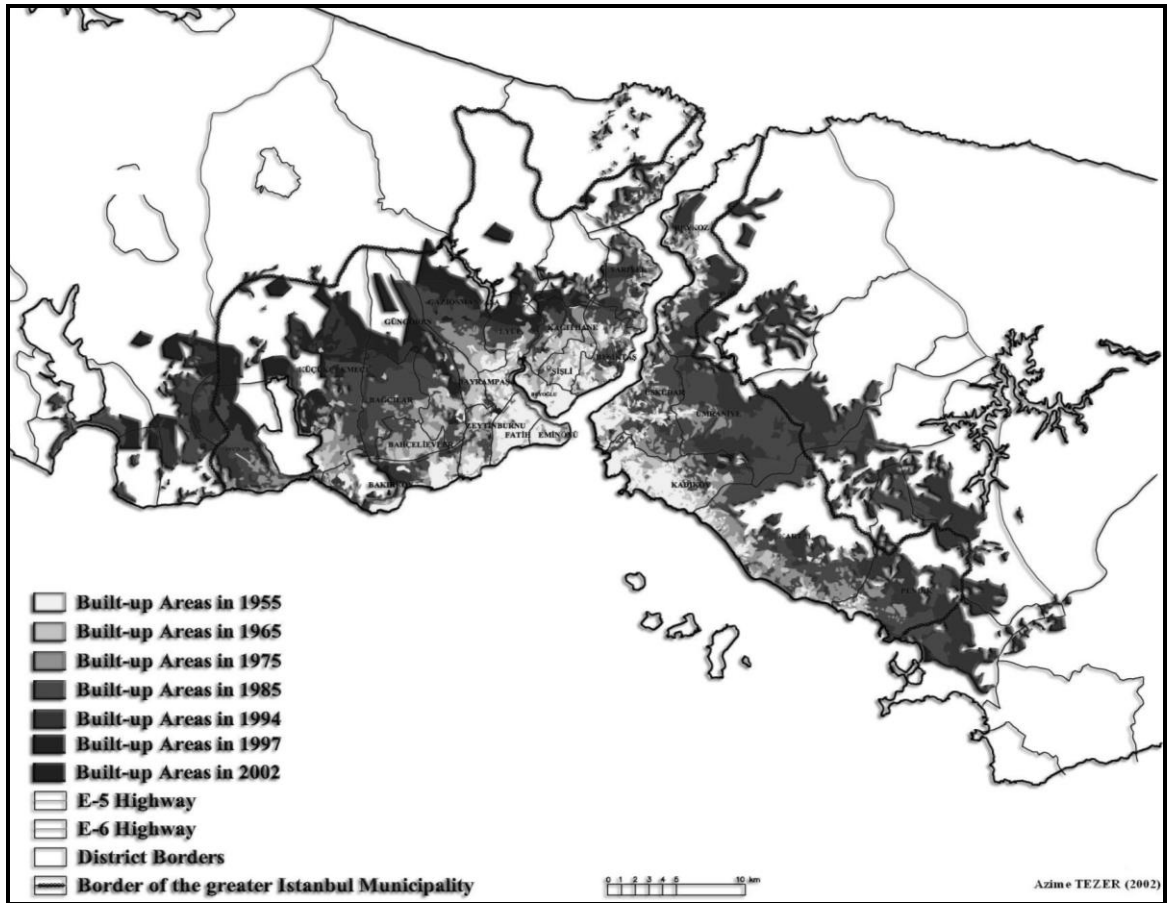


Figure 4.4 Built-up areas in Istanbul between 1955 and 2002 (Tezer, 2004)

In this period as the city expanded towards the north with new transport investments, the CBD also started moving in the same direction. In this sense, it is possible to state that transport infrastructure was used as a tool to develop Istanbul as a global city with better connectivity, proximity of the finance sector to businesses, markets and a global network. Moreover, exclusive construction rights given to some areas along the CBD altered the image of the area.

At the same time, these investments increased the social, economic and political fragmentation in the city even more. One of the well-known examples is the opening of the Tarlabaşı Boulevard. During Dalan's governorship, Beyoğlu district was spatially divided into two with the opening of the Tarlabaşı Boulevard, leaving one area (Tarlabaşı) in deprivation, in emergence of a slum and struggling with high crime rates and poverty; and enhancing the

economy of the other (Beyoğlu) as well as promoting its cultural, social and physical transformation with the help of other transformation and gentrification projects.

4.2.5 Transforming Istanbul (2000-present day)

Politics/governance

From the end of 2001 until the end of 2002, the Turkish economy witnessed a serious financial crisis resulting in firm regulation on banking and the devaluation of the Turkish Lira against foreign currency. The US Dollar exchange rate increased by 96.5% in 2001 while inflation remained at over 60% and the unemployment rate grew more than 30%. GDP growth slowed by almost 26%. In this economic climate the coalition government went for an early election which resulted in a single-party government, a major trend since 2002. Since then, the AKP became the ruling party both in the Turkish Parliament and in Istanbul Metropolitan Municipality.

The end of ongoing coalition governments and the start of EU negotiations in 2004-2005 created a more trustworthy environment for domestic and foreign investment. After this, unemployment, foreign exchange rates and Consumer Price Index (CPI) started to fall whilst GDP started to increase. However, the global economic crisis in 2008 shook the Turkish economy even though the banking system had been relatively secure as a result of the last crisis, and a mortgage system had not yet been widely established in the country. Between 2008 and 2009, GDP growth decreased by 17%, the Turkish Lira lost value against the US Dollar by almost 20% and unemployment increased by 33%.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Real GDP (*1000)	17551	26149	41665	60056	87619	113695	139758	162233	189598	210795	237634	238140	274700	323723
Changes in GDP														
Turkish Liras (%)		49.0	59.3	44.1	45.9	29.8	22.9	16.1	16.9	11.2	12.7	0.2	15.4	17.8
Changes in GDP US Dollars (%)		-8.6	7.2	-25.9	17.2	32.3	28.0	23.3	9.3	23.2	14.4	-16.9	18.6	5.6
Dollar Exchange Rate	0.26	0.42	0.62	1.23	1.51	1.49	1.42	1.34	1.43	1.30	1.29	1.55	1.50	1.67
Changes in \$ Exchange Rate (%)		61.0	48.5	96.5	22.9	-0.8	-4.7	-5.7	6.7	-9.1	-0.7	19.7	-3.0	11.3
Unemployment in numbers (*1000)	1606	1829	1497	1967	2464	2493	2385	2388	2328	2377	2611	3471	3046	2615
Changes in unemployment (%)		13.9	-18.2	31.4	25.3	1.2	-4.3	0.1	-2.5	2.1	9.8	32.9	-12.2	-14.1
CPI – Istanbul	1191.3	1968.5	3038.6	4682.2	6758.1	100.0	109.9	119.8	131.9	144.0	160.2	169.4	182.5	192.6
Changes in CPI (Dec-Dec) (%) – Istanbul	70.3	69.1	39.5	65.6	31.2	19.5	9.5	8.1	10.6	9.3	10.7	5.2	5.4	9.8

Table 4.1 Key economic parameters (Source: Turkish Republic Central Bank and Turkish Statistical Institute)

Although the AKP government made several changes to various laws since they came to power; among them, alterations to the regulatory system of the Mass Housing Administration (TOKI) emerge as important. TOKI was established in 1984 in order to provide affordable housing for low-income households and control illegal housing. Since its foundation it has provided cheap credit to almost a million families in Turkey (AGFE, 2009). Between 2002 and 2008 several legal and institutional reforms were passed and the TOKI was given greater power to execute urban renewal and transformation projects. This gave authority to TOKI to declare almost any urban area an ‘urban renewal area’. Within the last decade several parts of the city have been declared as transformation sites (discussed in the next section). Moreover, despite being a non-profit organisation, TOKI started to act like a profit-making institution.

The government’s reasoning for urban transformation projects is the risk posed by old and low-quality buildings in the event of an earthquake³². However, it is believed by others that the construction sector is revitalised through such developments and that

³² The last major earthquake in the region was in 1999 when thousands of people died and many more left without houses.

construction and new projects are predicted to generate an important profit (Letsch, 2012). Thus, such uplift in the economy would make a crucial contribution to the national annual budget (Yalçintan, 2010). This is also regarded as one of the reasons why Prime Minister Erdoğan insists on building the third bridge, even if that means using national resources (Hürriyet, 2012), despite opposition from academics, NGOs and the public; he has also announced new projects for transforming Istanbul. Based on a brief calculation, the construction of the Third Bridge over the Bosphorus Strait may create a \$350 billion surplus, more than the annual budget of Turkey (Yalçintan, 2010).

Socio-spatial changes and economics

Such an explanation is sufficient to understand why TOKI chooses the majority of urban renewal sites from the most valuable parts of the city. Adanalı (2010a, 2010b) demonstrates the government's role in creating a dual structure in the city by using the example of housing projects by the Housing Development Administration of Turkey (TOKI) which is directly affiliated with the Prime Minister's office and responsible for producing affordable housing for the poor. Two consecutive maps below show the projects conducted mainly by TOKI.

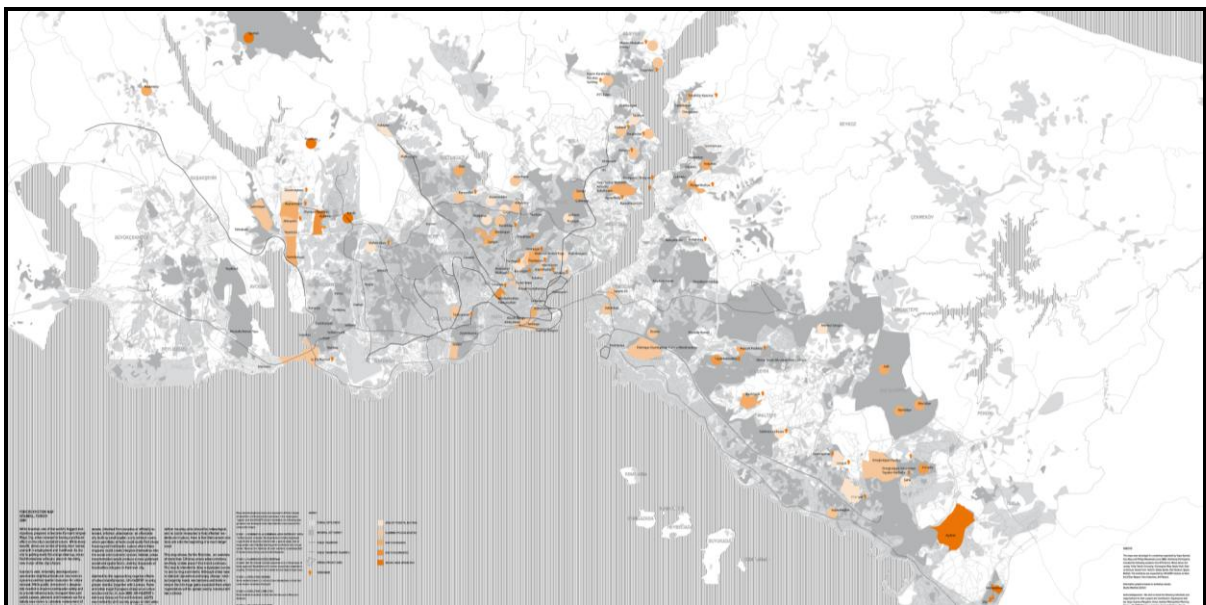


Figure 4.5 Eviction map (Adanalı, 2010a)

Figure 4.5 shows potential and actual areas where the eviction of residents of poor housing (mainly *gecekondu(s)*) has occurred or will occur. (Adanalı, 2010a). Light colours show the areas of possible eviction, while mid-tones point out the areas where evictions have been completed. Small dark orange patches demonstrate the areas where there has been some resistance. Adanalı (2010a) notes that UN-Habitat has recently taken Istanbul to the urban eviction red list as the Advisory Group on Forced Evictions report suggested (AGFE, 2009).

Figure 4.6 shows the location of TOKI housing projects (Adanalı, 2010b). The light green areas are the ones TOKI has privatised in order to increase its financial resources. These areas are close to the main transport links and on sites with a view where high profile housing units can be built. The dark green areas show the TOKI social housing projects. These are the main housing areas developed for the poor. Adanalı (2010b) describes them as the deportation areas, as they are on the outskirts of the city. Finally, the purple areas show the sites of urban transformation.

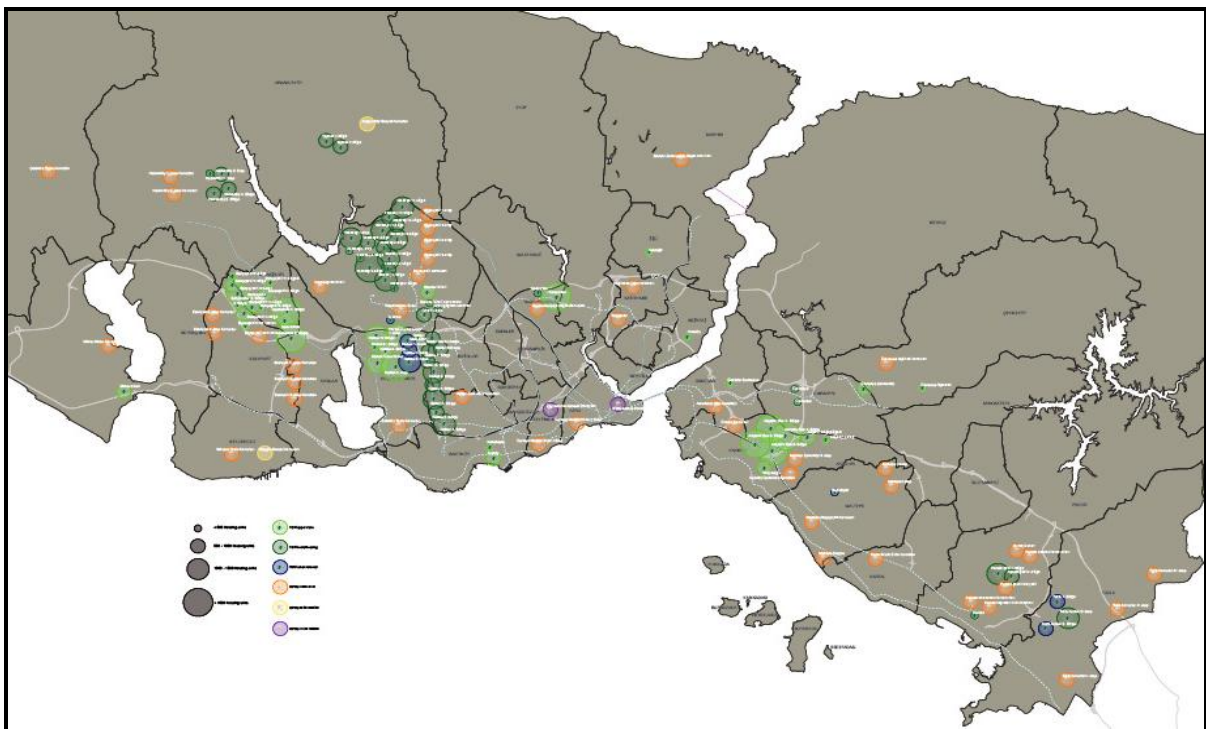


Figure 4.6 TOKI's projects (Adanalı, 2010b)

The majority of the residents in urban transformation areas (e.g. Sulukule, a Roma neighbourhood) are from low income groups and they were not able to afford the new houses built in their neighbourhoods (in the *Ottoman* style). They were offered new flats in high-rise buildings built by TOKI (dark green, Figure 4.6) but these new developments are situated far from the centre where many work in temporary jobs in the entertainment and service sectors. Moreover, the transport link between these new housing units and the city centre has not been established according to their needs (e.g. buses stop serving late into the evening and night). As a result, most of these displaced families have been excluded from the urban life they used to have. Consequently, the majority of families who moved to these new high-rise buildings started leaving them to seek affordable places close to the city centre.

As mentioned briefly above, there has been some resistance in neighbourhoods where forced evictions were planned or carried out. Moreover, civil society has started raising concerns against different types of social and spatial inequalities in Istanbul. The next section will provide a brief overview of these struggles over the Right to the City in Istanbul and will also make a list of actors that take part in this process.

4.3 A brief history of social activism in Istanbul and discussions on the rights to the city

Since the 1980s, Istanbul has faced immense changes in the socio-spatial and political structure of Istanbul. Ekinçi (1994) points out that the main purpose of the military coup in 1980 was not to bring an end to the political conflict between the right wing and left wing parties, nor to protect the secular state against anti-democratic activities, but it was to suppress public opposition against the IMF's economic decisions about Turkey³³ that proposed liberal economic policies, and was also to abolish existing policies concerning public good, workers' rights and planned development in order to create a flexible environment for IMF's policies (p. 33). Therefore, one can state that a recent breaking point

³³ IMF's decision of 24th January 1980

in the history of conflicts between the government and citizens in Turkey and Istanbul happened in the 1980s.

However, conflicts continued to rise with unjust applications of urban planning decisions. Within ten years (1984-1993) over 40 plots or city blocks were given tourism centre status (Ekinci, 1994). As it is explained in the next section on the development of Büyükdere Avenue, such exclusive rights increased the financial status of some groups who already owned land in these areas. As some got richer, the gap between the rich and the poor grew. Moreover, another gap occurred between the newcomers. Migrants who had settled in Istanbul in the 1950s later built their houses on the basis of single-storey houses. As they settled in, they brought their families to the city as well as their relatives and friends. Growing households and married children required larger, two to four storey houses which were eventually built. After the 1980s, as a solution to the housing problem, local governments gave several building amnesties to the squatter areas and illegal houses (ibid.). Such decisions resulted in additional profit for those who could afford to expand their houses and once again the socio-economic gap between newcomers grew. By the twenty-first century, the socio-economic profiles across Istanbul's neighbourhoods painted a fragmented picture (Güvenç, 2009; Figure 4.7).

However, the final stroke was the extreme authority given to TOKI between 2002 and 2008. As TOKI started declaring not only the squatter settlements but also the deprived, historical areas in the city centre as urban renewal areas, public opposition started to grow. This section of Chapter 4 aims to understand the actors taking part in this process and whether they were successful in the search for their rights to the city.

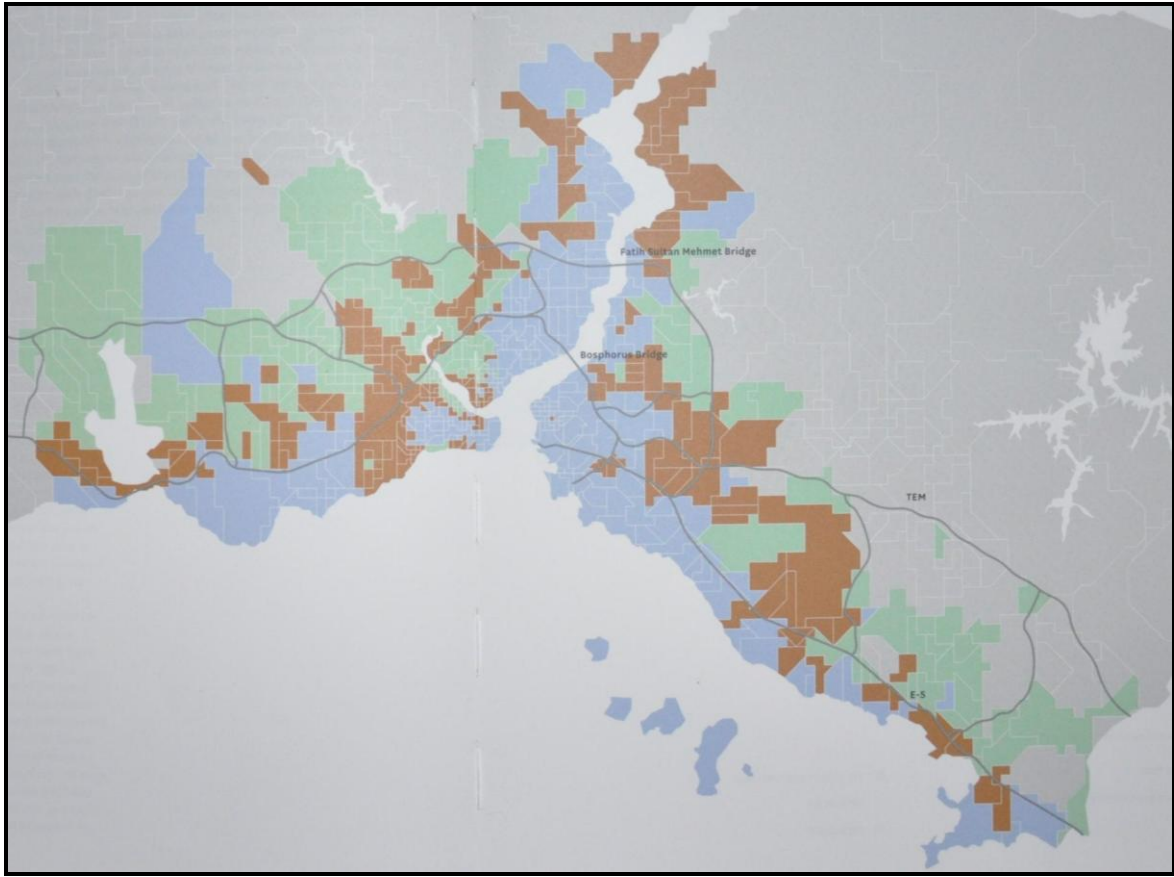


Figure 4.7 Aggregated socio-economic character of the neighbourhoods of Istanbul in 2000 (Guvenc, 2009). Blue: high profile zones; Brown: transition zones; Green: low profile zones.

Yalçintan and Çavuşoğlu (2008) discuss how dominant groups within the city are not expected to solve the problems of participation, urban rent, public good and so forth, as these issues are their *raison d'être*. Therefore, it is expected to see local movements being organised in order to resolve such issues. In Istanbul, it is possible to categorise these movements according to their structure. Ten different groups can be included in this categorisation for Istanbul, which may be different for other cities: professional chambers, syndicates, NGOs, political organisations, civil initiatives, neighbourhood organisations, umbrella organisations, universities, media and global civil organisations (ibid.).

Among these groups, professional chambers are the most influential ones with their performance in monitoring policy and planning decisions, powerful organisational structures with their members and permanent staff in various cities. In Istanbul, the Chamber of

Architects and the Chamber of Urban Planners inspect every decision of the Metropolitan and District Municipalities and the Municipal Council. They take them to court if the objectives of these decisions do not meet the long term planning strategies of Istanbul and if they are proposing projects which go against the public good. The Park Hotel case is the most well-known example of the success stories of professional chambers against municipal decisions. The planning decision for a high-rise hotel was not only cancelled but the floors already built were ordered to be demolished. It is now being used as a car park. Although there have been several cases in recent years where the professional chambers are found to be righteous by the court, the Municipal Councils take the decisions and re-propose them with small changes (Chapter 8). Nevertheless, as Yalçintan and Çavuşoğlu (2008) express, the determination of these professional chambers continues.

Although neighbourhood associations and political organisations (different political groups within neighbourhoods) show strong opposition during demolitions, they remain unorganised and closed within their own neighbourhoods in general. In mid-2000, as a result of increased intervention by the Metropolitan Municipality into their neighbourhoods, resistance groups in different areas united to form the Neighbourhood Associations Platform composed of 28 neighbourhood associations in Istanbul (ibid.). Despite problems with organisation, this platform gained the support of the Chamber of Urban Planners and many other civil initiatives, some of which are formed of academics and students at various universities. The latter group includes several initiatives such as IMECE and the Solidarity Studio that work in close relation with the residents of the squatter areas and try to understand their problems in depth. Therefore, it is possible to state that the collaboration between different groups of resistance is getting stronger in Istanbul. Yet, there is still a need for a more organised and consensus-based formation in order to raise the voice of the suppressed groups further.

In terms of transport, the number of civil initiatives is very small. However, all groups mentioned above, especially the Chamber of Urban Planners, deal with the issues of transport as well, since it forms an important part of the rights to the city as discussed in Chapter 2. In this sense, the Chamber of Urban Planners has taken the projects on the Third Bridge and the Road Tunnel under the Bosphorus to the court as these projects are against the master plan decisions, and are likely to open forest areas to settlements and increase car ownership and use.

Additionally, there are micro scale projects that not only is the Chamber of Urban Planners against, but also many civil initiatives. One of these projects is the pedestrianisation of the Taksim Square, one of the main squares of Istanbul, and an important transport hub where the Metro connects with the rest of the transport network via buses and the funicular system. Moreover, the busiest pedestrian street in Istanbul, Istiklal Avenue, links to this square and it is also the main gathering point during celebrations, festivals, demonstrations and commemoration days. Therefore, any intervention to Taksim Square, if not done for the public good, is also an intervention to public life. Civil initiatives such as Taksim Platform and Taksim Solidarity along with the Chamber of Urban Planners, Chamber of Architects, university students and professors and other civil initiatives and NGOs are resisting the pedestrianisation project. They claim that it is not just a transport project, with its pedestrian links and vehicle traffic being taken underground: it is a project for creating economic surplus through new shopping malls, and more importantly it is a project for controlling social space, through tools of planning similar to Haussmann's Paris plan.

This brief discussion on social activism in Istanbul displays the power of politics and planning in shaping socio-spatial platforms in urban space. Its impact on producing and reproducing space through unequal use of power is an issue that is discussed further in Chapter 8.

4.4 Introducing the case study: the development of the Büyükdere Axis as the new CBD

The most significant factor determining the scale of the impact of the Istanbul Metro is the existence of Büyükdere Avenue in the area. The Metro line follows the Büyükdere Avenue from north (Haciosman station) to south (Zincirlikuyu). From there it continues west to Şişli Station, later following Halaskargazi Street to Taksim. Approximately 50% of all Class A offices in Istanbul and 65% of all Class A offices on the European side of the city are located in this axis³⁴ (based on Colliers, 2012). Moreover, the main connector roads of the two bridges over the Bosphorus Strait get closest to each other via Büyükdere Avenue.

In order to understand the impacts of the Metro, the development of the Büyükdere Axis needs to be investigated as well as the economic environment in Turkey over the last ten to 15 years. In this section, first, the spatial and functional transformation of Büyükdere Avenue is presented. This is followed by two case studies on how planning decisions and construction rights have affected the development of Büyükdere Avenue where Şişli, Gayrettepe, Levent and Levent4 Metro stations are located. This section of Büyükdere Avenue is selected due to its proximity to the two road bridges over the Bosphorus Strait.

³⁴ Maslak, Levent, Etiler, Gayrettepe, Besiktas and Sisli.



Figure 4.8 The location of the Büyükdere Avenue in Istanbul with reference to the First and Second Bridges over the Bosphorus Strait. The blue dots show the stations of the Istanbul Metro Source: Google Maps and author's own drawing

Housing projects and the relocation of industry in the 1950s in Levent, mark the start of the development of the Büyükdere Axis (Figures 4.8 and 4.9). Until the 1950s, the first master plan of Istanbul, also known as the Prost Plan (1937-1948), controlled the development of the city to the north and suggested a concentration plan for Istanbul (Bilsel, 2011) in order to protect forests and water catchment areas. However, due to rapid migration in the 1950s, northern areas were opened to settlement either willingly – through housing projects that were initially planned for the middle income groups but eventually hosting high income groups – or unwillingly, through squatters. Another factor that played a significant role in the development of this axis was the establishment of pharmaceutical firms towards the southern end of Büyükdere Avenue followed by automotive sector companies in the 1970s in the northern areas.

Industrial development in the area was later controlled by an industrial plan for the region by the Steering Committee and subsequently by the National Security Council (MGK) during the military coup (Oktem, 2005). Military areas can be described as the *black holes* for planning in Turkey. Planners cannot make decisions on these areas and need to take existing

developments in these areas as granted. The military keeps the built environment less dense and thus these areas remain as forests or green spaces. By the end of the 1970s, the military slowly retreated from Büyükdere Avenue leaving the ex-military areas to new private housing developments (Oktem, 2005). Moreover, as a request from the military, major universities in Istanbul were asked to move outside of the city. At this time, a large piece of land to the north of Levent4 Metro station, also the north of military area in the Büyükdere Axis, was given to the Istanbul Technical University (ibid.) where the university built a new campus between 1970 and 1984.

Even though the settlement of industry in the area, various changes in plans and the construction of university campuses have helped the development of this axis, it is the bridges over the Bosphorus Strait (opened in 1974 and 1988; Figure 4.9 shows the arterial roads of these bridges) which foster urban growth to the north of Istanbul on Büyükdere Avenue. As Büyükdere Avenue has become the shortest route connecting two bridges on the European side of the city, the area has become more accessible for both sides. Therefore, the demand for growth, especially by major industrialists and the financial sector, has increased. This demand was also supported by neoliberal policies followed by Turkey following the 1980 military coup.

Between 1984 and 1989 during the ANAP (centre right liberal party) government, major capital groups in Turkey, such as Sabancı Holding, Alarko Holding, Koç Holding, and banks, such as İşBank, Garanti and Yapı Kredi, asked to develop their headquarters in the Büyükdere Axis (Oktem, 2005). Dalan, the most controversial Mayor of Istanbul and also a member of ANAP, allowed high-rise office construction along the axis. Öktem (2005) discusses how the relationship established by both local and central governments – which were then ruled by the same political party (central, ANAP 1983-92; local, ANAP 1984-89) – with the major capital groups in Turkey has been the main determinant in the development of the Büyükdere Axis (p. 62). Therefore, as she mentions, this development favours the elite

groups in the city and increases the income inequity, social polarisation, spatial segregation, urban tension and uses the city's restricted resources for the sake of certain social classes in the city (p.63).

As a consequence of changing construction rights allowing increased building space and floors for some areas, other industrialists in the area demanded equal building rights which led the local government to prepare the '1988 Büyükdere Avenue Axis Commercial Areas Implementation Plan' and 'Şişli Ayazaga Revision Plan' (Oktem, 2005). Through this plan the construction allowances on the axis were defined as 2.3 for north and 4.5 for south (Şişli), meaning the building area can be 2.3 or 4.5 times the plot, giving flexibility for design and allowing high rise development. However, during the next local government (led by the SHP – socialist – party), the construction of high rises was stopped, the construction allowances were reduced and commercial status was withdrawn. Nevertheless, the central government which was still governed by the ANAP declared these areas as tourism areas and took the planning power from the local authority (Oktem, 2005). The political tension over the Büyükdere Axis shows how important this area is for investment and thus for the investors' support for politicians.

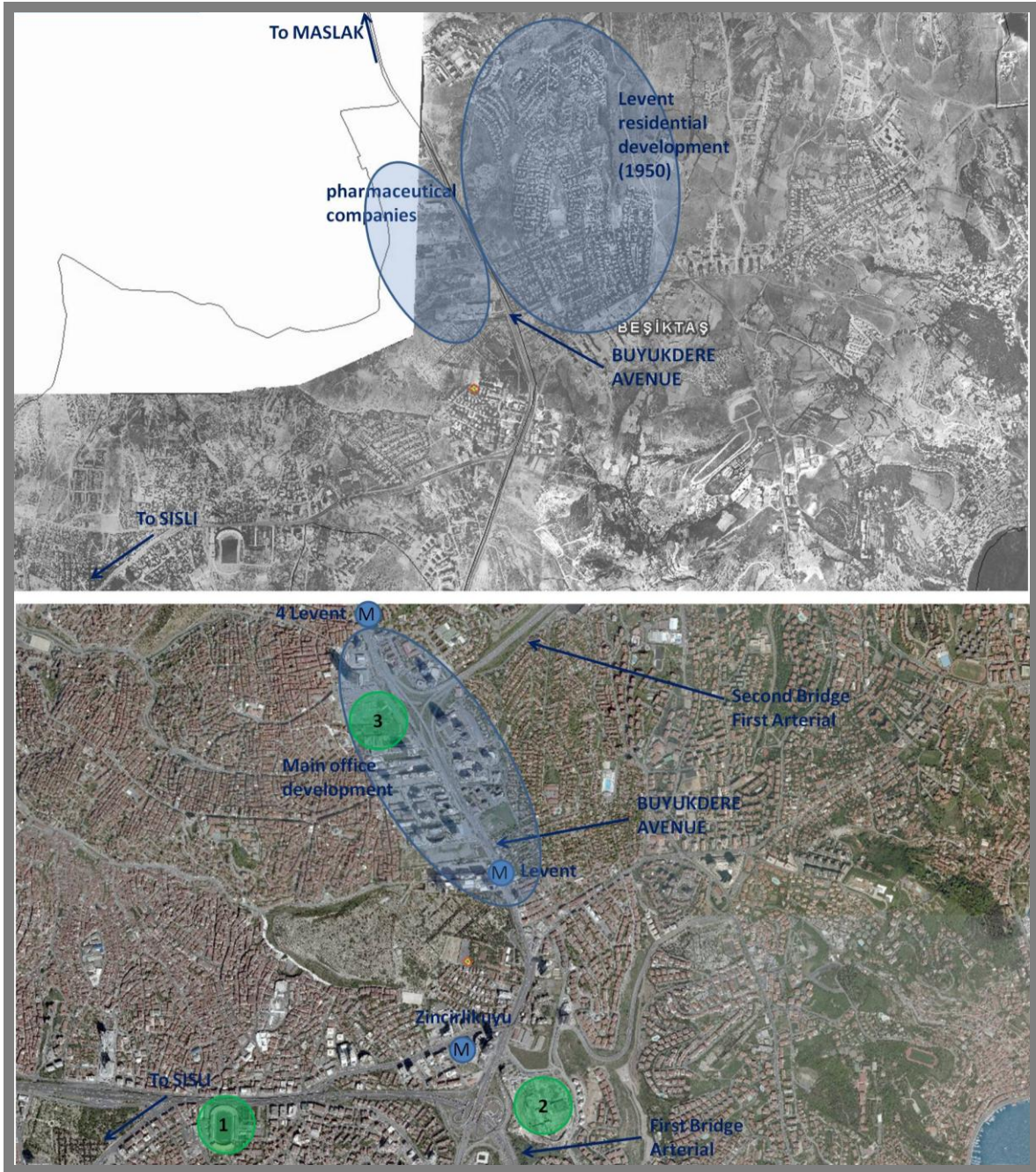


Figure 4.9 Spatial transformation between 1960s and 2006 in Levent and Levent4. The first map shows the location of the housing development on the Büyükdere Avenue in 1950s and the location of pharmaceutical companies (factories and storage facilities) while the second map below demonstrates the transformation of these companies to office buildings. This transformation took place especially in the middle section of the Büyükdere Avenue that is geographically close to the first and second bridges over the Bosphorus Strait. The map below also shows the location of three plots that are examined later on for the planning decisions. The maps are based on aerial maps of Istanbul, 1966 and 2006 (Source: <http://sehirrehberi.ibb.gov.tr>)

Case 1: policy changes in construction rights

In 1993 a new plan was prepared for the east of the Axis within the Beşiktaş district as the area was also under the planning regulation of the Bosphorus Plan that does not allow for the construction of buildings that harm the silhouette of the Bosphorus, and therefore introduced different height allowances for different areas along the Bosphorus. The 1993-94 plan in which the Metro stations were also mentioned, brought commercial function to areas along the Büyükdere Axis in addition to the Management Centre function for large plots, giving a construction allowance of 3.0 to these areas. The Büyükdere Avenue axis was subject to more controversial plans and decisions that were taken to court by the Chamber of Architects, Chamber of Civil Engineers and the Chamber of Urban Planners (Chapter 8).

Location Code (Figure 4.8)	Approval date of plans	Description
1	29.12.2003 Sisli 1/5000 Plan 24.06.2006 Sisli 1/1000 Plan 16.07.2007 Alteration 18.10.2007 Approved Plan	- Stadium – functional change - Commercial and Touristic Area Building allowance: 2.5 (alterations on 1/1000 and 1/5000 plans)
2	1993 Bosphorus Plan 06.01.2006 1/5000-1/1000 Plans 27.12.2006 Plan Alteration	- Natural and cultural conservation site - General Directorate of Highways Management Office - Tourism and Congress centre - Tourism, congress centre & Commercial, cultural facility zone Building allowance: 2.8
3	08.09.1995 1/1000 25.04.1996 1/5000 Plan 10.10.1996 Metro plan 15.03.1999 1/5000 Plan 21.11.2001 12.02.2006 29.12.2003 Sisli 1/5000 Plan 24.06.2006 Sisli 1/1000 Plan 19.05.2006 Alterations on 1/5000 07.11.2010 New 1/5000 Plan	- Istanbul Bus Company Main Bus Stop Kagithane District – all plans and plan alterations are still valid Functional change - Commercial and Touristic Area Building allowance: 3.0

Table 4.2 Planning legislation in three areas on the Büyükdere Axis. Based on the lawsuits of the Chamber of Urban Planners

Table 4.2 gives detailed information about three areas on Büyükdere Avenue and the number of valid plans and plan alterations in these areas, many of which are consequences of lawsuits brought by the Chambers mentioned above. The common reason for these lawsuits is that the decisions were based on single plots rather than the whole region, thus creating economic and spatial inequalities.

Changes in the economic situation of the country and in the planning regulations over the years have played an important role in the development of Büyükdere Avenue. The number of alterations in plans, especially in the last ten years, reveals how dynamic the urban development process in this area is. The reason behind this process can be explained by political motives or ways to overcome economic difficulties via construction and planning in valuable areas such as the Büyükdere Axis. Plan alterations on Büyükdere Avenue demonstrate how politics empowers planning and the law. Therefore, the way in which the Metro line settles in this axis and its relationship with the ongoing development since the 1980s are crucial factors in understanding its impacts. The case of Levent 4 presents such relationships briefly.

Case 2: Changes in planning decisions

As a consequence of the reduction in the military existence in Levent 4 on Büyükdere Avenue, new housing development started to occur, mainly in the form of gated communities. Figure 4.10 shows these developments around the Levent 4 Metro station. The whole area in Figure 4.10, apart from the areas marked with yellow, was developed through the 1963 military cooperative plan. This development changed with the 1977 master plan that opened military areas to private development. Although it seems that the plan for the entire area was completed by 1988, the most significant change was brought by the 1993 Bosphorus Revision Plan. This plan introduced a new road network in the area with a direct connection to the Second Bridge to the north-east. It also marked the entrance of the metro stations on the plan. Moreover, in this plan the commercial status of the plots along Büyükdere Avenue

was shown. Some of these plots were given Management Centre status with a building allowance of 3.0 (E:3.0). Finally, after the 1990s, the area was subject to partial plans through plan alterations. In these plans, decisions were made on the development of particular plots, such as changing their function or increasing their building allowance. The Sisli Centre Plan, especially, gave commercial status to many areas on this axis.

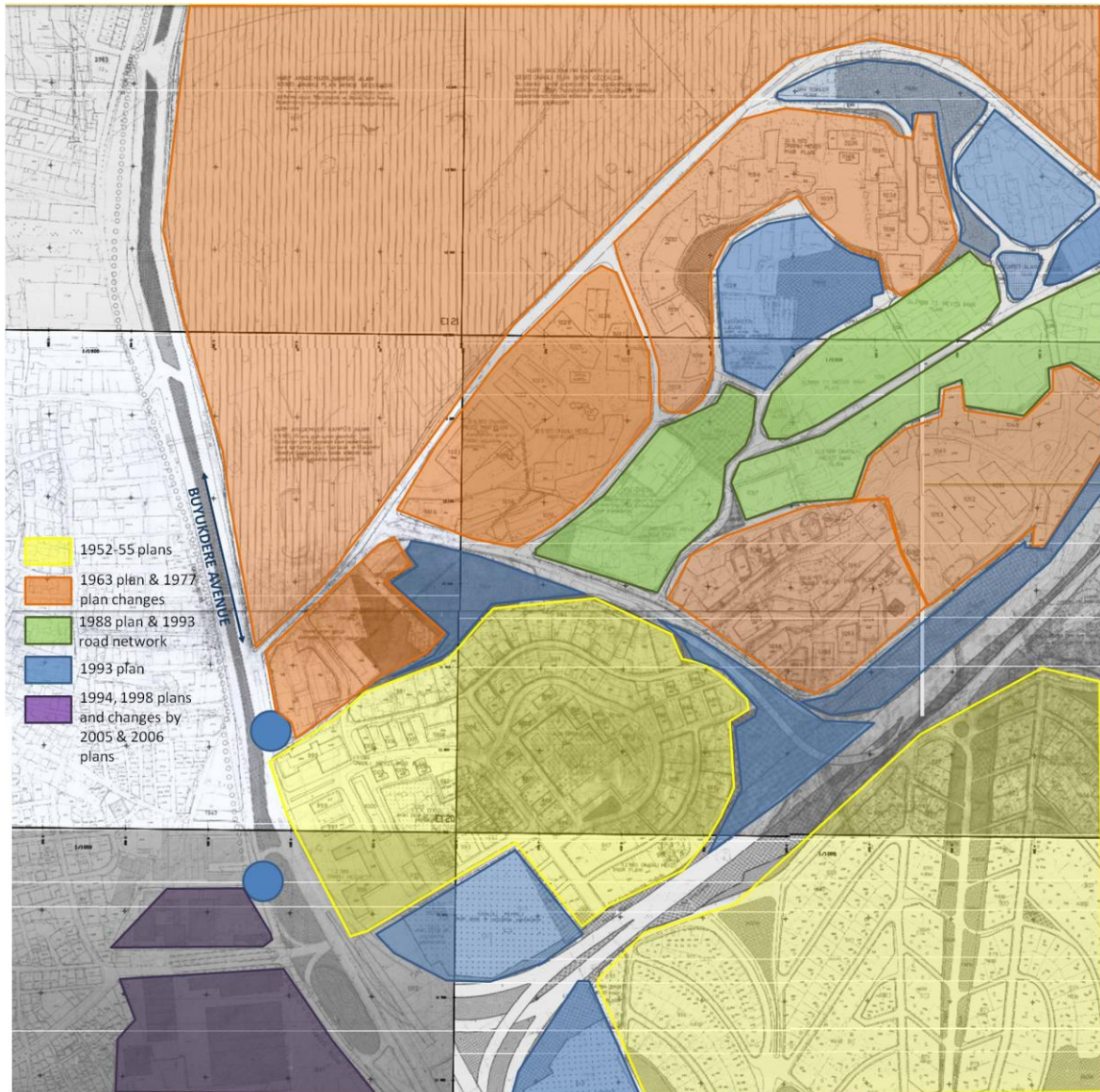


Figure 4.10 is based on Besiktas Municipality archives – 1963 Military members cooperative project (Ordu Mensuplari Kooperatifi); 1993 Besiktas 1/1000 revision plan (Besiktas gerigorunum ve etkilenme revizyon uygulama imar plani); Sisli Municipality archives – 2003/2006 Sisli Centre 1/5000 Plan (Nazim Imar Plani); Istanbul Aerial Photos (1966 & 1982, <http://sehirrehberi.ibb.gov.tr>); IBB Claims and the Truth policy document (Iddialar ve Gerçek ler); Lawsuits (Chamber of Urban Planners) (Background: 1993 Besiktas 1/1000 Plan – shows the area in the northern end of Figure 4.8)

4.5 Concluding remarks: socio-spatial justice and the case of Istanbul Metro

In this chapter, the socio-spatial and political processes that Istanbul has been through since the mid-1880s have been evaluated with reference to inequalities generated within these processes. Special attention has been paid to the development of the public transport network and transport policies that dominated the city's spatial development. Socio-spatial inequalities have been a part of the development process of Istanbul throughout the city's modernisation history. From political decisions on merchandise and agreements with foreigners, to the planning of the transport system, development and growth were based on social and spatial fragmentation of the city. Nevertheless, as Sassen (2001) discusses, such fragmentation can be observed in various cities around the world. The most important issue is to understand what different localities have to offer and how the different characteristics of urban areas change the course of this fragmentation process: "the rise of the informal economy and of urban dualism takes place in Los Angeles, as well as in Madrid, Miami, Bogota and Kuala Lumpur, but the social paths and social consequences of such similarly structural processes are so different as to induce a fundamental variegation of each resulting urban structure" (Castells, 1993, in Brenner and Keil, 2006, p. 135). This chapter's historical and spatial assessment of the city has been carried out in order to understand the socio-spatial inequalities in Istanbul's transport system discussed in subsequent chapters.

As discussed throughout the chapter, globalisation and the aim of increasing Istanbul's competitiveness in the global arena have been the main contributors to the dual formation of the city. Moreover, this segregation is being strengthened by local and central authorities. Their policies have not only created opportunities for some areas in the city but also contributed to the deprivation and exclusion of others.

Through its brief evaluation of the history of activism and the resistance of civil society against unjust applications of local and central government, it has been observed that in Istanbul, hegemony is established through tools of planning and law, and left for the use of

the politicians and the dominant groups (mainly businessmen). By doing this, not only is the tension between governing groups and their opposition controlled and regulated, but so is control over the economy sustained.

Finally, through partial plans and planning decisions, the redistribution of urban rent becomes possible. However, this redistribution does not necessarily aim at an even distribution; on the contrary, it may cause only certain areas to benefit from such distribution as these plan alterations are fragmented. Such possible impacts of plan alterations are also discussed in Chapter 8 in the case of the Istanbul Metro, as well as other issues raised in this chapter.

Chapter 5

Seeking equal mobilities in Istanbul

5.1 Introduction

In this chapter socio-spatial inequalities in Istanbul are analysed with regard to transport. This chapter, similar to Chapter 4, provides an understanding of inequalities at a larger scale, therefore, facilitates the transition between the literature review and the case study and prepares the reader for an in-depth socio-spatial analysis of the Istanbul Metro. Most importantly, it demonstrates considerable empirical evidence on the relationships between physical mobility patterns and socio-economic profiles in Istanbul based on spatial reference. Thus, this chapter is an introduction to the understanding of the ways in which social, economic and spatial inequalities are related to daily mobility practices in Istanbul.

The chapter draws on theories discussed in Chapter 2, especially on social exclusion and unequal mobilities based on socio-economic differences such as gender, economic status, education and employment. It aims to understand first, whether geographical exclusion based on transport exists in Istanbul by looking at the distribution of travel patterns; and second, it aims to uncover the relationships between actual mobility, based on trip³⁵ frequency and travel time, and socio-economic characteristics.

³⁵ A trip is defined as the movement between one activity place to another for different purposes. For example travelling from home to work, work to shopping, shopping to entertainment are defined as

This chapter is structured as follows. In the following section, theoretical background to the research is briefly explained, followed by an introduction of the data used for socio-economic and mobility analyses of Istanbul as well as the methods used in order to conduct them. Following this, spatial inequalities are examined with reference to the distribution of the travel patterns. Finally, an analysis on the interaction between socio-economic characteristics and mobility levels is presented. The chapter asks whether it is possible to talk about socio-spatial segregation in Istanbul and to what extent inequalities can be associated with the level of mobility in the city³⁶.

5.2 Background to the Study

There are a number of elements affecting individuals' daily travel³⁷. For instance, factors related to travel time range from income to gender, from employment to the structure of urban systems and land uses (Schwanen et al., 2002). In economic terms, money costs such as out-of-pocket costs and the time spent during travelling that can be used for something else more productive, are considered as important determinants of travel time costs (Banister and Berechman, 2000), and therefore, crucial elements of travel time. In relation to

different trips. A trip can be performed by using different transport modes and may include different stages such as walking from home to the bus stop – journey on bus – walking from the bus stop to work.

³⁶ This chapter uses quantitative data derived for the entire city in order to produce arguments at a larger scale. However, the importance of conducting qualitative studies on the socio-spatial segregation focusing on smaller units is acknowledged (e.g. Kurtuluş, 2005). It is believed that a combination of studies at different scales using different methods is more likely to explain the complexity of this urban phenomenon. Thus, this chapter is a contribution to the understanding of socio-spatial segregation in Istanbul at a large scale and it is followed by a more detailed case study approach in Chapters 6 to 8.

³⁷ Although travel distance is also an important component of daily travel (Stokes and Lucas, 2011), in this chapter only travel time and trip frequency are used as indicators of daily travel. Please note, social aspects of travelling emerging from the mobilities literature are not included in the analyses in this chapter, however, they are acknowledged and investigated to some extent in Chapter 8 that examines the socio-political inequalities related to the Istanbul Metro.

this, income comes forward as one of the key issues in travel time. Evidence from all around the world reveals that there is a strong correlation between travel time, trip frequency and income (Ohnmacht et al., 2009). In their analysis of the UK National Travel Surveys, Stokes and Lucas (2011) found that high income groups spend more time travelling in a year compared to low income groups (also see Lucas et al., 2001). Moreover, they have found that the number of trips increase as the income increases.

In terms of social characteristics, travel time and trip frequency, gender has been among the most examined issues in transport studies (Law, 1999; Turner and Grieco, 2000; Cresswell and Uteng, 2008; Hanson, 2010). In countries where women have more economic independence compared to the women in conservative societies, they are likely to make longer trips than men. In fact, economically independent women are even known to be time-poor as they have various tasks to fulfil (Turner and Grieco, 2000). Their daily journeys involve complicated trips (work, shopping, schooling) compared to men who mainly travel between home and work. Yet, differences exist based on the type of households these activities are scheduled in (Schwanen, et al., 2002). For instance, while no difference is found between the travel patterns of men and women in single households, women living with a working partner and children face high levels of time pressure (ibid.).

Ethnicity, income and migration issues play an important role in gendered mobilities. In a study exploring the differences in mobility patterns between Norwegian and non-Western immigrants, Uteng (2009) discovered that non-Western women immigrants spend longer hours travelling compared to their male counterparts and Norwegians due to lack of public transport after certain hours and lack of car-ownership.

There are, in fact, different views on the impacts of car ownership on travel time. While some believe that as the number of cars in a household increases, total travel time increases (Lu and Pas, 1999); there is evidence that these two are not very well related and in

fact car users spend less time travelling (Schwanen et al., 2002 citing from Shen, 2000; Hanson and Johnston, 1985; McLafferty and Preston, 1997).

Findings of the Social Exclusion Unit (2003) on transport as a barrier to finding jobs and reaching other activities, also have carried important issues to the agenda of transport research and planning. In their study, many respondents mentioned long travel times as constraints to search for jobs, especially while going to interviews (ibid.). Moreover, access to services such as health and education may take longer and may require more modal shifts for low-income groups or for people living in rural areas with no access to car. Furthermore, as Sandow and Westin (2010) mention, positive correlation exists between longer journeys and education level. Although these differences can be evaluated in terms of value systems of people and their conscious choices, they are more likely to be explained as causes and outcomes of socio-spatial and economic inequalities.

As discussed briefly, these outcomes differ in different contexts. Cities and regions produce their own socio-spatial inequalities. In this sense, historical, spatial and demographical development of Istanbul explained in Chapter 4, draws the framework of the context which the inequalities produced in the city can be evaluated within. To our knowledge, no study has been found to explain the likelihood of socio-spatial fragmentation in Istanbul in terms of transport. Therefore, this study is important in order to briefly understand and later on deepen our understanding of socio-spatial inequalities in Istanbul in the context of in-between cities of the developing world (see Chapter 1).

5.3 Data and Methodology

The data used in this chapter has been obtained from the Istanbul Metropolitan Municipality's Household Travel Survey conducted in 2006-2007 for the last Transport Master Plan (TMP) completed and published in 2011. The TMP 2011 is the last of the three major TMPs produced in Istanbul so far. Although transport master plans are relatively new for Istanbul, as they do not have a long history as much as the Urban Master Plans do, the last

TMP can be separated from the previous plans with its disaggregate approach to data collection and analysis and the expertise put into that process. Yet, the outcome has been a transport plan based on trip generation (i.e. trip production and attraction) as a part of the four-step modelling process.

Although the socio-economic data collected during household transport surveys looked at a wide range of issues and the travel diaries were very detailed, this large data set has not been used to produce an understanding of transport need for different socio-economic groups living in different areas of the city. The socio-economic data has only been evaluated from transport planning point of view. For instance, in the plan report, after the mobility levels (trip frequencies) are given for men (1.95) and women (1.36) it has been stated that the low mobility ratio of women for all trip purposes reduces the mobility ratio in the entire city (IBB, 2011a p.20).

Another indicator the plan report looked at has been the relationship between car ownership and trip rate. Although the plan report mentions that the non-car owners make less trips than car owners, this information has not been used as an input in transport policies. Therefore, the problem has been regarded as a transport problem and the real issue behind the numbers, such as gender or income based unequal mobility, has been disregarded. Hence, a study looking at socio-economic inequalities based on mobilities in Istanbul is crucial to bridge this gap. Therefore, this chapter provides an overall understanding of the problem and opens up new areas to discussion as well as showing direction to future studies in this area.

As mentioned earlier, Household Surveys including the travel diaries have been collected by the municipality in detail and from a large sample of population. The sample ratio was determined as 2.2 by the Transport Department of the Municipality after long discussions on the method and investigation of other transport master plans from different cities (IBB, 2008). The quality of this data has been discussed in Chapter 3 in detail and has

been concluded that the methods used to conduct the surveys (e.g. household selection criteria) and the ratio of their completion are good indicators of the quality of this study. For the purposes of this thesis, the Istanbul Metropolitan Municipality, Department of Transport agreed to provide 2596 travel diaries which were randomly selected from the entire data set and also used by the Municipality itself to test the reliability of their research. The socio-economic profile of this sample can be found in Table 5.1.

Travel data of individuals and their socio-economic characteristics have been obtained from these travel diaries and analysed to understand whether there is any significant relationship between travel profile (travel time and trip rate) and socio-economic characteristics (gender, age, education, employment and car ownership). In order to do that, first, the data set has been examined to decide on the method to be used.

Data used in this chapter is mainly categorical except from the transport data³⁸. Moreover, the data set is not as large as the original city-wide surveys and therefore, the data does not have a normal distribution which is a requirement for parametric tests (Healey, 1996). Thus, travel diaries have been analysed by using nonparametric tests i.e. Mann-Whitney test for two-sample cases and Kruskal-Wallis test for cases with more than two samples. Both tests are based on ranking of the sample scores and the latter needs an additional test (Wilcoxon rank sum test or Mann-Whitney) in order to identify which two samples differ from each other. The categories used for each socio-economic indicator can be found in Table 5.1. According to this, gender, employment and car ownership have been classified in two categories while education, reasons for unemployment and age have been grouped in more than two categories. In section 5.3 the results of these tests are discussed.

³⁸ Income data is not used here as respondents have not answered questions on income accurately. Therefore, car ownership is used as an indicator of income. In Istanbul, car ownership is very low, 137 cars per capita, compared to American and European cities.

As mentioned earlier, there are two sets of data used in this chapter. The second data set is based on spatial data. In the last TMP Istanbul has been divided into 451 areal units (traffic analysis zones –TAZ). This division has been more disaggregate than the previous TMPs of Istanbul (Table 5.2). Istanbul Metropolitan Municipality's Transport Department describes TAZ as hypothetical units that are formed by one or more than one small statistical units, such as neighbourhoods, that have similar land use patterns and attract and produce similar trip rates (IBB, 2008). However, such partitions are often problematic as they are not divided naturally based on social, economic and spatial features of cities but based on the “convenience” of data collection and computing (Kwan and Weber, 2008 p.112). Therefore, different results may be “obtained from the same statistical analysis at different levels of spatial resolution” and different results may be gathered “from the regrouping of zones at a given scale” (Kwan, 2009 p.1311). This problem is called the Modifiable Areal Unit Problem (MAUP) (Kwan, 2009).

In order to avoid MAUP, Kwan and Weber (2008) propose the use of space-time measures and aim to understand the importance of different geographic areas in cities rather than using arbitrary units. Thus, they suggest using more meaningful geographical areas. Having acknowledged the existence of MAUP in the case of Istanbul and different ways to solve this problem, use of such methods is beyond the scope of this study. Nevertheless, in this chapter, the impacts of MAUP have been reduced as much as possible through a critical analysis of the outcomes, i.e. not solely relying on these outcomes, using them as a guide and controlling them with the travel diary analyses.

TRAVEL DIARIES				
Sample size: 2.592/263.768 (number of travel diaries selected randomly by the Istanbul Metropolitan Municipality from a pool of travel diaries)				
Sample ratios		1987 TMP: 0.16	1997 TMP: 0.42	2007 (2011) TMP: 2.2
Socio-Economic profile of survey respondents (number of individuals)	Gender	Female: 1240 Male: 1352		
	Age	0-18: 831 19-45: 1198 46+: 593		
	Education (students have been excluded)	Illiterate: 175 Literate: 78 (no schooling) Mandatory: 1178 (primary + secondary schools) Higher education: 538 (high school and above)		
	Employment	Employed: 817 Unemployed: 1250		
	Reasons for unemployment	Student: 289 People in need*: 229 (disabled, ill, retired) Housewife: 639		
	Car ownership	One or more cars: 409 Non-car owners: 1400		
*Although disabled, ill and retired individuals who are unemployed have been grouped as people in need, this does not mean that they necessarily need care. This grouping has been done in order to facilitate the analysis.				

Table 5.1 Travel diary sample profile

Table 5.2 demonstrates general information about the study area, the Greater Istanbul divided into 451 TAZ. The data set subtracted from this information is the travel matrices for Home-Based Work (HBW) trips. According to the results of the four-step transport model used in TMP 2011, almost 8 million daily HBW trips were found to be generated in Istanbul. These trips constitute 32.3 % of all daily trips in Istanbul (IBB, 2008)³⁹. Due to some difficulties in data collection, mentioned in Chapter 3, only HBW trips have been obtained from the municipality.

In this chapter travel matrices showing the number of daily HBW trips between each traffic zone has been used to understand the mobility level for each traffic zone. The number

³⁹ 21.4 % of all daily trips are generated for Home-Based School (HBS) purposes. 37.2 % constitute Home-Based Other (HBO) and 9.1 % Non-Home Based trips (NHB).

of trips each traffic zone generates and attracts have been summed up and been mapped. Furthermore, the number of HBW trips originated per person from each zone has been found by dividing the total number of trips to the number of employed people residing in each zone. By doing this differences between traffic zones have been observed.

TRAVEL MATRICES		
Traffic Zones	1987 TMP: 108	1997 TMP: 209
2007 (2011) TMP: 451		
2012 Transport Master Plan – Net number of trips per person according to purposes HBW: 1.98 HBS: 2.02 HBO: 2.18 NHB: 1.45 Average: 2.43		
Home-Based Work (HBW) Trips: 7.836.917 trips (model outcome) – These matrices have been obtained from the Istanbul Metropolitan Municipality		
Geographic data according to 451 traffic zones (actual data, not obtained from the model)		
Socio-Economic profile of survey respondents (number of individuals)	Gender	Female: 131460 Male: 133806
	Education	Illiterate: 50331 Literate: 41340 (no schooling) Mandatory: 121786 (primary + secondary schools) Higher education: 63112 (high school and above)
	Employment	Employed: 87840 Unemployed: 188939
	Reasons for unemployment	Student: 31996 People in need: 23060 (disabled, ill, retired) Housewife: 63115 Looking for a job: 8178
	Income (figures in TL – TL exchange rate to pound was 2.65 on average in 2006)	Below 250-500TL (approx.£180): 51923 501-1000: 117934 1001-1500: 41649 1501-2000: 19009 2001-2500: 6717 2501-5000: 7977 +5001: 3090
	Car ownership	One or more cars: 85182 Non-carowners: 179366

Table 5.2 Travel matrices socio-economic profile

5.4 Spatial distribution of physical mobilities

The ways in which maps are created generates important debates among geographers. It has been emphasised that mapping should not be representational, maps are context dependent and the mapping process should be participatory (Kitchin and Dodge, 2007). An attempt has

been made to produce socio-economic maps of Istanbul based on the zonal data supplied by the Municipality (a summary can be found in Table 3.2). Although the maps have been produced through a series of statistical analyses such as the Hierarchical Cluster Analysis and Chi-square analysis, the outcome was a representation of the most dominant socio-economic characteristics of the Traffic Analysis Zones, an aggregate representation of the city. Therefore, these results have been abandoned, and solely the trip generation and attraction in each TAZ have been mapped. Yet, the outcomes of this exercise resemble the socio-economic maps produced by Güvenç (2009; Figure 4.7). According to Güvenç (2009) 'high profile' socio-economic groups reside in the centre of the city and the socio-economic profile decreases as the distance from the centre increases. In the exercise mentioned here, one further conclusion has been drawn that new residential developments outside the city centre as well as the gated communities are also places that accommodate high-profile socio-economic groups. Yet, as mentioned, these results are based on largely aggregated data and disregard difference within TAZs.

Figure 5.1 illustrates the total number of HBW trips generated in and attracted by different traffic zones in Istanbul. The first map above shows that the traffic analysis zones in historical areas and the zones by the Bosphorus and in rural parts of the city such as the Black Sea coast produce less traffic compared to the areas in what can be described as the second ring or the transition zone (Güvenç, 2009; Figure 4.7). The second map below is a demonstration of the total number of HBW trips ending in each traffic analysis zone. Similar to the first map, western and eastern sides of the city come forward for they attract high volumes of traffic. Unlike the first map, the historical peninsula and the Büyükdere Axis are also among the main areas where HBW trips end.

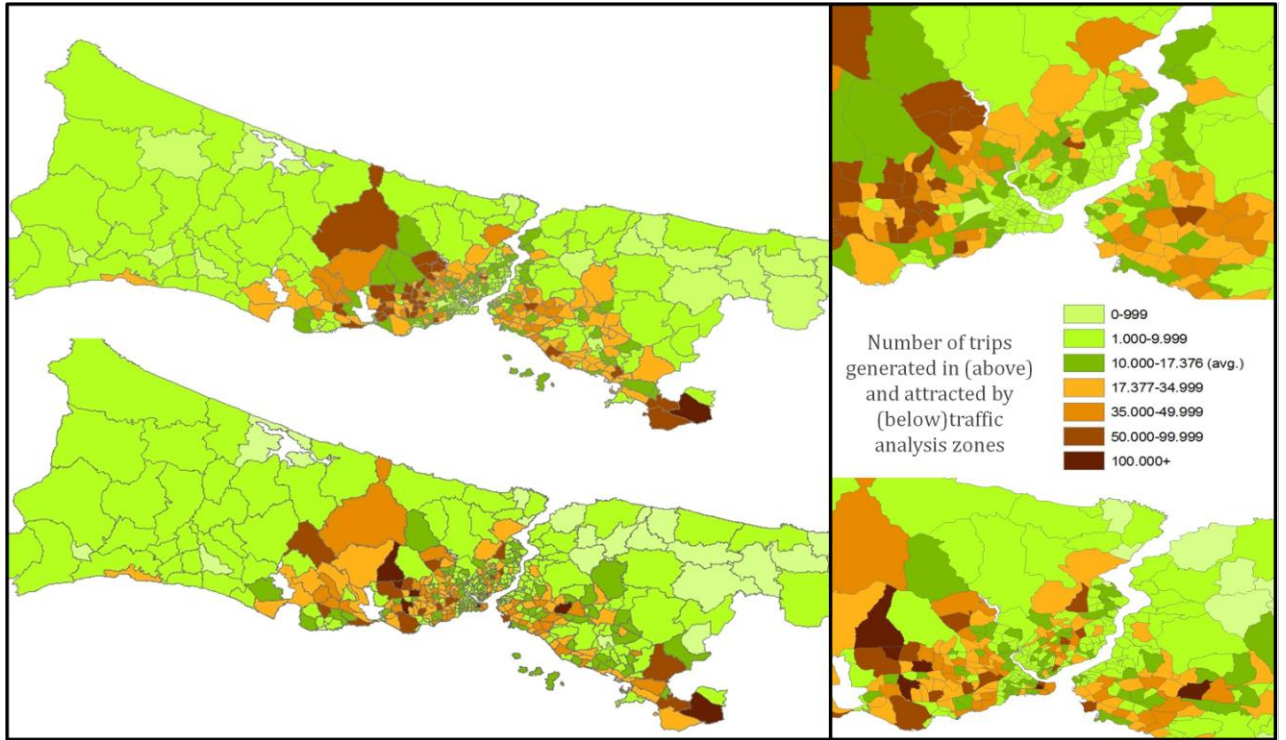


Figure 5.1 Total number of HBW trips generated in and attracted by traffic analysis zones

These two maps are important tools for understanding the main locations where the employed population live and work. Especially by exploring the first map, where the departure profiles for travel to work are presented, it is possible to conclude that the zones that are further from the city centre produce most of the HBW trips while the central zones produce less HBW trips. However, whether this situation is an outcome of unequal opportunities or socio-economic differences is further discussed in the next section.

Figure 5.2 is produced by dividing the total number of HBW departures to the total number of employees in each TAZ. Based on this evaluation it can be seen that some zones have HBW trips per employee that are larger or smaller than 2.0. According to the USA Federal Highway Administration (2010), there are many reasons for some workers not making 2.0 HBW trips a day. These are basically related to their schedule or being absent due to holidays or other reasons. Yet, they mention that the reasonable range is between 1.20 and 1.55 HBW trips per employee (p. 5-5). This is likely to explain the low numbers of HBW trips per person in different TAZ in Istanbul (Figure 5.2).

However, high numbers of HBW trips per person requires further explanation. According to one view, in four-step models, journeys to and from work also include other trips on the way, thus, the number of HBW per person may be higher than 2.0⁴⁰. However, according to the Istanbul household survey team⁴¹, for the purposes of the last TMP all trips have been coded separately, therefore, this would not be the case. Yet, they explain that this situation occurs as the employees living in these areas may have done more than 2.0 trips because their work and home places are close to each other and they might have gone home at lunch time; they might have worked in more than one period a day; or they might have left work for work related purposes. Whatever the explanation is, Figure 5.2 demonstrates high levels of home-based work activity in central parts of Istanbul as well as areas where suburbs and gated communities can be found. Yet, this argument will be validated in the next section with a detailed analysis based on travel diaries.

5.5 Social inequalities and transport in Istanbul

The spatial representation of the distribution of HBW trips in the previous section opens up new areas for discussion. Questions arise on the relationships between trip frequency and socio-economic characteristics. In this section, travel time and trip frequency for all purposes have been used as indicators in explaining transport inequalities further, based on gender, age, education, income and employment.

⁴⁰ Based on an informal meeting with a transport planner/academic on 04.03.2013 at Istanbul Technical University (ITU).

⁴¹ Based on an informal email exchange (04.03.2013) and a discussion (03.12.2012, ITU) with the head of the transport household surveys conducted in Istanbul in 2006-2007.

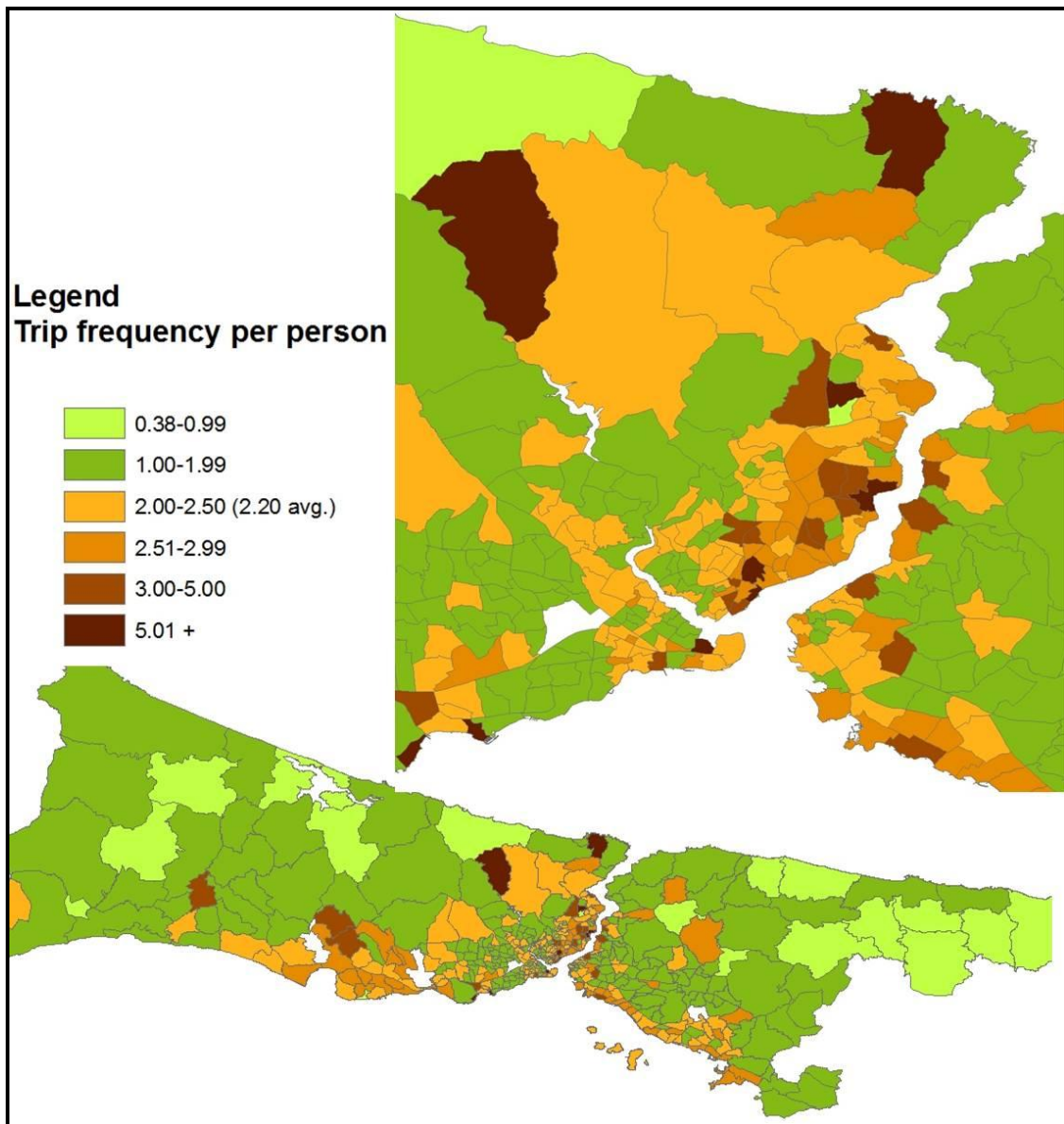


Figure 5.2 Number of HBW trips per person per day

5.5.1 Travel time

Table 5.3 shows the Mann-Whitney and Kruskal-Wallis statistical results for travel time versus gender, age, education, employment and car ownership. As explained earlier, both tests compare the medians of different samples, the latter comparing the medians of more than two samples. Differences for all socio-economic categories have been determined at high levels of significance (95 percent).

Test results suggest that there is significant difference between total daily travel time of men and women. Looking at the medians of these groups, it is possible to state that men

spend longer hours travelling compared to women. However, this situation is not solely gender dependent. There is evidence on the impacts of employment on travel time (Lu and Pas, 1999). Therefore, when the travel times of employed women and unemployed women are compared, significant difference is found. Employed women make longer trips than unemployed women. There is no significant difference between employed men and employed women in terms of travel time⁴². Yet, it has been found that unemployed men make longer trips than unemployed women. Therefore, it is possible to state that gender has an important impact on travel time especially for the unemployed population; however, for the employed population there is no significant difference in travel time in terms of gender.

The Kruskal-Wallis test for age and travel time has revealed differences between total daily travel time of various age groups. When the age groups are tested in groups of two, further comparisons could be made. It has been found that, as expected, the 0-6 age group has the shortest travel time followed by the group over 66 years old. Age groups between 7 and 24 and 36 and 45 make longer trips compared to at peak hours groups between 25-35 and over 56 years old. Ranking tests for different pairs indicate the existence of three main age groups: 0-18; 19-45; and over 46. When these groups are examined with the help of ranking tests, it is seen that groups aged between 19 and 45 spend longer time travelling compared to other groups. 0-18 and over 46 years age groups do not have any significant difference between their daily travel time. In the analysis of trip frequency, these three age groups are used as variables.

⁴² Here, part-time and full-time workers have not been evaluated separately. However, differences between journey to work travel time of part-time and full-time women employees can be found. For instance, Hanson and Pratt (1995) draw attention to longer travel time of full-time women employees in Worcester (based on Hanson and Pratt, 1990). Moreover, they emphasise differences in travel time for women working in female-dominated occupations and non-female-dominated occupations (ibid.).

Variable	Sample Size (#individuals)	Median (minute)	W/KW*	p-value
Gender				
Male	1352	30	1923297.5	0.0000
Female	1240	15		
Employed women	179	50	150277.0	0.0000
Unemployed women	857	10		
Unemployed men	393	30	495568.0	0.0000
Unemployed women	857	10		
Employed women	179	50	71062.5	0.4392
Employed men	638	60		
Age				
0-6	260	0	398.87 (adjusted for ties)	0.0000
7-14	401	30		
15-18	170	50		
19-24	286	30		
25-35	530	30		
36-45	382	40		
46-55	281	20		
56-65	155	20		
66+	127	0		
Education**			85.45 (adjusted for ties)	0.0000
Illiterate	176	0		
Literate no schooling	78	20		
Completed mandatory	1178	30		
High school and above	538	50		
Employment			1014048.5	0.0000
Employed	817	60		
Unemployed	1250	20		
Reasons for Unemployment			137.06 (adjusted for ties)	0.0000
Student	289	40		
Housewife	639	2		
Needs care	229	20		
Car ownership***				
One car or more	409	30	1240971.5	0.0042
No car	1400	25		

Table 5.3 Mann-Whitney and Kruskal-Wallis Test results for travel time (* indicates the results of the Kruskal-Wallis Test that has been applied to categories with more than two variables) (**Students have been excluded from this evaluation). (***)Sample population 18 years and over have been considered).

As mentioned previously, there is a positive correlation between higher education and longer journeys (Sandow and Westin, 2010). Based on the analysis, it can be stated that differences exist between time travelled by different education groups in Istanbul. Mann-Whitney test for different pairs of education levels, point out that while there is no significant difference between illiterate and literate (no schooling) groups in terms of travel time, they

both differ from groups with high education (high school and above). Although there is no significant difference between literate groups and people who have completed their mandatory education, illiterate groups travel significantly less compared to people with mandatory education. Groups with high education make longer trips compared to all other groups.

As discussed earlier in terms of gender, it is an expected outcome to find employed people making lengthy trips compared to the unemployed. Yet, this is the case in Istanbul. Moreover, unemployed groups such as students, housewives and people needing care have difference in their daily travel time. Within this group, students spend longer time travelling on a daily basis than both housewives and people in need; housewives spend the least time travelling.

Finally, based on the travel time analysis, it is possible to state that in Istanbul car owners spend more time travelling compared to non-car owners. Yet, the probability of this situation happening is slightly lower than the probability of other socio-economic criteria discussed above. The medians of two samples are also close to each other. Nevertheless, whether the reason is traffic or the independence the car delivers to its user, car owners are more likely to make lengthy trips in Istanbul.

5.5.2 Trip frequency

The average trip frequency in Istanbul is much lower (between 1.64 and 2.4) compared to, for instance, London where an average trip rate per person is between 2.7 and 2.8 (IBB, 2008; TfL, 2009). Yet, differences exist between travel time of different socio-economic groups. In Table 5.4 the results of Mann-Whitney and Kruskal-Wallis tests are shown. Although the median trip frequencies are the same in most categories, based on the analysis results it is statistically possible to state that differences exist. In the cases where the medians are the same, alternative hypotheses have been set to understand whether one group's trip frequency median is higher than the other.

Gender comes across yet again as an important determinant for trip frequency. The analysis demonstrates that men make more trips than women. However, when employment is taken into consideration, it is possible to see that it is the unemployed women who make less trips and that employed men and women have no significant difference in the number of daily trips they make. However, similar to the analysis on travel time, unemployed men are likely to make more trips than unemployed women.

There is also significant difference between trip levels of different age groups. Individuals aged between 19 and 45 make more trips in a day compared to 0-18 and over 46 years old age groups. There is no significant difference between 0-18 and over 46 years age groups in terms of trip frequency.

Education is an important element in determining trip frequency of individuals. As shown in Table 5.4 there is significant difference between education level and daily trip frequency of individuals. Analyses for different pairs of education categories have revealed that there is no significant difference between illiterate and literate individuals in terms of trip frequency and no significant difference between individuals who have completed mandatory education and individuals with higher education. However, there is significant difference between illiterate individuals and individuals that have completed a school. Moreover, literate individuals without any schooling also have different daily trip rates than individuals who have completed a school.

When different unemployed groups are examined according to their trip rates, differences can be found. According to the analysis, students have higher trip rates than both housewives and the individuals in need while housewives make the least number of trips of all three groups. Lastly, in terms of car ownership, there is enough evidence to suggest that car owners make more daily trips compared to non-car owners.

Variable	Sample Size (#people)	Median (#trip)	W/KW*	p-value
Gender				
Male	1352	2	1880624.0 ¹	0.0000
Female	1240	2		
Employed women	179	2	136254.5 ²	0.0000
Unemployed women	1061	2		
Unemployed men	393	2	279999.5 ³	0.0000
Unemployed women	857	2		
Employed women	179	2	72065.0	0.6428
Employed men	638	2		
Age				
0-18	831	2	20.27 (adjusted for ties)	0.0000
19-45	1198	2		
46+	593	2		
Education				
Illiterate	176	0	41.40 (adjusted for ties)	0.0000
Literate no schooling	78	2		
Completed mandatory	1173	2		
High school and above	537	2		
Employment				
Employed	815	2	931353.0 ⁴	0.0000
Unemployed	1246	2		
Reasons for Unemployment				
Student	289	2	101.55 (adjusted for ties)	0.0000
Housewife	638	1		
Needs care	228	2		
Car ownership				
One car or more	407	2	388135.5 ⁵	0.0067
No car	1396	2		

Table 5.4 Mann-Whitney and Kruskal-Wallis Test results for trip frequency (* indicates the results of the Kruskal-Wallis Test that has been applied to categories with more than two variables) ¹Ha: Men make more trips than women ²Ha: Employed women make more trips than unemployed women ³Ha: Unemployed men make more trips than unemployed women ⁴Ha: Employed make more trips than unemployed ⁵Ha: Car owners make more trips than non-car owners

5.5 Conclusion

This chapter has aimed to establish a broader understanding of socio-spatial inequalities based on transport in Istanbul; which is the main concern of this thesis and a complex phenomenon that is discussed from different aspects in the proceeding chapters. Although factors that explain this urban phenomenon range from land use to the existence of transport services, proximity of jobs, location of houses in relation to other services; from household structure to individuals' choice of travelling and freedom to choose (e.g. whether they want

to or can choose to work from home) and to many more issues, in this chapter gender, age, employment, education and car ownership are taken as socio-economic factors that explain individuals' daily mobilities in terms of travel time and trip frequency.

First of all, the mapping exercise has made it possible to visually understand the distribution of HBW trips in Istanbul. It has demonstrated that traffic analysis zones located in the outer ring of the core of the city, have the highest number of employees with high rates of HBW trips, and yet, the central parts of the city produce more trips per person. The outer parts of the city were described as low profile zones while the inner parts of the city were determined as high profile zones by Güvenç (2009) (Chapter 4). However, further evaluation has been needed to understand whether there are strong linkages between these parameters.

Analysis of travel diaries has become an important tool in filling this gap. As discussed previously, although there are similarities between cases, evidence from around the world point at different interactions between socio-economic and demographic characteristics of individuals and their travel behaviour. It has been possible to test some of these differences for Istanbul. One of the striking results was on gender and employment. Unemployed women in Istanbul can be described as *a-mobile* since their mobility level in terms of travel time and trip frequency is very low. Another important outcome has been on education. Analyses have shown that individuals with no or low education have lower mobility levels than individuals who have completed their mandatory education and the ones with higher education levels.

These results suggest that socio-spatial inequalities based on mobility are generated not only in forms of spatial fragmentation of urban space but also in forms of inequalities within smaller units, maybe even within households especially when the mobility levels of housewives are taken into consideration. However, understanding whether unequal mobility practices are outcomes of people's wants and choices or whether these practices are actually

based on social, demographic and economic differences requires further qualitative research. Yet, it is important to emphasise the existence of such inequalities regardless.

To examine those issues further, a more detailed analysis of urban form, housing structure and the proximity of public transport infrastructures would help explaining many issues that have not been covered in this chapter. Yet, another important parameter, mode choice based on socio-economic characteristics in Istanbul, is discussed in Chapter 7 with reference to the Istanbul Metro.

All in all, the findings of this chapter are important not only for drawing the framework of the case study of the thesis, but also for guiding policy makers in finding solutions to supplying opportunities for equal mobility experiences for unemployed women, groups with no or low education, the youth and elderly.

Chapter 6

Spatio-economic impacts of the Istanbul Metro

6.1 Introduction

This chapter is the first among three empirical chapters on the social, economic and political impacts of the Istanbul Metro with regard to spatial inequalities. This chapter evaluates the economic impacts of the Istanbul Metro with regard to spatial development and aims to understand whether the Metro contributes to the generation of uneven economic growth in Istanbul. In this sense, this chapter mainly relies on the theories of wider economic impacts of transport and land use-transport interaction.

Although the research on the relationship between transport and economic development dates back to the early nineteenth century and the studies of Von Thünen, Christaller and Lösch, the modern understanding of this link has only been on the agenda in the last fifty years (Banister and Berechman, 2000). In recent years, understanding the wider economic impacts of transport investments has become an important area of investigation, not only for transport geographers and economists but also for policy makers who, to a greater extent, refer to these impacts in order to justify the need for a particular transport investment. What makes wider economic impacts of transport infrastructure investments important is that, unlike the traditional economic assessment of infrastructure impacts, the analysis of wider economic benefits captures indirect user benefits which are not normally

captured in cost-benefit analysis (Vickerman, 2008). These are the impacts of transport infrastructures on the economic growth and labour market (Banister and Berechman, 2000; Vickerman, 2008; Banister and Thurstain-Goodwin, 2011; Hensher et al., 2012), agglomeration (Graham, 2008; Vickerman, 2008; Banister and Thurstain-Goodwin, 2011; Chatman and Noland, 2011; Graham and Melo, 2011; Mejia-Dorantes et al., 2012) and impacts on land and property values (Cervero and Duncan, 2001; Cervero, 2003; ; AtisReal and Geofutures, 2005; Debrezion et al., 2007; Banister and Thurstain-Goodwin, 2011).

The majority of the empirical studies mentioned above focus on the wider economic impacts of rail infrastructures for a reason. Rail infrastructure investments provide important discussions for understanding the wider economic impacts of transport infrastructures, since investment in rail is justified not only on the basis of traditional economic assessments but also by looking at the broader benefits of agglomeration, employment and development (Banister and Berechman, 2000). “In fact, many [rail] investment decisions would not have been made if only the transport benefits had been considered” (ibid. p.257).

In this sense, it is important to understand the wider economic impacts of the Istanbul Metro and to make a judgement on the economic feasibility of the project. Nonetheless, it is not the main purpose of this chapter; hence, such an assessment will not include the calculation of the wider economic benefits in monetary terms. The main argument to be tested here is whether the Metro has had impacts on the accumulation of benefits in space and, therefore, been influential in uneven spatial development.

After this brief description of the subject, the chapter proceeds with a review of the literature on the assessment of wider economic impacts of transport infrastructures. Examples are mainly selected from research on rail transport. This is followed by a methodological discussion on the ways in which these impacts can be examined and the issues relating to such assessments. Following this, macro, meso and micro economic impacts

of the Istanbul Metro are discussed and, finally, main conclusions on the findings of the chapter are drawn.

6.2 Assessing the wider economic impacts of rail transport

In this section, the framework of the empirical research on the spatio-economic impacts of the Istanbul Metro is drawn and the methods used in previous empirical work in order to calculate these impacts are evaluated. This section gives the opportunity to comment on different approaches and their limitations. A variety of methods have been developed in order to evaluate the impacts of different transport infrastructures, but due to the complexity of the subject it is hard to discern the impacts of investment on one particular transport system from any other infrastructure investment, planning regulation or implementation. Vickerman (2008) draws attention to the difficulty of ex-post analysis as the impacts of transport infrastructure investments reveal through time and, therefore, changes cannot be clearly detected. Thus, a methodological challenge exists in understanding post-impacts of transport investments. This chapter aims to provide an approach to overcome these barriers.

Scale and causality are the first issues that need to be dealt with in any exercise examining the impacts of a transport infrastructure investment (Banister and Thurstain-Goodwin, 2011). It is not just the scale of investment that is important, but also the geography (the context) in which the investment has been made. The scale of investment defines the scale of impact and the spatial unit to be affected by that investment. Therefore, other issues affecting the development of the area, such as planning regulations, the economic situation, spatial/environmental barriers and demographics, are important for research. The question is how much of the impact can be attributed to transport. These issues very much affect the causality as well. It is a hard task to prove causality as one needs to eliminate the external factors from the impacts of the transport infrastructure in which scale of research is an important factor (ibid.).

The issue of distribution is another important factor. According to Chatman and Noland (2011), the growth that is measured as a result of a transport investment is not always new. On the contrary, it may occur as a result of redistribution from one area to another. Vickerman (2008) explains this process as the acceleration of impacts in one region “at the expense of another” (p. 35) which raises the debate on ‘gainers and losers’. Despite the possible disruptive impacts of such redistribution, Vickerman (2008) suggests that there still would be an overall gain as a result of the investments. Although the overall economic gain at the regional and urban scale could be seen as a positive result, the impacts on the local economy could be tremendous as the losses could negatively affect the local population.

In terms of methods, difficulties in measuring the impacts of transport infrastructure investments include double counting of the benefits, timing of the changes and the control areas. Including wider economic benefits in traditional assessment processes may result in double counting of the benefits since they already consider the economic growth resulting from travel cost savings (e.g. as a result of a Cost-Benefit Analysis). However, measuring economic growth effects do not necessarily double count investment benefits since infrastructure investments, as is argued here in terms of wider economic benefits, “produce more than just travel cost savings” (Banister and Berechman, 2000: p. 162).

Time-related factors are also crucial for the assessment of transport infrastructure benefits. Changes in property values, development in businesses and employment changes need to be assessed before and after the new infrastructure starts operating. Banister and Thurstain-Goodwin (2011) suggest that the data to assess these changes should be “ideally available from before the decision to build was taken, prior to opening, and immediately after opening, as well as further downstream. A continuous database is ideal, but data are needed for at least these four points in time” (p. 217). However, different approaches exist such as Cervero and Duncan’s (2001) research on the relationship between transit and land values

where they use data from 1998 and 1999 when remarkable changes were observed in land prices.

Using control areas is another way to understand the impacts of a transport infrastructure investment. Control areas need to share similar economic, spatial and demographic characteristics with the area of investment in order for the comparison to be meaningful. Moreover, the control and the areas where the investment takes place need to be within the same political context. Apart from control areas, the size of the research area is also an important issue for transport. In their research on land value changes related to transit development, Cervero and Duncan (2001) find that most of the benefits occurred in areas that were located closely to the light rail and commuter rail stations, within one quarter of a mile. As Banister and Thurstain-Goodwin (2011) mention, “depending on the investment, residential impacts could extend to 1000 m, whilst those for commercial developments are likely to be concentrated in a 400 m radius” (p. 217). Although this distance depends on the area in which the research is being carried out, as the willingness to walk changes from one place to another, 400 to 500 metres can still be taken as an average distance from a rail transport station, especially for commercial areas.

The above discussion displays the need for a new approach to overcome the methodological issues of time, scale, double counting and control areas. Banister and Thurstain-Goodwin (2011) discuss the way in which such an approach can be developed and suggest a methodology that evaluates wider economic benefits of transport infrastructure investments in three different scales: macro, meso and micro. In macro scale the impacts of transport infrastructure at national and regional scale (i.e. growth in GDP) are investigated while in meso scale the analysis looks at the impacts at urban level (agglomeration of business benefits and increase in labour force, also discussed by Graham, 2008), and in micro scale the analysis highlights the impacts of transport infrastructures at the local level (i.e. land and property values). According to Banister and Thurstain-Goodwin (2011) an analysis

that would combine all three levels may result in double counting of some effects. Thus, they add the need for focusing on one level of analysis, examine it in detail and find out how it relates to the other two levels. They further mention that the influence of external factors and the causality can be better understood at a more local level depending on the scope of the investment and the geography it has been within.

In the context of Istanbul Metro, the approach and the solutions to specific problems are not straightforward and the research is mainly driven by data constraints. Data is often not collected regularly, not stored systematically or not available to researchers. In terms of ex-post studies, there is no evidence of in-depth analysis of economic benefits of transport infrastructure investments in Turkey, apart from a few descriptive and traditional analyses on rail investments (Gerçek et al., 2004; Babalik-Sutcliffe, 2007) and analytical analysis on agglomeration, employment and urban form related to accessibility changes within a whole city (Alpkokin et al., 2005; Alpkokin et al., 2008). Therefore, there is a need for a more systematic and inclusive approach to understanding the spatio-economic impacts of transport systems in the Turkish context. Moreover, such an approach would in turn improve the appraisal methods in the transport literature. Based on the discussion of the complexity of measuring the wider economic impacts of the Istanbul Metro, the methodology is structured around the issues raised above.

6.3 Methodology and data

In this section, the case of the Istanbul Metro is introduced through a discussion on the constraints and challenges in assessing the economic impacts of transport infrastructure investments. As discussed in the previous section, the economic impacts of the Istanbul Metro are examined at three levels: macro, meso and micro. It is important to note that, since the Istanbul Metro is an urban transport infrastructure, its impacts at the macro level are evaluated within the urban context, not within the country context as previous empirical studies suggest (Banister and Thurstain-Goodwin, 2011). In this sense, it is possible to state

that these three scales are not only physical but also contextual. For instance, while employment and population changes are discussed at the macro scale and comparisons are made between the Metro served areas and the rest of the city, business clustering and business growth are investigated along the Metro corridor at the meso scale and the property value changes are discussed at the micro scale for the catchment areas of the Metro. The data used at each scale and the analyses are described below.

At the macro level, the changes in employment and population before and after the opening of the Metro are examined. Data for employment changes before the opening of the line are gathered from the census data provided by the Turkish Statistical Institute (TUIK). However, the TUIK stopped collecting employment data after 2000 and only demographic (population and gender) and educational data have been collected since then. Therefore, the three Transport Master Plan (TMP) reports have been used to obtain employment data at the district level. Changes in employment within the Metro-served districts have been compared with the changes in districts in the European part of the city that are not served by the Metro, with the changes in the Asian districts of the city, entire Istanbul and Turkey. Population changes in neighbourhoods that are served by the Metro are compared with the neighbourhoods within the same district but without the Metro stations, and with the rest of the city and with Turkey, in order to understand whether the Metro has been influential on population.

At the meso scale, the firms that were established after the opening of the Metro are examined based on their sectors in order to identify whether the Metro has contributed to agglomeration economies due to the clustering of businesses in certain areas. Analysing the commercial data gathered from the Istanbul Chamber of Commerce (ITO) has been a difficult task as the data set is immense, including about 160,000 firms which opened between 1990 and 2000 and about 200,000 firms between 2001 and 2010 in Istanbul. In addition, it is not coded geographically: the data contains addresses, but is not coded according to

neighbourhoods or districts. Streets within a 500 metre radius around the Metro stations have been determined by using the Google Maps application and details of firms operating on these streets have been extracted from the data to be examined according to their sectors and year of opening. After conducting descriptive research, chi-square analysis was used in order to investigate whether there is a relationship between the sectors and areas with and without the Metro. At the same level, changes in the number of firms that had opened within a 500 metre radius of the Metro stations have also been examined. Moreover, two further case studies have been included at this level. These studies examine the capital growth in businesses before and after the opening of the line, and also by using the investment capitals of the firms.

At the micro level, changes in residential and office values have been examined. As mentioned earlier, none of the existing governmental or private institutions hold regular information regarding property values in Turkey. The values determined by the Valuation Commissions consist of information on land values per square metre for each street in each neighbourhood. These values have been designated every four years by valuation commissions formed at every district municipality mainly for the purposes of applying property tax, collected by the district municipalities twice a year. Square metre values for properties are based on the sum of land values designated by the commission itself and the construction costs determined by the Treasury and the Ministry of Environment and Urban Planning. During the transaction of a property both the buyer and the seller pay an amount of tax based on these values. Although square metre values are important indicators of property values in different areas of a city, they can be below or above of the actual market values as they are defined according to inflation amongst other factors. Therefore, they are not fully sensitive to socio-spatial changes such as changes in transport, built environment and demographics. Nevertheless, since they provide information based on evaluation by local

commissions and inflation they are commonly used as a base for analysis in property value analysis.

UNIT SCALE	TOTAL SYSTEM			SOURCE OF DATA
	IMPACT	TIME		
		1990-2000 (before)	2001-2012 (after)	
MACRO	Employment change	+	+	Census (Turkish Statistical Institute and Istanbul Master Plans)
	Population change	+	+	
MESO	Clustering of businesses	-	+	Documentation (Istanbul Chamber of Commerce)
	Business growth	-	+	
		(Changes before the Metro are considered in case studies)		
MICRO	Change in Residential Values	+	+	Documentation (District Municipalities)
	Change in Office rents	-	+	
				Market reports

Table 6.1 Methodology and the source of the data

The analyses in this chapter have been carried out for different points in time before and after the opening of the Metro in order to control other time, related factors, mentioned earlier. Construction of the Metro started in 1992 after being decided upon by the 1988 Transport Master Plan (TMP). Thus, where possible, 1990 was taken as the start date for analysing trends before the opening of the Metro. Istanbul Metro opened in September 2000. In order to create coherence between different data sets (e.g. property prices and number of firms opened in one year) January 2001 was taken as the start date for the analysis. Other important dates are shown in Figure 6.1.

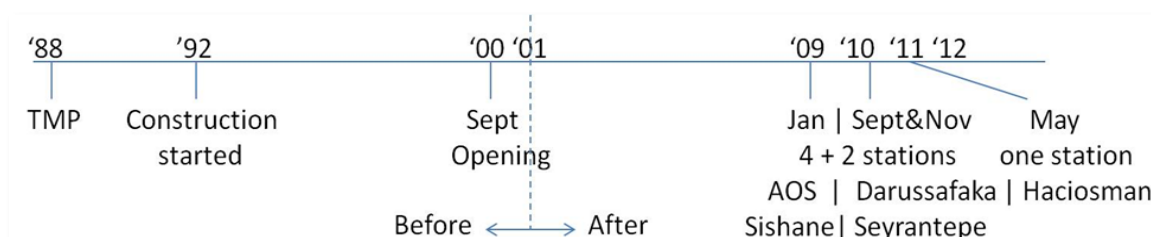


Figure 6.1 Timeline showing important dates before and after the opening of the Istanbul Metro

The most dominant feature of the Metro corridor is Büyükdere Avenue which links the first and the second bridges (see Chapter 4 for details). In order to eliminate impacts of Büyükdere Avenue, the Metro catchment area is kept small: 500 metres from every station⁴³ along the line. In order to define the areas around stations, the street form has been taken into consideration since the city has grown organically. Where the main arterial roads act as barriers, pedestrian crossings are regarded as streets. In order to create a map of the catchment areas Google Maps application was used (Figure 6.2). As explained earlier, this chapter does not aim to calculate the wider economic benefits of the Metro in monetary terms and make comparisons with the outcomes of previous cost-benefit analyses (Gerçek and Demir, 2007)⁴⁴. The main aim is to draw conclusions on the spatial inequalities that the Metro is likely to generate as a result of its wider economic benefits.

6.4 Macro impacts

6.4.1 Changes in employment

At the macro level, an analysis was carried out to understand employment growth as a result of the subway development. The data shows employment levels before and after the opening of the Metro (1985-1996-2006) and was obtained from the reports of the three Transport Master Plans of Istanbul at the district level. Since the employment analysis is carried out at the macro level, this data is sufficient for comparing employment changes before and after the opening of the Metro. Table 6.2 shows changes in employment in Turkey and Istanbul since 1985, comparing employment growth between five districts along the Metro line and the areas outside this corridor, named 'non-Metro' areas. Although the Metro opened in 2000, employment levels since 1985 have been included in order to understand the trend.

⁴³ Except from Şişhane, an area that used to be within the old CBD, where the development capacity is believed to have reached its peak.

⁴⁴ Gerçek and Demir (2007) found the benefit-cost ratio to be 2.12 for the extension of the Metro line (4Levent-Haciosman) and 60% of total economic benefits were expected to result from travel time savings.

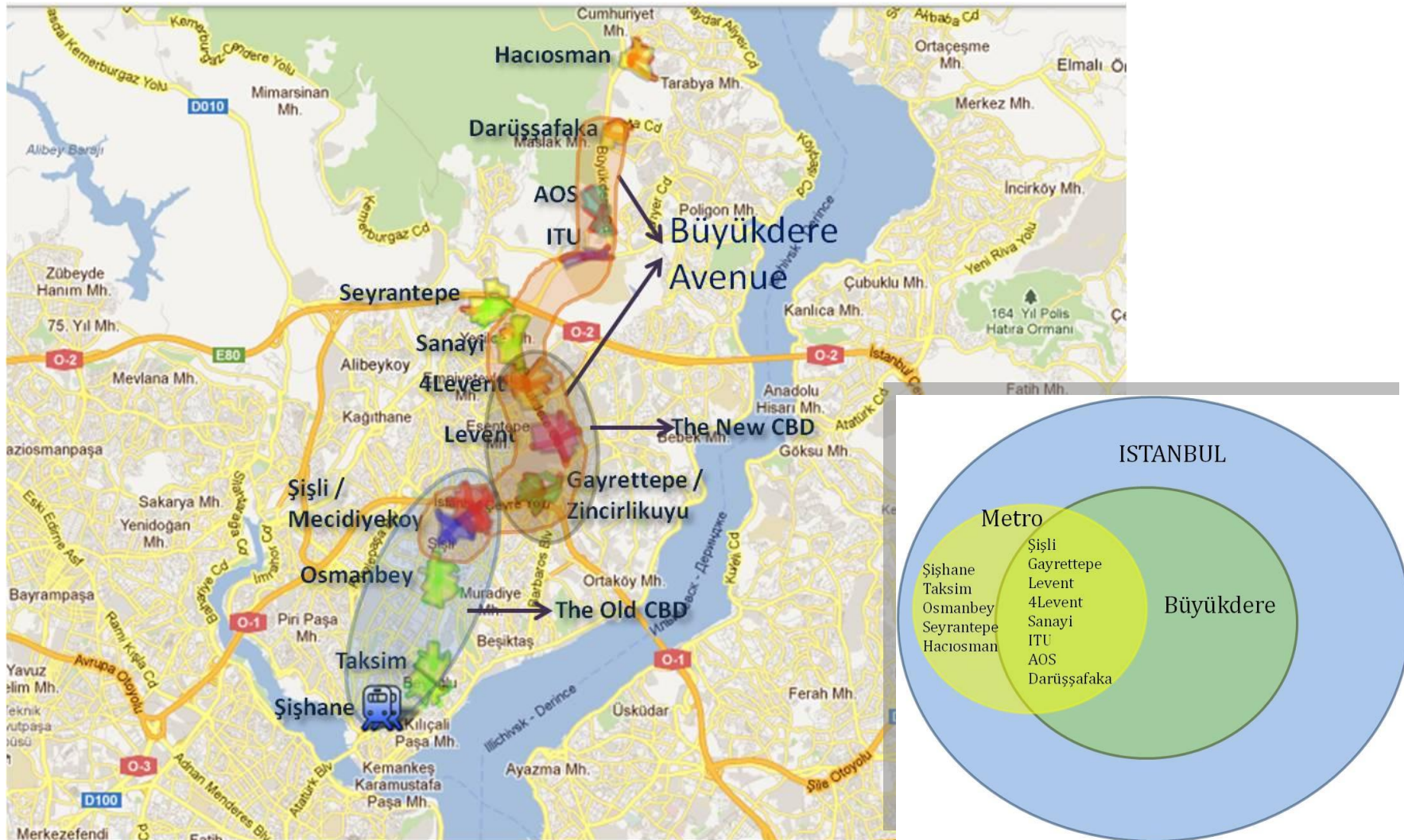


Figure 6.2 The map shows the catchment areas of the Metro stations (500m walking distance) while the diagram demonstrates the location of each station in relation to Büyükdere Avenue. The map can be found at <http://g.co/maps/jm2s7>

Table 6.2 demonstrates that between 1985 and 2006, employment levels in Turkey decreased by almost one million, and since 1996 the growth rate declined by 3.6 percent. Privatisation policies after the 1980s may be regarded as one of the main factors in this fall in employment levels (Karabıyık, 2010) as well as economic instability and crises, especially in 1994 and 2001 (discussed in Chapter 4). In Istanbul, the situation is different. Employment levels rose continuously in Istanbul between 1985 and 2006, although there are differences between the east and west of the city as well as in the northern part where the Metro is located.

	NUMBER OF EMPLOYEES			ABSOLUTE CHANGE	
	1985	1996	2006	1985-1996	1996-2006
Metro	495948	538206	660508	42258	122302
Istanbul Non-Metro Europe	954464	1317267	2119925	362803	802658
Istanbul Asia	421088	661533	1081535	240445	420002
Istanbul Total	1871500	2517006	3861968	645506	1344962
Turkey	15000500	21194000	20423000	6193500	-771000
	PERCENTAGE CHANGE		Growth rate by base year (1985)		
	1985-1996 (%)	1996-2006 (%)	1985	1996	2006
Metro	8.5	22.7	1	1.09	1.33
Istanbul Non-Metro Europe	38.0	60.9	1	1.38	2.22
Istanbul Asia	57.1	63.5	1	1.57	2.57
Istanbul Total	34.5	53.4	1	1.34	2.06
Turkey	41.3	-3.6	1	1.41	1.36

Table 6.2 Employment changes in Istanbul and Turkey by the number of employees. Table shows the differences in Metro and non-Metro areas. Source: 1988, 1997 and 2011 Transport Master Plans (IBB, 1988; 1997; 2011a); www.tuik.gov.tr, 09.05.2012 (values between 1990-2007 for Turkey); Karaçor and Saraç, 2011 (employment level in Turkey in 1985 is an approximate value obtained from Graph 3 in authors' paper based on TUIK, 2010)

Although employment levels increased both in the European and Asian parts of the city, the latter reached higher levels of employment. This situation can be explained by the Urban Master Plan approaches to the development of the urban macro form of Istanbul. It has been clearly put in Istanbul Metropolitan Sub-centres Master Plan (IBB, 1995) that

new sub-centres were planned in Istanbul in order to decentralise the population and control the development of the city in a linear form by the Marmara Sea. In this sense, four sub-centres were designated in the Asian part. Increase in employment levels in the Asian part is, to a greater extent, an outcome of such policies, supported by initiatives for new business development in these areas. Therefore, employment growth in the European part has been slower than that of the rest of the city. Having stated that, the districts served by the Metro line even had a slower increase in the number of employees working in the area. Although the number of employees within the Metro-served areas grew after the opening of the Metro line in 2001, since this increase is at a slower rate than the rest of the city, it suggests that the Istanbul Metro was not influential in creating additional employment in the area (Figure 6.3).

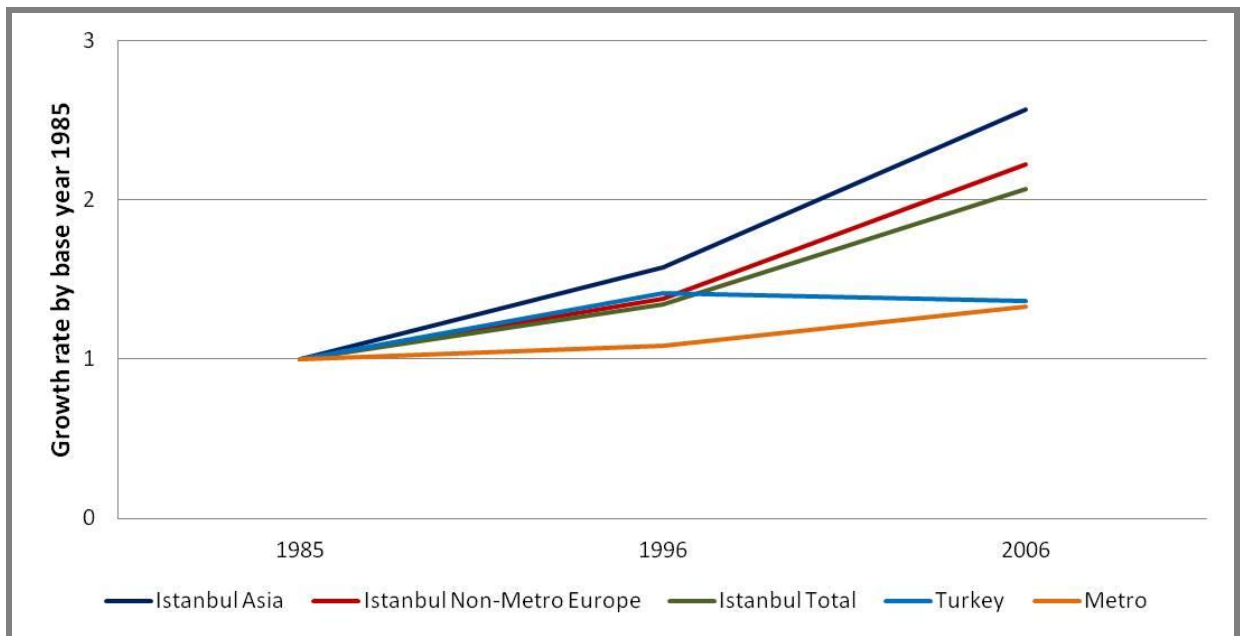


Figure 6.3 Employment growth rate by base year 1985

6.4.2 Changes in population

Despite not being directly related to the wider economic impact analysis, population changes are important in understanding employment and business development in the area. After making comparisons between the population changes in different areas of

Istanbul, five districts where the Metro is located are examined according to the population changes before and after the opening of the Metro. The population of neighbourhoods surrounding the Metro is compared to the population of the other neighbourhoods in the district. Therefore, a comparison between the Metro and non-Metro areas is made.

	POPULATION					ABSOLUTE CHANGE			
	1970	1980	1990	2000	2010	1970-1980	1980-1990	1990-2000	2000-2010
Metro	795478	996821	1100805	1281169	1356281	201343	103984	180364	75112
Istanbul (Europe)	2281000	1383500	4734900	6511000	8486821	-897500	3351400	1776100	1975821
Istanbul (Asia)	677500	3261200	2459900	3467200	4633775	2583700	-801300	1007300	1166575
Turkey	35605176	44736957	56473035	67803927	73722988	9131781	11736078	11330892	5919061
	PERCENTAGE CHANGE					Growth rate by base year (1980)			
	1970-1980	1980-1990	1990-2000	2000-2010	1970	1980	1990	2000	2010
Metro	25.3	10.4	16.4	5.9	1.0	1.3	1.4	1.6	1.7
Istanbul (Europe)	-39.3	242.2	37.5	30.3	1.0	0.6	2.1	2.9	3.7
Istanbul (Asia)	381.4	-24.6	40.9	33.6	1.0	4.8	3.6	5.1	6.8
Turkey	25.6	26.2	20.1	8.7	1.0	1.3	1.6	1.9	2.1

Table 6.3 Population changes in Istanbul and in Turkey between 1970 and 2010 based on the population of neighbourhoods Source: www.tuik.gov.tr, 09.05.2012

Table 6.3 clearly demonstrates population shifts between two sides of the city. Especially between 1970 and 1980, population increased on the Asian side while it dropped on the European side, and vice versa, between 1980 and 1990. Yet, both sides of the city have gained population over the years, even more than the population increase in Turkey. Istanbul was host to 18% of the country's entire population in 2010. Districts served by the Metro, however, did not witness such a rapid population increase.

When the population change in Metro-served districts is examined further, it is possible to observe in Figure 6.4 that the Metro did not contribute majorly to the population increase. Neighbourhoods within and outside the Metro axis of the same districts (Beyoğlu, Şişli, Beşiktaş, Kağıthane, Sarıyer) witnessed a similar population increase between 1990 and 2010, slower than in the rest of the city. This descriptive

analysis suggests that the Istanbul Metro has not attracted a new population to the area it serves.

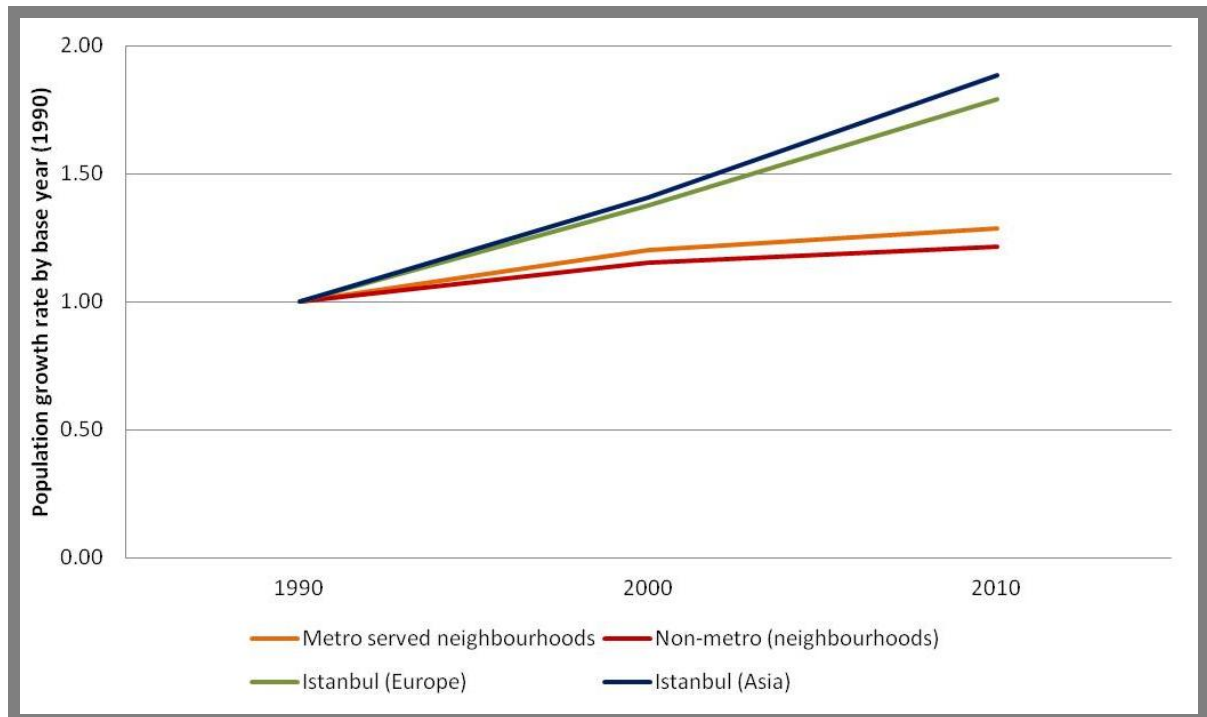


Figure 6.4 Population growth rate by base year 1990. The figure shows neighbourhoods served by the Metro and those not served, across four districts (Beyoğlu, Şişli, Beşiktaş, Kağıthane, Sarıyer)

6.5 Meso impacts

6.5.1 Clustering of businesses

Transport is an important factor in creating agglomeration economies⁴⁵ as increased accessibility through enhanced transport systems is one of the main factors determining the location of businesses (Yu et al, 2012). Moreover, improvements in public transport is known to have higher impacts on economic development than investment in road networks, as they can increase the number of workers who can efficiently access to their workplaces, thus accelerate production and growth (Chatman and Noland, 2011). Yet, outcomes vary depending on the scale of the transit investment and the methodology

⁴⁵ For instance, 75% of all Wider Economic Benefits of the High Speed 2 in the UK are found to be due to agglomeration benefits (DfT, 2012: p. 28).

used. Although the Istanbul Metro in an urban transit system, it is expected to have generated an economic uplift since its opening. Yet, for the purpose of this thesis, the important issue to understand is whether the Istanbul Metro accumulated investment in certain areas and therefore, generated spatial inequalities. Moreover, it is expected to have created a sectoral shift from manufacturing to CBD and service related businesses. In this section these hypotheses are tested.

Since the Metro network is on one of the busiest roads in Istanbul, eliminating impacts related to the Metro from impacts of Büyükdere Avenue and the development of the old CBD is a difficult task. In order to do this, the possibility of the Metro forming business clusters⁴⁶ was examined in different areas. First, clustering of businesses in areas that are within close proximity to Büyükdere Avenue⁴⁷ but are not within the catchment area of the Metro stations (see Figure 6.2) was compared with business clustering in the Metro catchment areas and with the whole city.

Figure 6.5 displays the aggregate percentage of businesses opened between 2001 and 2010⁴⁸ by sector. According to the figures, almost 20% of all businesses opened within these ten years in both the Metro and Büyükdere Non-Metro catchment areas have been in the Information and Communication Services (ICS) sector, while the highest opening rate of businesses in Istanbul was in the construction sector. Moreover, the second and the third highest rates of business growth are in the industry and transport sectors in Istanbul. This sort of breakdown of business type indicates the sectors on which Istanbul's

⁴⁶ Business clustering is based on the number of businesses opened in different sectors since the opening of the Metro.

⁴⁷ These areas consist of the neighbourhoods that have direct access to Büyükdere Avenue apart from neighbourhoods that are closer to other main arterial roads than the Büyükdere Axis. Additionally, the neighbourhoods that are not located on Büyükdere Avenue but where the avenue is the only main arterial route have been included in this group.

⁴⁸ 2010 numbers include the first half of this year as the fieldwork was conducted between June and September 2010.

economy is based. On the other hand, it is possible to observe that the Metro catchment areas take the lead in CBD related businesses while the Büyükdere, as a whole, shows a similar pattern to Istanbul. Moreover, the proportion of the retail market is slightly higher in the Metro catchment areas than the areas on the Büyükdere Axis non-Metro areas. This information can be interpreted as CBD functions being located around the Metro station more than along the Büyükdere Avenue. However, before making any conclusions based solely on these differences there is a need for a closer examination of the aggregate business growth over the years which is done in section 6.5.2.

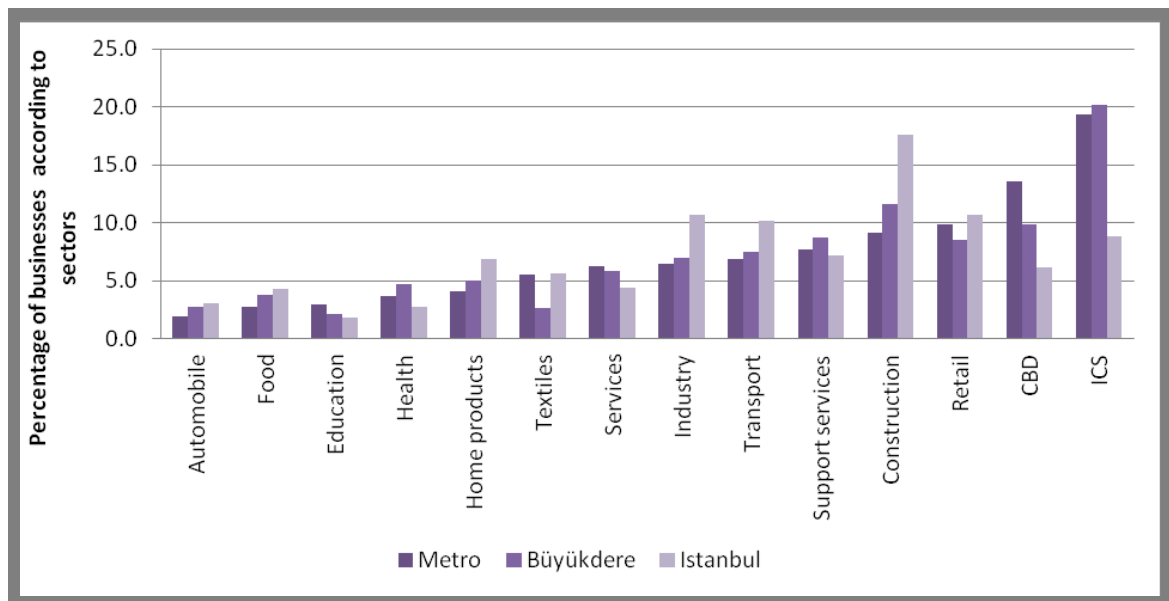


Figure 6.5 Aggregate percentage of businesses opened in Istanbul, Büyükdere and the Metro-served areas between 2001 and 2010 by sector.

Figure 6.6 includes slightly different locations than the previous figure for a further comparison. Here, both areas are on Büyükdere Avenue (one within the Metro catchment area) while the other is outside the catchment area. As shown in Figure 6.2, the Büyükdere Axis consists of eight stations, all of which were included in this analysis even though two of the stations (Seyrantepe and Darüşşafaka) were only recently opened when the data was collected in 2010. The figure verifies the previous statement on the Metro's impacts in accumulating CBD-related functions within the area it is located. Within the ten years of its

operation, more CBD-related businesses opened within the Metro catchment areas on Büyükdere Avenue than in areas on the same axis but further from the Metro stations. However, it is important to note that the ICS was the largest sector in both areas. Retail was the second most dominant sector within the Metro-served areas while for the rest of Büyükdere Avenue, the construction sector took second rank following a similar pattern to that of the whole of Istanbul. The reason for retail businesses being located around the Metro stations more than in the rest of Büyükdere Avenue is the increased accessibility the Metro has created (the attractiveness of the Metro stations for businesses is also discussed in Chapter 8 through expert consultations).

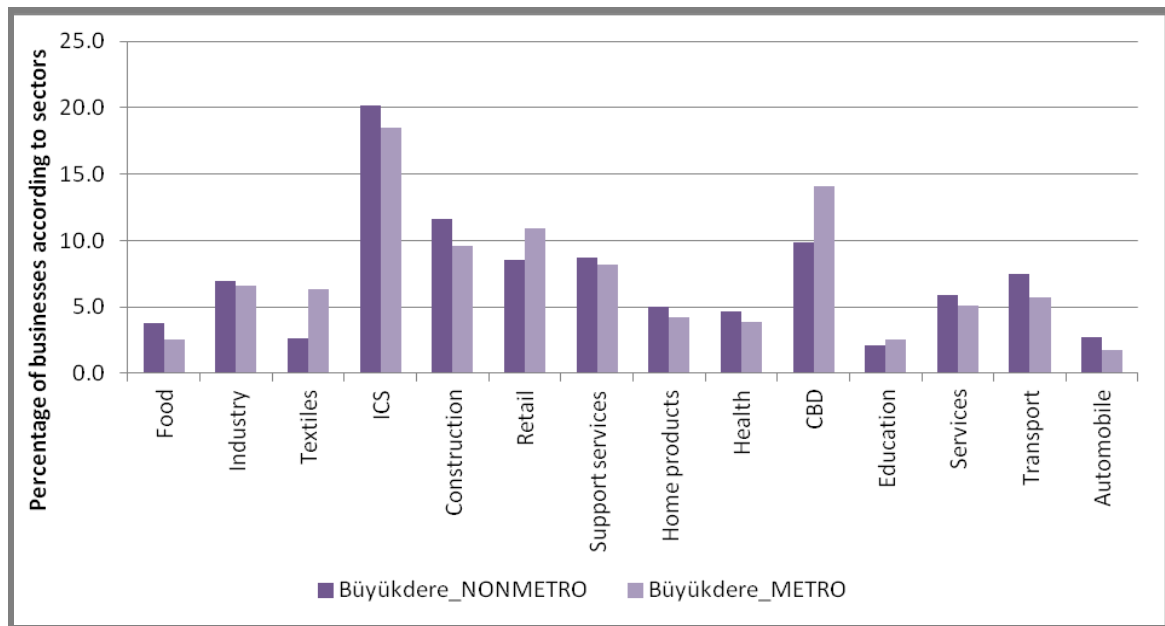


Figure 6.6 Aggregate percentage of businesses opened within and outside the Metro catchment areas of Büyükdere Avenue (2001-2010)

Although relative differences can be observed through the figures above, it is important to understand whether there is a significant relationship between sectoral development and company location with regard to the existence of the Istanbul Metro in the area. In order to make such an assessment, chi-square analysis was applied to two sets of variables in a two-way table, including numbers of businesses opened in each sector and Büyükdere Metro and Non-Metro areas as location variables (also used in Figure 6.6).

According to the results of this analysis, shown in Table 6.4, there is a significant relationship between the types of businesses and their location. When the percentages are examined it is possible to see that the ICS and construction sectors are dominant in Büyükdere Avenue, whereas CBD and retail-related businesses, along with ICS, have opened within the Metro catchment areas to a greater degree. Yet, the major difference, percentage-wise, between the Metro and Non-Metro areas of Büyükdere Avenue is in the CBD sector.

SECTORS	BÜYÜKDERE NON_METRO		BÜYÜKDERE METRO		Chi-square	Degrees of freedom	p-value
Food	417	4%	129	3%	286.597	13	0.000
Industry	764	7%	340	7%			
Textiles	290	3%	326	6%			
ICS	2225	20%	947	18%			
Construction	1282	12%	491	10%			
Retail	941	9%	560	11%			
Support services	958	9%	418	8%			
Home products	554	5%	218	4%			
Health	514	5%	200	4%			
CBD	1092	10%	721	14%			
Education	234	2%	131	3%			
Services	648	6%	263	5%			
Transport	826	7%	292	6%			
Automobile	301	3%	88	2%			
Total	11046	100%	5124	100%			

Table 6.4 Chi-square analysis for sectors and location

So far, all catchment areas of the Metro were analysed within the same category as the Metro-served areas. However, the Metro stations opened in various years over time and therefore their impacts may vary. In order to understand whether it was the Metro that attracted CBD-related and retail activities, stations were examined in four categories (Table 6.5). These categories were formed according to location and opening year of the stations as well as their relationship with Büyükdere Avenue. This way, a further

distinction can be made between different locations according to the opening year of the Metro. Location of these categories can be found in Figure 6.2.

Categorisation of the Metro Stations					
Category		Opening year	Stations	Description	Connections
1	The Old CBD	2000	Taksim, Osmanbey, Sisli	Old CBD. Taksim and Osmanbey are not on the Büyükdere Axis but in close proximity to other main arterials. Sisli is on the southern end of the Büyükdere Avenue, a.k.a. Old Büyükdere	Metro; Strong Connections with Main arterials Strong Public Transport Connections
2	The new CBD	2000	Gayrettepe, Levent, 4Levent	The new CBD; on the Büyükdere Avenue, either between (Levent and 4Levent) or within the close proximity to (Gayrettepe) the main arterials of the two Bridges	Metro & Büyükdere Avenue Strong Connections with Major Highways
3	First extension	2009	ITU, Sanayi, AOS	On the Büyükdere Avenue; university and industrial areas	Büyükdere Avenue, TEM Strong to Moderate Connections with Major Highways
4	Second extension	2010-2011	Seyrantepe, Darussafaka, Haciosman	Either on (Darussafaka) or within close proximity to the Büyükdere Avenue	Partly on Büyükdere Avenue Strong to Moderate connections

Table 6.5 Categorisation of the Metro Stations

The first category includes the stations within the old CBD. This category includes Taksim and Osmanbey stations which are not on Büyükdere Avenue but are located on other main roads in the city. Şişli station⁴⁹ is also in the same category. The second category consists of Gayrettepe, Levent and 4 Levent which are in the heart of Büyükdere Avenue. All three stations have strong links with the main roads of the two bridges over the Bosphorus Strait. The third category includes the stations that opened in 2009. These are the Sanayi, ITU and AOS stations which are on the northern part of Büyükdere Avenue and have been developed as an extension of the CBD. However, these areas were initially developed as industrial and university areas (Chapter 4 discusses the transformation from industry to commerce in this area). Finally, the fourth category involves Seyrantepe,

⁴⁹ Although it is located on (Old) Büyükdere Avenue, in terms of historical development it is closer to the Osmanbey station and Halaskargazi Avenue on which the Osmanbey station is located. Moreover, Şişli is at the northern end of the old CBD. Until the 1960s it was the last stop on the tramline and therefore Şişli station was included in the Old CBD category.

Darüşşafaka and Hacıosman stations which are either on or within close proximity to Büyükdere Avenue and opened after 2010.

SECTORS	Old CBD		New CBD		First extension		Second Extension		Grand Total
Food	112	3%	25	2%	10	2%	15	7%	162
Industry and Automobile	275	7%	96	9%	95	20%	27	13%	493
Textiles	289	7%	23	2%	6	1%	7	3%	325
ICS	803	20%	212	19%	79	16%	45	21%	1140
Construction	353	9%	134	12%	38	8%	17	8%	542
Retail	493	12%	54	5%	14	3%	14	7%	575
Support services	275	7%	93	8%	66	14%	14	7%	448
Home products	165	4%	49	4%	20	4%	16	7%	250
Health and Education	287	7%	56	5%	17	4%	6	3%	366
CBD	492	12%	209	19%	85	18%	16	7%	802
Services	266	7%	66	6%	25	5%	8	4%	365
Transport	258	6%	82	7%	27	6%	29	14%	396
Grand Total	4068	100%	1099	100%	482	100%	214	100%	5867
Chi-square	370.546								
Degrees of freedom	33								
p-value	0.000								

Table 6.6 Chi-square analysis for four categories of the Istanbul Metro stations and sectoral development

The outcomes of the chi-square analysis suggest that there is a significant relationship between sectoral development and the location of businesses along the Metro line. First of all, based on the percentages of businesses in different sectors in Table 6.6, it is possible to observe that five out of twelve categories of sectors are not very likely to be located around the Metro stations. These are the sectors based on the production of food, textiles, home products; services such as health, education; and support services such as cleaning, laundry, plumbing and fuel and energy. On the other hand, there are some sectors that are likely to dominate the surroundings of the Metro stations and suggest the possibility of accumulation of businesses.

In this sense, the ICS sector and its related businesses have been dominant in the Old CBD and the Second Extension of the line, and in the New CBD at a slightly lower level, while CBD related businesses have represented the leading sector in the New CBD along

with the businesses in the ICS sector. Having stated that, the First Extension (2009) also got a high proportion of CBD-related businesses opened between 2001 and 2010. Yet, the category of industry and automobile sectors has been dominant in this area and more than it has in the Second extension (2010-2011). At a lower level, the Old CBD hosted retail and CBD-related businesses between 2001 and 2010, while businesses relating to construction largely opened in the New CBD, with support services and transport related businesses opening in the First and the Second Extensions consecutively. An interesting outcome is the relationship between the First Extension of the Metro line and support services opened in this area. Table 6.6 suggests that over the years the First Extension area might have been associated with businesses such as dry cleaning, laundry, electricity services, water works, energy services (eg. air condition firms) and petrol stations in order to serve the CBD-related facilities developing in this area and in the New CBD. Therefore, the accumulation of the service sector in the First Extension may be as a result of the growth of CBD-related businesses in the area.

Although it is possible to suggest that the Metro has been the sole reason for this transformation, it is important to be cautious because changes in planning rights and construction permits have largely affected the development of the CBD and ICS-related businesses along Büyükdere Avenue. Yet, despite the incentives for the development of these sectors in the area in the last two to three decades and willingness of banks to build their headquarters in this axis in order to be close to the main motorways (see Chapter 4), the industry and automobile sectors are still very dominant in the First and Second Extensions of the Metro line. Therefore, it is possible to conclude that the areas on Büyükdere Avenue without the Metro have not been affected by sectoral transformation from industry to CBD-related businesses as much as in areas with the Metro. On a different note, retail activities continued to maintain their place in the Old CBD as a form of traditional shopping. However, these changes may also mean relocation of business in the

Metro area and therefore, including these changes may result in double-counting the benefits of transport infrastructures in Istanbul, one of the main problems of ex-post analysis. Yet, the data does not allow making such judgements at this level. Nevertheless, the possibility of such relocation of businesses from other areas of the city to the surroundings of the Metro (and vice-versa) is acknowledged.

The analyses on clustering of businesses are based on the number of businesses opened annually. Although this data gives an estimation of the relative growth in various sectors around the Metro stations, further information is needed to understand the magnitude of this growth. In this sense, changes in the office floor-space, number of employees working in each firm and vacant land before and after the opening of the Metro are important indicators (Cervero and Landis, 1997). Having stated this, since the data does not include these values, growth of businesses is examined in the next section according to their initial investment, reported to the Istanbul Chamber of Commerce during registration.

6.5.2 Growth in business

Having discussed the accessibility impacts of the Metro in sectoral transformation and presented the relationship between different sectors and the existence of metro stations, this section explores the impacts of the Metro on business growth⁵⁰. In relation to the Metro, the 2001 economic crisis was an important determinant of business growth after the opening of the Metro. Therefore, the impacts of the crisis should be considered when evaluating the possible growth impacts of the Metro on businesses. The expected outcome of this analysis is that the areas with the Metro (with better transport links) were more successful in recovering from difficult economic situations, in this case the 2001 crisis. In

⁵⁰ Business growth is calculated by changes in the number of businesses opened annually since the opening of the Metro and total investment in the area.

order to understand that, in this section, changes in the number of businesses and changes in the volume of investment are evaluated. Yet, the main purpose of this section is to understand whether the Metro has generated capital accumulation in certain areas.

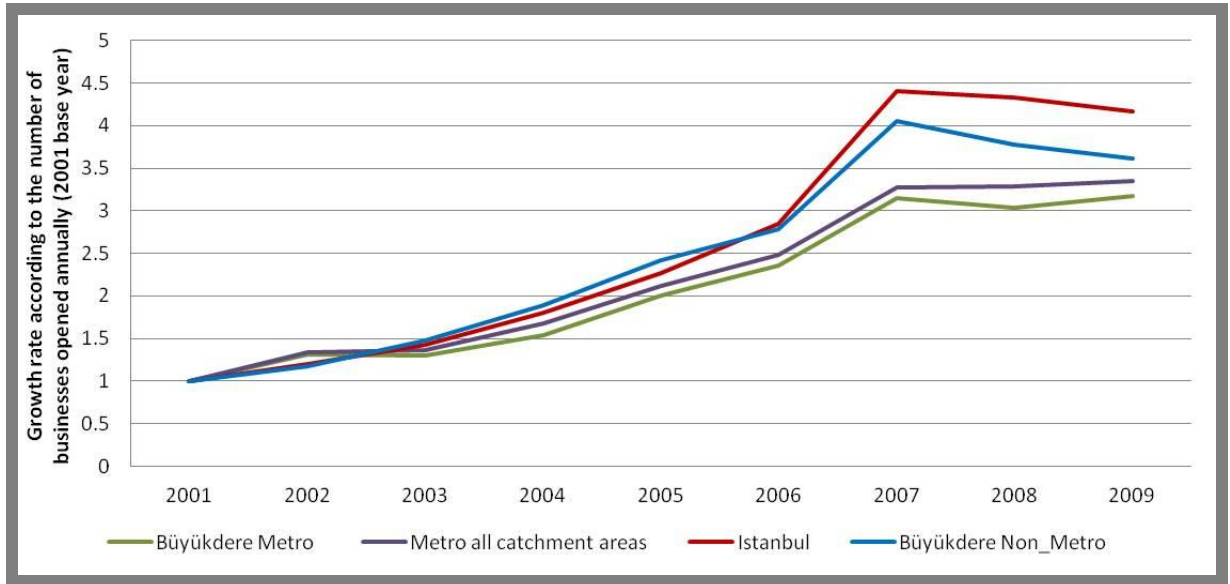


Figure 6.7 Growth rate according to the number of businesses opened annually (2001 is taken as the base year)

Figure 6.7 demonstrates the business growth in the Istanbul Metropolitan area, Büyükdere Avenue non-Metro served areas, Büyükdere Avenue Metro-served areas and within all Metro catchment areas. The graph was produced by using the number of businesses opened every year. The year 2001 is taken as the starting year and annual numbers are divided by 2001 figures in order to make the differences comprehensible between areas. Growth in these four areas shows similarities, with a steady increase between 2001 and 2006, followed by a sharp increase between 2006 and 2007 which then plateaued. However, it is possible to see that the growth in numbers has been greater in Istanbul and Büyükdere Avenue non-Metro served areas compared to the Metro-served areas of Büyükdere Avenue and all the catchment areas of the Metro. This situation can be explained by various factors such as reduced investment costs in areas outside the Metro catchment areas of the city, planning decisions trying to balance business growth in Istanbul or increased attractiveness of other areas in the city through transformation

projects. Yet, this may not mean that the Istanbul Metro has not generated any impact in its catchment area in terms of attracting businesses.

When business growth is assessed in terms of investment within different areas, outcome is the opposite. Figure 6.8 displays the growth of principal investment according to the declared values by businesses while registering with the Istanbul Chamber of Commerce. These values are grouped in five categories by the Chamber of Commerce. For the purposes of this analysis the minimum value in each category was taken as the investment of each company. Values are based on 2010 figures and quoted in Turkish Lira⁵¹. According to the graph, where the year 2001 is used as a baseline, investment growth has been almost twice as great in Metro-served areas, six stations in Old and the New CBD, compared to non-Metro served areas and the rest of the city. While Büyükdere Avenue follows a similar path to Istanbul as a whole, investment in Metro catchment areas grew especially after 2004. This brief analysis suggests that the Metro-served areas were preferred by large scale businesses with higher capital.

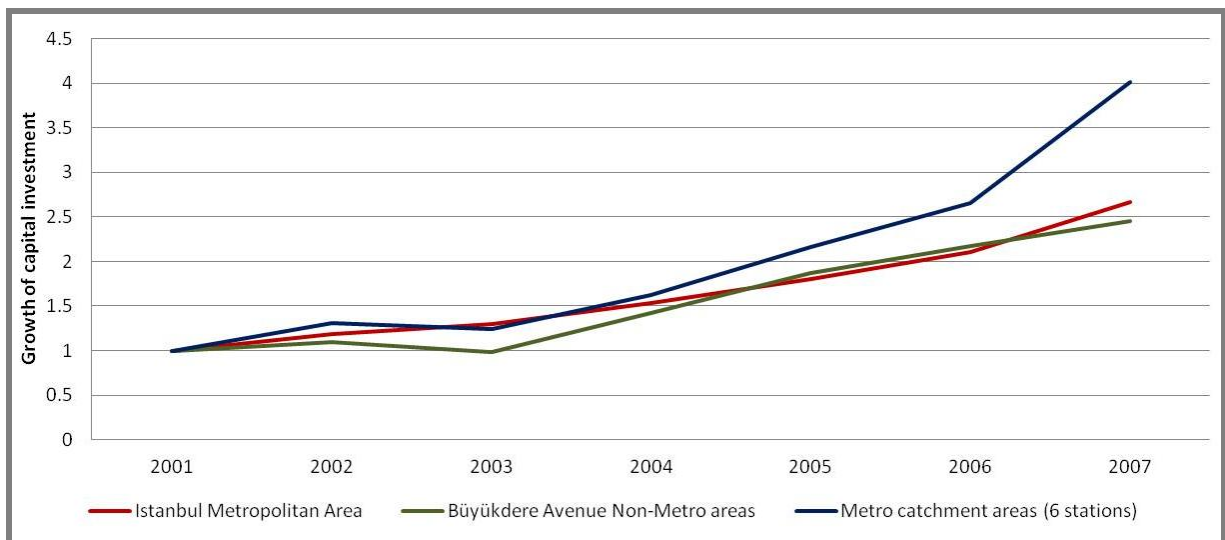


Figure 6.8 Investment growth in areas with and without the Metro link. Year 2001 is taken as the baseline.

⁵¹ In 2010, the exchange rate between Turkish Lira and GBP was 2.36TL = £1 (Central Bank of Turkey, 01.07.2010 <http://www.tcmb.gov.tr/kurlar/201007/01072010.html>)

This argument is also tested at the local level. Figure 6.9 is based on business growth in the number of firms opened annually within the Old, the New CBDs and the First and the Second extensions. It is important to note that although the extension of the Metro did not start operating until 2009, the growth rates were analysed for all catchment areas. Since the physical dimensions of the catchment areas are similar to each other, comparisons between different areas were able to be made. For this purpose, the Extension is used as a control area. According to the Figure 6.9, business growth in terms of number of businesses was larger in the Second extension areas compared to the Old and the New CBD as well as the First extension. However, capital investment growth, shown in Figure 6.10, demonstrates a different outcome.

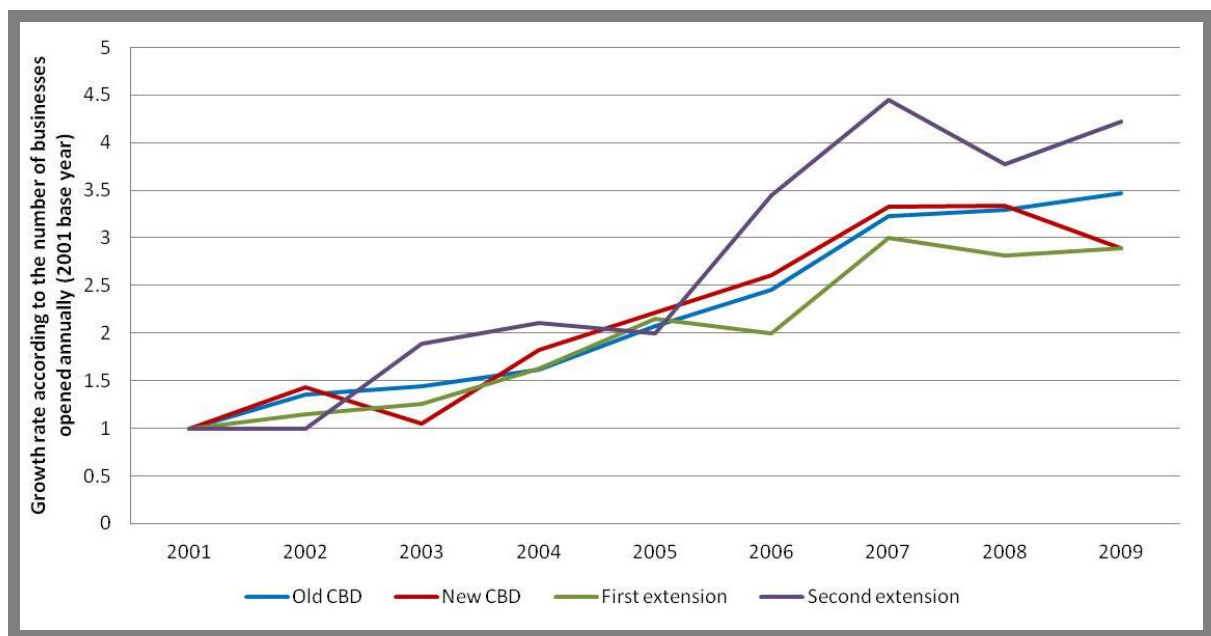


Figure 6.9 Growth rate within the Metro catchment areas according to the number of businesses opened annually (2001 is taken as the base year)

According to Figure 6.10, investment in the Old CBD was much larger than in the other areas and a rapid increase was observed after 2004. The investment in the New CBD has also been larger than the investment around the new stations. Although total investment in the First extension reached the total investment in the New CBD in 2003, it slowed down after that. A conclusion can be drawn based on the figures presented in this

section suggesting that Metro-served areas attracted more investment than the areas without a Metro station. Therefore, it can be stated that even though the number of businesses around the Metro stations is lower than other parts of Büyükdere Avenue, the level of investment has been higher there due to the existence of the Metro.

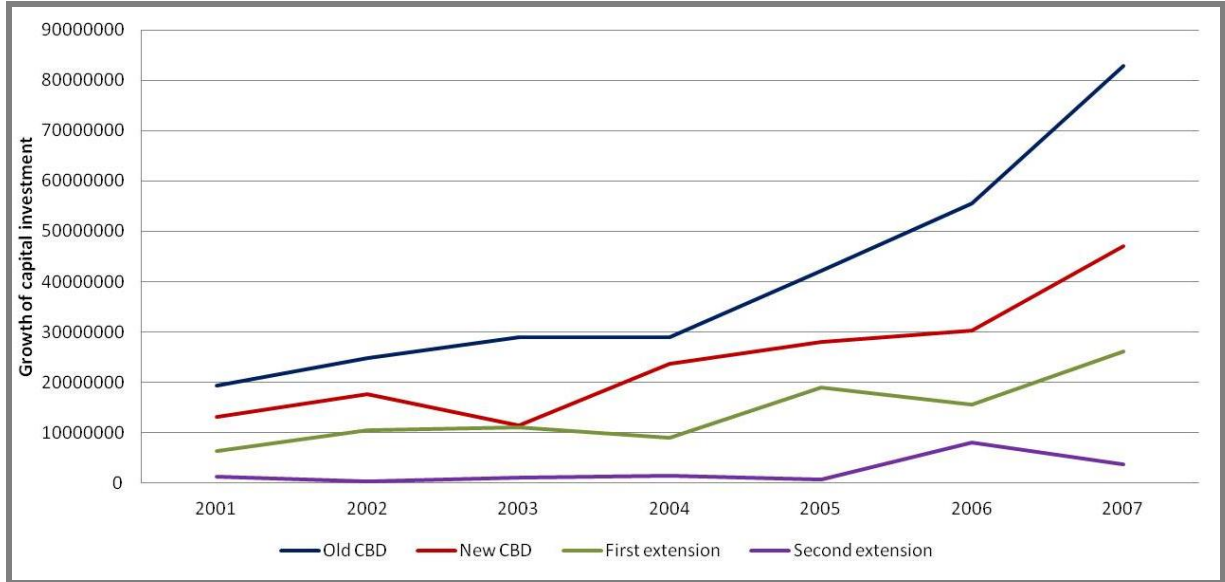


Figure 6.10 Investment growth in areas within the Metro catchment areas (2001 is taken as the base year)

Business growth and clustering in Şişli and Gayrettepe

So far, the analysis has included the growth of businesses and sectoral transformation after the opening of the Istanbul Metro. In this section, an in-depth study is carried out in order to understand the impacts of the Metro on businesses before and after its opening. In this sense, the analyses in this section look at the data ten years before and after the opening of the line. In order to carry out this study, two stations with different characteristics were selected. Şişli and Gayrettepe stations are good representatives for such an analysis, as they both opened in 2000 but they have different features in terms of urban development, urban fabric, location, history and transformation. While Şişli is located at the northern end of the Old CBD and central area for commerce, Gayrettepe has only recently been developed within the last three to four decades with the construction of

first and second bridges over the Bosphorus. Yet, it is now a vibrant business area during weekdays. Figure 6.11 demonstrates the transformation of the surroundings of Şişli and Gayrettepe Metro stations over the last half a century.



Figure 6.11 Şişli centre (top and bottom left) and Gayrettepe (top and bottom right) by the end of 1960s and early 2000s. Source: <http://sehirrehberi.ibb.gov.tr/map.aspx>

Figure 6.12 displays an enormous growth in the number businesses opened every year in Şişli between 1990 and 2001. The growth in Şişli was 4.5 times larger in 1998 (when it reached a peak) than it was in 1990. However, after the 2001 economic crisis Şişli never regained the same momentum. This deceleration in growth may be explained by two arguments, aside from the impact of the economic crisis on businesses. First, since we are looking at the businesses opened annually, it is possible to argue that business growth in terms of company numbers may have reached its capacity in Şişli over the years as the area is within the Old CBD and, unlike Gayrettepe, it has had urban functions for a very long time. Therefore, business development may have slowed down and not been affected by an improvement in transport (this argument has also been discussed in Banister and Thurstain-Goodwin, 2011). The second argument is that in Şişli, small enterprises may have left their premises to bigger enterprises that required larger office areas, hence

resulting in fewer firms opened every year. These arguments will be discussed further while explaining Figure 6.13.

In contrast to the case of Şişli, the crisis did not affect businesses around the Gayrettepe station as much. Moreover, the growth of businesses in Gayrettepe after 2001 was much greater than the growth in Şişli: about three times more businesses opened every year compared to the 1990 levels. This result might be an indicator of the positive impacts of the Metro within the area. Since Gayrettepe started developing mainly after the opening of the first bridge and its main roads in 1973, it had larger vacant areas than Şişli (Figure 6.11). Therefore, even though the number of businesses opened every year fluctuated over time, the opening of the Metro may have created an uplift in business growth in Gayrettepe.

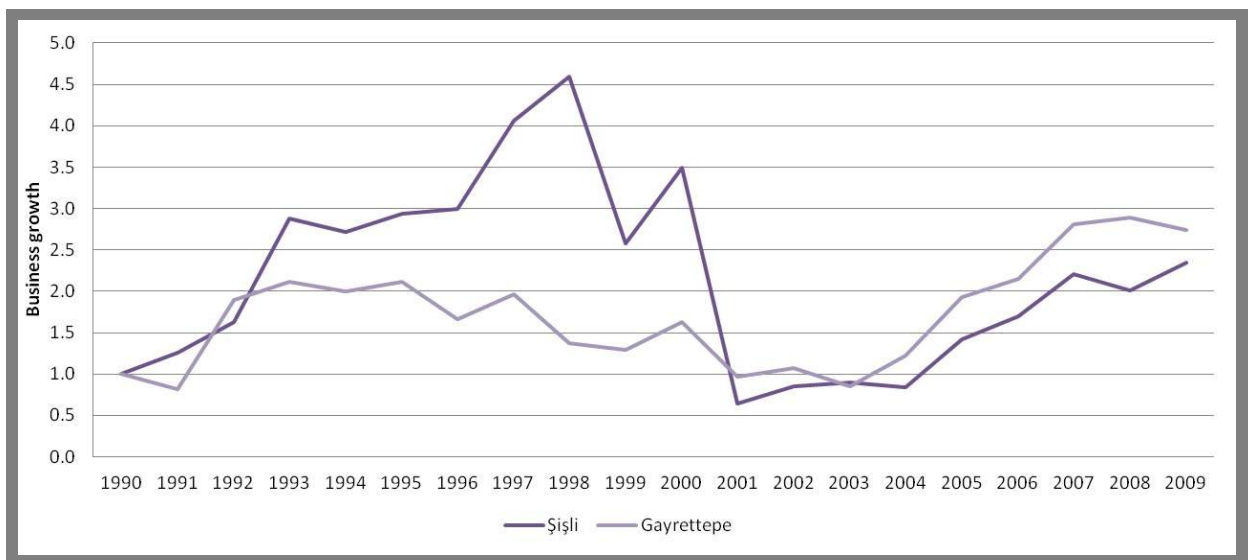


Figure 6.12 Growth rate within the Şişli and Gayrettepe catchment areas according to the number of businesses opened annually (1990 is taken as the base year)

Although the rate of businesses opening annually slowed in Şişli after 2001, business investment in the area regained its growth after the recession, mainly after 2004 (Figure 6.13). This increase in growth may be attributable to the Metro but it could also be a consequence of the 2003 Şişli Master Plan which increased the construction rights in the area (see Chapter 4). This supports both the first and the second arguments discussed

earlier that in Şişli, business development reached its capacity in terms of space and, as a result of higher construction rights, larger offices started to be developed in fewer numbers. Even though the Metro may not have directly affected the business growth in Şişli, it may have affected the sectoral development which will be discussed later.

Meanwhile, in Gayrettepe, the situation was slightly different. As mentioned earlier, Gayrettepe was not affected by the 2001 crisis as much as Şişli in terms of the number of businesses opened in the area. Figure 6.13 proves this argument further. Investment in Gayrettepe over the years was mainly stable since 1990 and decreased only slightly between 1997 and 2000. However, after 2003, a gradual increase was observed following a different line to Şişli. Therefore, it can be stated that the Metro might have accelerated investment growth in Gayrettepe. Yet, this acceleration was not instant but took two years after the opening of the Metro to start.

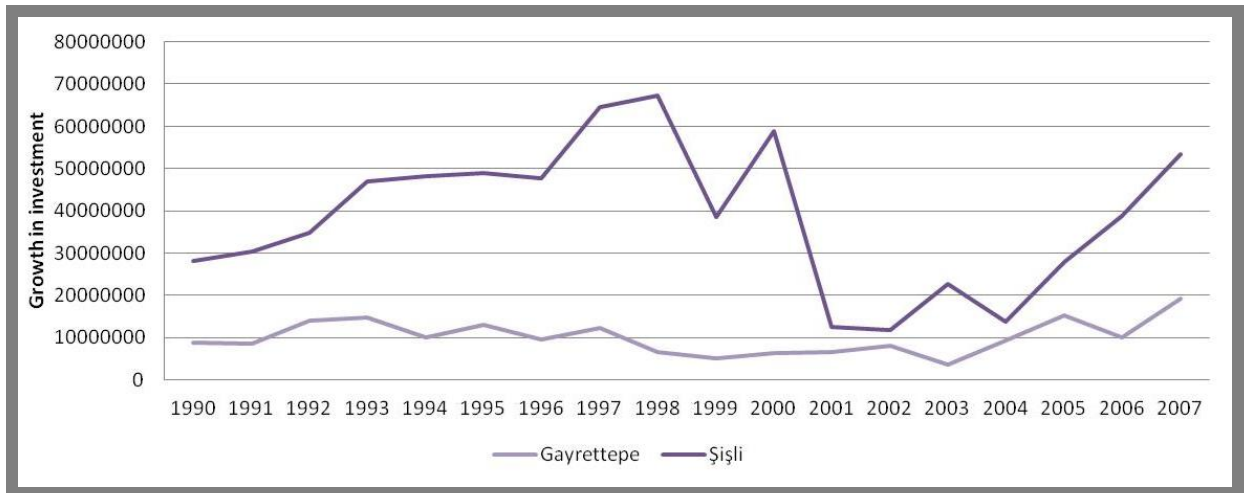


Figure 6.13 Investment growth within the Şişli and Gayrettepe catchment areas (in Turkish Lira)

In terms of the impacts of the Metro on sectoral development in Şişli, a similar pattern to the business growth discussed above can be observed, meaning that the 2001 crisis affected all sectors in the area in the same way (Figure 6.14). Although retail was the leading sector two years prior to the crisis, it had not fully recovered after 2001 and the business growth in this sector remained slightly higher than its 1990 levels. On the other

hand, CBD-related businesses achieved almost a full recovery after the 2001 crisis. However, it was the service sector that reached the highest levels of growth across all sectors. In this sector, the number of firms opened annually increased almost five times by 2009 compared to 2001.

In Gayrettepe, it is difficult to assess the sectoral changes as these changes do not follow a pattern. Over the last 20 years, the growth in different sectors fluctuated. However, the retail sector has had the highest fluctuations which may be due to this sector's sensitivity to economic changes. Nevertheless, in recent years, the number of businesses in the service sector has increased rapidly representing the majority in the sectoral structure of Gayrettepe.

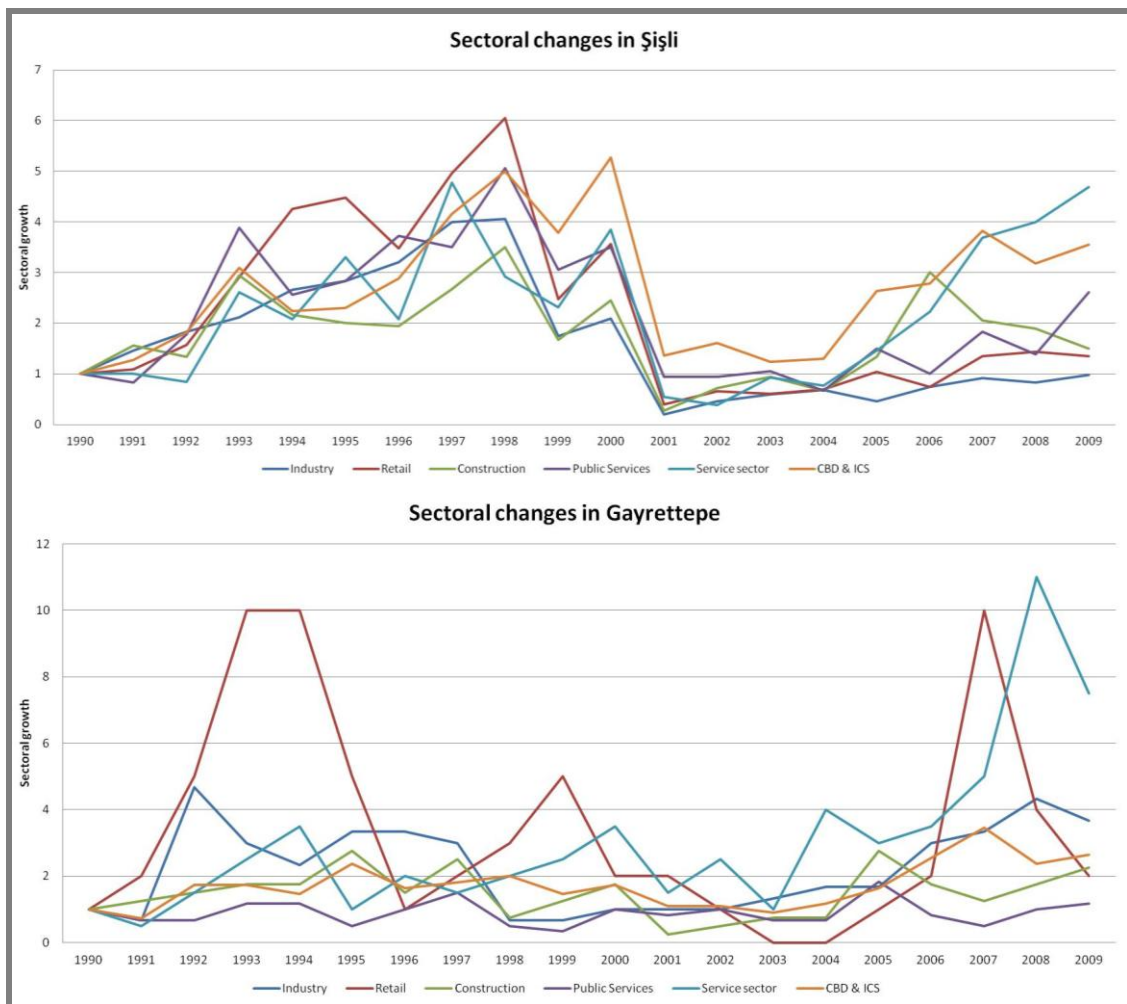


Figure 6.14 Sectoral changes according to the number of businesses opened annually in Şişli and Gayrettepe (1990-2009)

The case study on Şişli and Gayrettepe has demonstrated that impacts of the Metro have not been the same on all areas. While development in Şişli is likely to have reached its capacity by the 2000s, the economic crisis which was followed by increased construction rights in 2003 changed the course of business growth. Total investment in the area increased after 2001, suggesting that larger investments took over businesses in Şişli. In terms of sectoral development, the largest decrease was in the retail firms which left their premises to the service sector. In the case of Gayrettepe, having followed a steady pattern since 1990, the number of businesses and investment growth accelerated after the opening of the Metro. Furthermore, the number of businesses in the service sector increased after the opening of the Metro, indicating signs of transformation in the area. Yet, a more precise judgment can be made through a statistical analysis.

Chi-square analysis for before and after the opening of the Istanbul Metro indicates a relationship between the businesses opened in different sectors and the existence of the Metro both in Şişli and Gayrettepe stations. According to the percentage of businesses in different sectors before and after the opening of the Metro, it is possible to observe that industry and retail sectors in particular lost their dominance around the Şişli station, while the service sector and the CBD and ICS sectors gained power. Likewise, around the Gayrettepe station, the ratio of businesses that were not directly related to CBD activities (such as construction, industry and retail) started to diminish. The ratio of the service sector, meanwhile, increased and ICS and CBD related businesses maintained their places. This was an unexpected outcome. The ICS and CBD-related businesses were expected to increase their ratio across all businesses in Gayrettepe, but, instead, the service sector flourished within the first ten years of the opening of the Metro.

Sectors	Şişli Before		Şişli After		Chi-square	df	p-value
Industry	944	23%	220	12%	274.678	5	0.000
Retail	824	20%	197	10%			
Construction	418	10%	231	12%			
Public Services	571	14%	231	12%			
Service sector	348	8%	263	14%			
CBD & ICS	1083	26%	743	39%			
Grand total	4188	100%	1885	100%			
Sectors	Gayrettepe Before		Gayrettepe After		Chi-square	df	p-value
Industry	71	15%	66	14%	27.173	5	0.000
Retail	46	10%	22	5%			
Construction	71	15%	50	10%			
Public Services	57	12%	58	12%			
Service sector	43	9%	87	18%			
CBD & ICS	194	40%	194	41%			
Grand total	482	100%	477	100%			

Table 6.7 Chi-square analysis for sectoral changes in Gayrettepe and Şişli stations

Chi-square analysis on sectoral development suggests that, Şişli has witnessed larger sectoral changes than Gayrettepe, indicating that the Metro has generated a greater sectoral shift in Şişli. This outcome proves the argument that after the economic crisis in 2001, small scale businesses in manufacturing, retail and industry have left their places to service sector and CBD related facilities in Şişli. Gayrettepe, on the other hand, has a slow progress, but following the same pattern. Due to vacant areas, the shift from retail, construction and industry to service sector has been at a slower pace and by looking at the outcomes of the analysis on Şişli; these changes are yet to take place.

Nevertheless, it is difficult to comment on how much of these changes can be attributed solely to the Metro. As discussed earlier, the economic crisis, Şişli Master Plan and other undetected factors may have been more influential in sectoral changes and business growth in the area. Yet, by drawing conclusions from the previous discussions in sections 6.5.1 and 6.5.2 on differences between Metro-served and Non-Metro areas, it can

be stated that the Metro has been affective to some extent in generating a shift from manufacturing, retail and industry to service-based structure within its catchment areas and also have been influential in accumulating capital in these areas. These not only have consequences on spatial inequalities by accelerating growth in certain areas but also generating social inequalities that are discussed in the conclusion section.

6.6 Micro impacts

In terms of the micro impacts of the Istanbul Metro, changes in property and office values were investigated. The analysis in this section is mainly descriptive and gives brief information about these changes before and after the opening of the Metro line. Still, regression analysis is carried out for two station areas in order to understand the relationship between the distance from the Metro station and local property values.

Figure 6.15 demonstrates the changes in average and maximum values⁵² for each catchment area of the Istanbul Metro⁵³ between 1990 and 2012. The general trend is an increase in average and maximum values over twenty years, yet differences can be observed for various locations. While property values remained almost stable between 1990 and 2002 despite the devaluation of the Turkish Lira during the 1994 crisis, a sharp increase in property values was observed between 2002 and 2006 pushing the maximum prices up by more than 100%. Although property values around the Taksim station have always been higher than other areas (mainly due to its location within the city and having been within the central business district for over a century) property prices around

⁵² Values are in Turkish Lira/square metres. All monetary values have been adjusted to those of 2012 according to inflation.

⁵³ As explained earlier, property values are determined by valuation commissions for each street and not by property. For the purpose of this first descriptive analysis, the average value of streets in each catchment area is considered and nor are the streets with maximum values. ITU station has been excluded from the analysis on property values as there is only one street (Old Büyükdere Street) apart from Büyükdere Avenue within the catchment area of the ITU Metro station.

Gayrettepe and AOS stations started to catch up with Taksim, especially after 2010. Moreover, an increase can be observed for property values in all catchment areas in 2010.

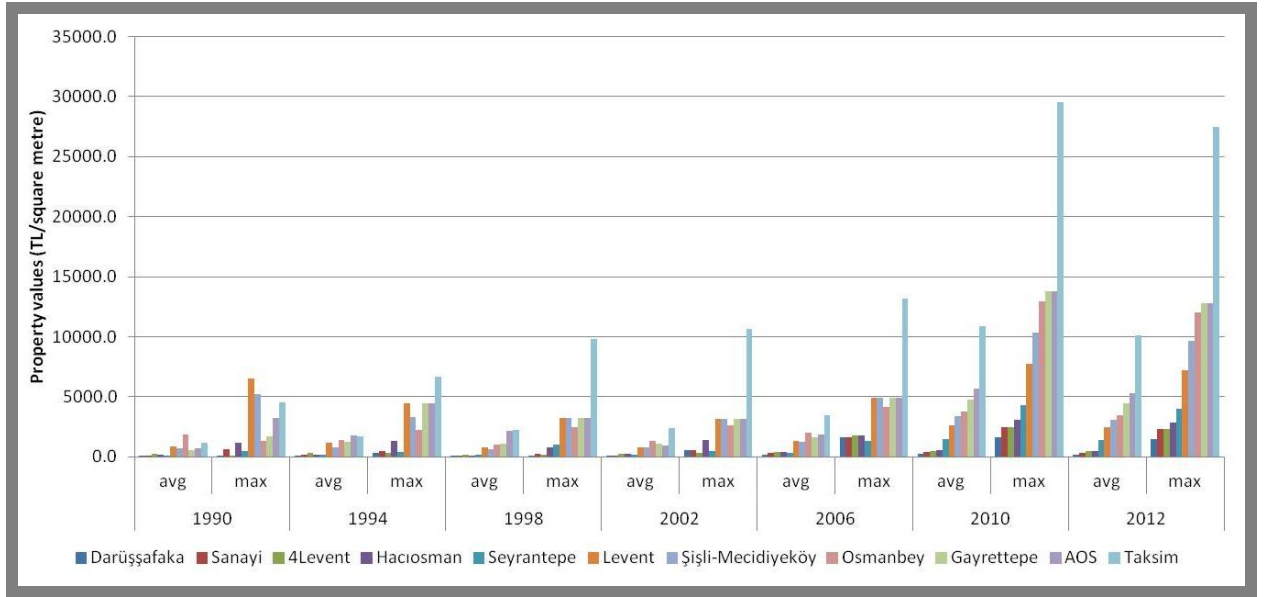


Figure 6.15 Changes in property values in the catchment areas of the Metro (1990-2012)

In order to create coherence between the analysis on business development, property prices have been grouped under four predefined categories. Figure 6.16 presents the changes in property values in the Old and the New CBD as well as the First and Second Extensions of the Metro line. Based on the figures it can be stated that the Old CBD has always had the highest property values regardless of the Metro investment. Between 2006 and 2010 a sharp increase in property prices was generated in all four categories and the value gap between different station groups remained almost the same. Therefore, at this level of analysis, it would not be correct to conclude that the Metro had a positive impact on property prices. Hence, a further analysis has been conducted for two cases: Levent and Darüşşafaka stations. The former is selected from the initial line, the New CBD, in centre of Büyükdere Avenue, and the latter from the Second Extension of the Metro line, at the northern end of Büyükdere Avenue. This way, these cases are expected to further eliminate the impacts of Büyükdere Avenue from that of Metro's.

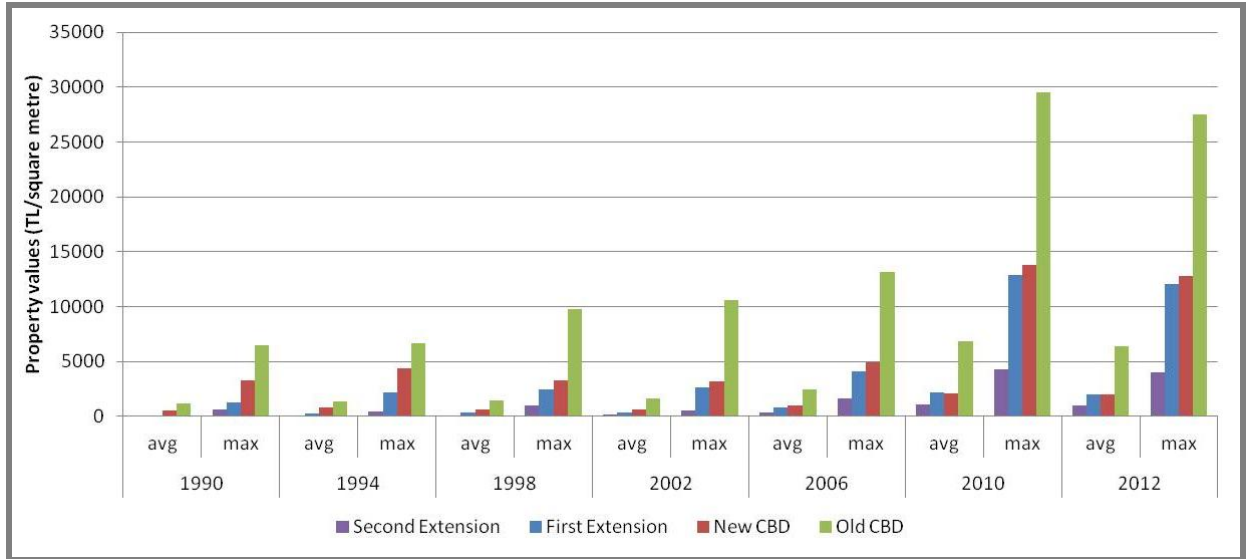


Figure 6.16 Changes in property values in four station categories of the Metro (1990-2012)

Based on the evidence presented above, changes in property values between 2002 and 2006 and especially between 2006 and 2010 are noticeable and need to be examined further. The development of the areas of Levent and Darüşşafaka is briefly discussed in Chapter 4. Yet, the reader should be reminded of the spatial changes that took place within these areas. The area of Levent started to be developed after the 1950s as a planned, suburban neighbourhood (Figure 6.17). Later, the area west of Büyükdere Avenue in Levent, was developed as an industrial area and pharmaceutical companies especially were located here. In the last fifteen years, these companies left their premises to shopping centres and high-rise residential and office blocks. In contrast, Darüşşafaka started developing after the 1980s as a squatter area at the northern end of Büyükdere Avenue, far from the city centre. The settlement included some industrial facilities but was mainly residential. In the last two decades, gated settlements have begun to be built in this area as well as an arts complex.



Figure 6.17 The urban pattern in Levent (left) and Darüşşafaka (right) Source: <http://sehirrehberi.ibb.gov.tr>

In order to understand whether the Istanbul Metro has been influential on the changes in property prices in Levent and Darüşşafaka, the distance from the Metro station and the square metre property prices (determined by the valuation commissions for each street within a 500 metre distance from Metro stations) were analysed through simple linear regression analysis for both 2006 and 2010 values. Although the Darüşşafaka station opened in 2010, the extension was planned in 2005-2006 and the construction extending the line to the north started in 2005 (Gerçek and Demir, 2007). Therefore, 2006 is important to understand whether the Metro was effective in Darüşşafaka prior to its opening⁵⁴.

Table 6.8 displays the results of the regression analyses for two different station areas and for 2006 and 2010. First of all, the analysis suggests that the relationship between the Metro and the property values in Levent is not significant. These results do not indicate that the distance from the Metro has any impact on property prices but do suggest that there are other factors affecting these values more significantly and explain changes in property values at higher levels. This was an expected outcome since Levent is in the centre of Istanbul's CBD and, therefore, there are other variables affecting property

⁵⁴ It should be noted that when the regression analysis was carried out for 2002 values in Darüşşafaka, the outcome was statistically insignificant. Therefore, it is likely that changes in property values started to take place in Darüşşafaka in 2006.

values such as land use, centrality, commercial activities and services, as well as street patterns, density, socio-economic characteristics of its residents and property features (Landis et al., 1995). For instance, the Kanyon Shopping Mall, opened in 2006, has direct access to the Istanbul Metro.

On the other hand, the regression analyses for the Darüşşafaka station give statistically significant results for both 2006 and 2010 values⁵⁵. Moreover, the anticipation of the opening of a new Metro station in 2006 and the existence of the station in 2010 are likely to explain the property values by 28% and 29% respectively. Additionally, by looking at the coefficient values, it is possible to state that as the property gets one metre closer to the Metro station its value increases by about 1.7 Turkish Lira. These results may suggest that the Istanbul Metro is more likely to have affected (and is yet to affect) property values in areas outside the Central Business District. Yet, it is acknowledged that various other factors mentioned above influence the property values and the existence of a Metro station may only be one of these numerous factors.

Dependent variable	Independent variable	Location	N	Coefficient	T	Significance level	R ²	Adjusted R ²
Property prices (TL/sqm)	Distance (metres)	Levent 2006	33	-2.142	-1.60	0.121	7.6%	4.6%
		Levent 2010	33	-4.335	-1.12	0.270	3.9%	0.8%
		Darüşşafaka 2006	14	-1.7094	-2.18	0.050*	28.4%	22.4%
		Darüşşafaka 2010	14	-1.6635	-2.22	0.047*	29.0%	23.1%

Table 6.8 Regression analysis results for property values and distance from the Metro stations (*indicates statistical significance at 95% confidence level)

⁵⁵ Although the values of properties within the catchment area of the Darüşşafaka station do not follow a normal distribution, these values have been used without taking a log of the data and without normalising it, as all the values are obtained from the same source and they are based on the actual prices determined by the valuation commissions. Therefore, the outliers reflect a real situation and can be included within the data set.

Finally, in order to understand the changes in office rents, the market reports of the Colliers Real Estate Services were examined (Colliers, 2003-2010). As discussed earlier, being parallel to Büyükdere Avenue and within the CBD, the Istanbul Metro has access to and is in close proximity to many high-rise buildings which are primarily built for business purposes but also contain mixed uses. The market reports of the Colliers Real Estate Services were a good resource for comparing changing office rents in different regions in the city as well as vacancies since 2003. According to the reports, there was a slow increase in rent from 2004 to 2007 when rents peaked, reaching up to \$50/m² in Levent followed by Etiler and Taksim. However, this increase slowed down after 2008, showing similarities with the growth of businesses discussed earlier. Since the data is not detailed spatially, it is difficult to make a judgment in terms of the impacts of the Metro. The offices around the Metro stations might have had a different progress than across the rest of the city. These issues are picked up later on in Chapter 8 through the analysis of expert interviews and other qualitative research.

6.7 Conclusion

In this chapter, the spatio-economic impacts of the Istanbul Metro are examined. The research was conducted in three scales: macro, meso and micro. Analysis in this chapter provides evidence supporting the discussions on the spatio-economic impacts of transport infrastructures. This chapter demonstrates that the Istanbul Metro has generated indirect economic benefits, especially in terms of business investment and sectoral changes – important factors in assessing the wider economic impacts of transport infrastructure investments – have been on the agenda of transport studies in the last decade. Moreover, these changes are good indicators of the spatial transformation in the study area and therefore establish an important link between spatial and economic development. Having stated that, it is acknowledged that not all of these changes can be attributed to the Metro,

there are other factors that may have been more influential some of which have been mentioned in the discussions in this chapter.

Methodologically, this chapter contributes to the evaluation of ex-post impacts of transport infrastructure investments. It proves the argument that as the scale of assessment becomes more local, the analysis gives more accurate results (Banister and Thurstain-Goodwin, 2011). It has been difficult to make assumptions about the macro impacts of the Istanbul Metro, yet at the meso scale, its impacts are discussed with a high level of confidence. At the micro level, it is acknowledged that further socio-economic and spatial variables are needed to be included in the analysis. Nevertheless, the analysis on the relationship between property values and distance from the Metro stations is an important step in understanding the varying impacts of the Istanbul Metro on different areas along the line.

Moreover, the in-direct economic impacts of the Istanbul Metro at different levels have been analysed by comparing the changes around the Metro stations with areas that are not within close proximity with the Metro. This way, non-Metro areas have been used as control areas at different levels. Such an approach supports the discussions on case-study as a research strategy. Case studies can employ multiple levels of analysis within a single study (Eisenhardt, 1989; Yin, 1984).

Having stated that, an unorthodox approach could have been taken in defining the space affected from the Metro investment. Space as discussed in Chapter 2 is dynamic and fluid and therefore, setting boundaries to it is against the nature of space. As Graham and Healey (1999) discuss, (transport) researchers need new conceptions of place and places cannot be represented only in plans. Therefore, instead of taking 500m radius as a boundary, 'multiple spaces' could be analysed. Yet, this approach has not applied in the case of the Istanbul Metro mainly because of practical reasons and also the extensive of spatial relationships in Istanbul. Nevertheless, such an approach complements the

theoretical background of this thesis and can be used in a different context in future studies.

SCALE	IMPACT	DESCRIPTION	EVALUATION
MACRO	Employment	The number of employers working in the Metro-served areas has increased after the opening of the Metro. However, this increase has been slower than the rest of the city	LOW
	Population	Population increase within the Metro-served neighbourhoods has been slower than both European and Asian parts of Istanbul. However, it has been slightly higher than the non-Metro neighbourhoods of the same districts	LOW
MESO	Sectoral changes	The Istanbul Metro has fostered sectoral development especially for CBD-related businesses and the ICS services. Moreover, the extension of the Metro has developed service related businesses. Such development may be a consequence of the growth of CBD-related businesses on the initial line	HIGH
	Number of businesses	The number of businesses opened annually has not been affected by the Istanbul Metro since the Metro-served areas have accommodated less businesses than non-Metro areas and the rest of the city	LOW
	Investment growth	The investment growth rate has been the highest in Metro served areas, even higher than Istanbul . Especially two years after the opening of the Metro line, investment in the area grew larger . In the Old and the New CBD where the Metro line opened in late 2000 , the investment has been higher than the rest of the line opened between 2009 and 2011	HIGH
MICRO	Property values	The Istanbul Metro has not generated a great impact on property values . Having said that, the evidence suggests that its positive impacts on property values are likely to have been higher in under-developed, mainly residential areas along the Metro line.	MODERATE

Table 6.9 Summary of results

Table 6.9 gives a summary of results according to the scales within which the impacts have been analysed. The results raise important issues regarding spatial inequalities generated by the Metro and provide some evidence for the weakness of planning strategies in the Metro corridor. These points are discussed in the following paragraphs.

The Istanbul Metro has had negligible impacts on population, employment and business growth⁵⁶ around its stations indicating the fact that the development plans for

⁵⁶ In terms of number of businesses opened annually.

the Metro corridor and the Metro investment have not been particularly supportive of each other. While it is a common practice for governments and local authorities to consider development plans in conjunction with infrastructure projects, the Metro investment has not played a major role in the development of Istanbul's new CBD. This is an important issue that needs to be considered by policy makers. If urban master plans are carried out in accordance with large scale infrastructure projects such as the Istanbul Metro, their benefits can be increased and attributed to larger areas within cities rather than being accumulated in certain areas. Affordable housing projects can be one way of increasing the population in the area and therefore, the employment and the business growth. This would also prevent issues of displacement and gentrification as a result of transport investment (as seen in the case of Jubilee Line Extension in Stratford, Lane et al., 2004; see also Smith, 1982). Moreover, since the employment growth has been the lowest in Metro served areas, the development must have taken place elsewhere in the city, such as the Asian part of the city (Figure 6.3). This result also shows that the planning strategies for the area lacked a vision for development and support of employment.

Having stated that, the analysis also shows that the Istanbul Metro has generated sectoral transformation especially from industry and manufacturing related sectors to service based high-profile businesses within its catchment areas. This finding reveals that the transformation from industry to CBD related businesses has started to take place in the corridor. Using the Non-Metro served areas on the Büyükdere Avenue as control areas has made it clear that the Metro has had a significant impact on this transformation. Additionally, the shift from manufacturing and industrial activities to CBD-related businesses and the ICS and services sectors might be an indicator of the agglomeration of finance and business services (FBS) within the Old and New CBDs served by the Istanbul Metro, since the FBS sector has a tendency to cluster (Banister and Thurstain-Goodwin, 2011) and, therefore, create agglomeration economies. This argument creates an

important direction for future research in relation to the wider economic impacts of the Istanbul Metro and other urban fast rail transit systems.

Although transformation to CBD-related businesses as well as ICS and service sectors may be inevitable, as Istanbul is among the global cities of the world and the sectoral transformation from manufacturing and industry to service-based sectors has been going on in the city for some time (IBB, 2009a), it is likely to pose a threat for employees working in these diminishing sectors. As this transformation happens in the Metro catchment areas and new business sectors accumulate here, low-skilled labour working in manufacturing and industry are spatially excluded from their work places, and spatial unevenness occurs this time for the employees.

Moreover, the catchment areas of the Istanbul Metro in the Old and New CBDs accommodated the highest investment rate compared to the Büyükdere Non-Metro areas and the rest of the city. Combining this finding with previous findings on businesses, it is possible to state that even though the Metro does not affect business growth in terms of the number of businesses opened annually, it fosters growth in terms of capital investment. Therefore, the Istanbul Metro accumulates capital in its catchment areas. Although it may have positive impacts for businesses and also helps creating agglomeration economies, capital accumulation, as discussed in Chapter 2, is one of the factors creating uneven geographies. In this sense, the Istanbul Metro can create spatial fix by locking excess investment in the areas it serves (Harvey, 1981).

In terms of the development of the local economy, capital growth can be seen as a threat. By attracting large investments to its catchment areas, the Istanbul Metro is likely to drive off the small entrepreneur in industrial and manufacturing sectors from these urban areas. Instead, larger companies mainly in CBD and service related sectors are locating in areas around the Metro stations. This process can be evaluated as the Istanbul Metro's impact on the gentrification of the area (Smith, 1982) and therefore, Metro's

contribution to uneven geographic development (Harvey, 2005). Political dimensions of this process are discussed in Chapter 8.

Finally, it is possible to state that the Istanbul Metro is not influential on property values in developed areas with major CBD-related activities, such as Levent; however, it is likely to affect the property prices in undeveloped areas, such as Darüşşafaka, which is not directly connected to the centre of Istanbul. This finding suggests that in already developed areas negligible differential rent is generated as a result of transport infrastructure investments whereas in developing areas the differential rent based on transport is significant. This situation is likely to generate displacement based on unaffordable housing. Yet, these issues need to be investigated further in future research.

In this chapter the ex-post impacts of the Istanbul Metro have been analysed. However, the chapter has produced important outcomes for ex-ante assessment of the indirect economic impacts of transport infrastructures. It is discussed in transport literature that the wider economic benefits of transport infrastructure investments are often exaggerated in order to legitimise the investment (Banister and Berechman, 2001). In addition to considering the double-counting of benefits and relocation of economic investment due to transport improvements, this chapter has demonstrated that negative wider economic impacts of transport infrastructures also need to be taken into account in such ex-ante assessments. In this sense, the negative impacts of transport infrastructures on the local economic development and employment need to be considered in order to avoid high expectations of benefits from transport infrastructure investments.

Although the link between economic development and transport investment has only been partially explored due to data limitations, this chapter can be seen as a guide for future research. Relocation of businesses, changing office rents and floor space, occupancy rate of offices, exclusion of low-skilled labour and residential displacement due to unaffordable housing are amongst the most important issues that need to be included in

the future research in understanding spatio-economic inequalities generated by transport infrastructures. The Marxist analysis of labour as commodity (Harvey, 1973) and the analysis of urban land rent (Harvey, 1973; Evans, 1983; Jager, 2003) can guide the research in these areas. There is also an important potential for research in terms of the impacts of transport infrastructures on residential displacement. As discussed in Chapter 2, transport is rarely found to be the reason of displacement. Displacement due to the construction of transport infrastructures has been investigated to some extent (Patel et al., 2002; Siemiatycki, 2006; Ndezi, 2009), yet displacement or relocation due to increased rents resulting from transport has not been looked at. In this sense, studies on gentrification and increased rents would be important sources. Especially, Neil Smith's (1982) and Peter Marcuse's (1985) work would be very helpful. Based on these studies some of the key areas to collect data would be the changing socio-economic profile of neighbourhoods around the Metro stations, changing rent prices and number of transactions as well as an in-depth qualitative analysis of changing ethnicities and education. Acknowledging these issues and others discussed here would develop ex-ante assessment of transport infrastructure investments with concerns over inequalities.

Chapter 7

Socio-spatial impacts of the Istanbul Metro

7.1 Introduction

Transport infrastructures and infrastructure networks are assumed to integrate cities, regions, countries, economies and people (Graham and Marvin, 2001). However, they are also causes of disintegration (Graham and Marvin, 2001; Jensen, 2007; Richardson and Jensen, 2008) and disruption (Graham, 2010). As discussed in Chapter 4, in Istanbul, the road network especially has been a major cause for social, spatial and economic fragmentation and there are new road/bridge proposals that are likely to cause environmental disruption. Bearing in mind one of the underlying purposes of transport is to “work to bring heterogeneous places, people, buildings and urban elements into dynamic relationships and exchanges which would not otherwise be possible” (Graham and Marvin, 2001 pp.11), it is an important task to search for infrastructures that are likely to generate negative impacts and eliminate those impacts. This chapter investigates the possible splintering effects of the Istanbul Metro in terms of social and spatial inequalities.

In order to define the socio-spatial impacts of the Istanbul Metro, it is important to understand the ways in which these inequalities occur in different cases mainly regarding urban and intra-urban rail transport systems. Van der Westhuizen (2008) argues that the

high speed rail link in South Africa, namely Gautrain, comes across as an elitist project rather than an infrastructure project that helps social and spatial integration or enhances the economy due to its lack of connectivity with the rest of the transport network and with the locations and activities it brings together⁵⁷ and its high costs of construction and maintenance. Therefore, the Gautrain can be seen not as only a symbol of modernity but also a symbol of class-based exclusion (ibid.).

Likewise, the Bangkok Sky Train (BST) in Thailand has been found to have generated similar socio-spatial inequalities (Jensen, 2007; Richardson and Jensen, 2008). Jensen (2007) discussed that the BST has created an urban environment that goes far beyond being horizontally splintered to also being vertically splintered by structures of skywalks, rail lines, building blocks that form layers of cities – overlapping but fragmented. Beyond this spatial fragmentation, BST has also generated social fragmentation. Richardson and Jensen (2008) are of the opinion that although BST provides clean, fast and reliable transport it has become a system that is mainly used by the businessmen and tourists due to high ticket costs and its limited service area. In his evaluation of the subway development in Delhi, Siemiatycki (2006) discusses how the Delhi Metro has helped revitalisation of some areas while causing social and spatial disruption for others through land appropriations. Moreover, due to increase in its ticket prices it has become less affordable by the poor.

The three examples briefly discussed above show that transport infrastructures may generate exclusive uses primarily on account of their location, connectivity and ticket prices. Based on this brief discussion on the socio-spatial inequalities that the transport infrastructures generate, in this chapter the Istanbul Metro is evaluated in order to understand whether such socio-spatial inequalities are generated based on its

⁵⁷ Since nearly all of its stations are located in upmarket suburbs

connectivity, uses, location and the activities it links. Moreover, social differences related to uses of the Metro are evaluated with reference to the literature on socio-economic factors such as gender, education, age, employment and car ownership that influence transport mode choice. This chapter is evaluated within the literature on splintering urbanism discussed in Chapter 2 in terms of the production of space through networked or unbundled urban infrastructures.

7.2 Methodology

In this chapter, quantitative methods have been used in order to understand the social and spatial impacts of the Istanbul Metro. First, background information regarding the location of the Istanbul Metro as well as different land uses around its stations is presented. Second, the empirical analysis is structured in two sections. The first part is on understanding the catchment area of the Metro, in other words, the actual use of the Metro for different trip purposes. The second part investigates whether the user profiles differ for different transport modes in Istanbul, seeks to understand whether the Metro generates a user profile different than the rest of the transport modes in Istanbul.

In the next section, Metro stations are evaluated in terms of the land uses and the functions around them. GIS data gathered from the Istanbul Metropolitan Municipality has been filtered in order to obtain the land use pattern along the Metro line. Moreover, the surroundings of each station have been determined according to main uses in the area. Finally, the connection of the Metro with the rest of the city's transport network is evaluated by demonstrating the spatial distribution of the transport network in Istanbul.

Section 7.4 aims to understand the accessibility of the Metro. In order to do that, the origin and the destination of all Metro trips⁵⁸ (2239 trips) were analysed and mapped according to four different purposes by using GIS software. Here, the main purpose is to define the extended catchment area of the Metro⁵⁹. In this sense, these maps provide the actual use of the Metro line based on individuals' trip origins and destinations including the transfers they make, rather than producing an accessibility map of the Metro. This way, it is also possible to understand the spatial coverage of the Metro for different trip purposes.

As explained in detail in Chapter 3, the data used in this chapter was mainly obtained from the Istanbul Metropolitan Municipality. In the following sections, Household Travel Diaries are used. These travel diaries were obtained from the Municipality both for the entire city (2596 randomly selected travel diaries out of approximately 90.000), and for the Istanbul Metro (all travel diaries conducted with the Metro users, 1331 travel diaries). Moreover, the Ulaşım A.Ş. supplied the number of

⁵⁸ A trip is defined as the movement between one activity place to another for different purposes. For example travelling from home to work, work to shopping, shopping to entertainment are defined as different trips. A trip can be performed by using different transport modes and may include different stages such as walking from home to the bus stop – journey on bus – walking from the bus stop to work.

⁵⁹ The catchment area of the Metro has been defined in Chapter 6 and was based on the areas within walking distance from the Metro stations. 400m was taken as a threshold for each station, and the catchment area was defined according to the street pattern. In Istanbul, about 85% of all walking trips are made within 30minutes. According to the Ulaşım A.Ş. surveys, 55% of all Metro passengers walk to the stations. The average time to reach the stations is up to 10 minutes (ULASIM A.Ş., 2011). In 2006, the average walking time to the Metro was determined as 9.71 minutes (based on 481 Metro trips out of 2239), making about 647metres with average walking speed 4km/h. However, since some of the Metro stations are within close proximity to each other, in order to prevent overlaps and double counting the benefits, 400m was taken as a threshold.

passengers using rail transport in Istanbul based on the use of smart cards⁶⁰ and tokens in every station.

The Household Transport Survey study conducted in Istanbul between 2005 and 2006 is regarded as the most inclusive survey that has been conducted in Istanbul and in Turkey for transport master plan purposes with a sampling ratio higher than 2%. The surveys have covered an extensive study area and high number of traffic zones (451 zones in Istanbul⁶¹) forming a disaggregate study area⁶² (IMM, 2006). Surveys were conducted in two different periods (Spring-Summer and Autumn-Winter) and by five different companies in five geographical areas in the city. Survey companies were given different areas in the second round of the study. Detailed information about the quality of the surveys can be found in Chapter 3. However, it is important to mention here that although the travel diaries were collected in detail, it was not possible to collect information on different modes used in one trip⁶³. Therefore, only the principle transport mode that the individuals use for making one trip has been recorded. Thus, in this chapter one transport mode per trip has been taken for the analysis.

⁶⁰ Smart Cards, known as AKBİL (AKıllı Bİlet – smart ticket) have been used in Istanbul since 1990s. There are 22 different smart cards in three categories (discounted, full price and free of charge). It is possible to transfer from one mode to another using this card and pay a lower fee. Within two hours of the first use of a transport mode passengers can make five transfers with a reduced fee. For instance, passengers with a normal smart card (not discounted), using public transport for the first time, pay 1.95 TL and for the next five transfers within two hours they pay 1.25TL.

⁶¹ A detailed map of traffic zones can be found in Chapter 3.

⁶² A discussion is held in Chapter 5 on the Modifiable Areal Unit Problem in terms of the Traffic Analysis Zones in Istanbul.

⁶³ This information is based on an informal chat with the head of the household survey team who was responsible for the design and monitoring of the surveys in 2006-2007 at the Istanbul Metropolitan Planning Centre (03.12.2012, Istanbul Technical University, Green Mobility Conference).

Although only a small, randomly selected sample of transport household surveys has been used in the analysis of the relationship between the use of transport modes and socio-economic characteristics, this sample has provided statistically significant and important outcomes for understanding the socio-spatial differences in Istanbul based on transport. The main statistical method used in this chapter is the Chi-square analysis. Chi-square analysis is a basic statistical analysis that allows understanding whether two categorical variables are dependent and therefore, investigates whether one variable affects the value of the other. To start with, a null hypothesis is established proposing that the two variables are independent. If the chi-square test proves the contrary then the null hypothesis is rejected and the analysis suggests that the variables are dependent.

Chi-square analysis makes it possible to comment on the dependency between variables and helps generalise the results to a population level. However, it does not explain the direction of this relationship. Therefore, chi-square analysis is supported with a comparison of percentages, i.e. a comparison is carried out between the ratios of groups with different socio-economic characteristics using different modes of transport to understand which social, demographic and economic groups use which transport modes the most. Finally, it is important to note that some of the transport modes have been merged in order to allow chi-square analysis to perform correctly since values below 5 cannot be included in the initial table for analysis.

7.3 Background to the study

This section aims to give some necessary information about the Istanbul Metro before commencing the discussion on the outcomes of the empirical study. Therefore, it aims to prepare the reader for a better understanding of the land uses and activities around the stations as well as determining the connection of the system with the rest of the transport network.

In Chapter 6, the Metro stations have been grouped according to their relationship with the CBD and the Büyükdere Avenue and depending on their opening years. According to this categorisation, four groups, the old CBD, the new CBD, first extension and the second extension, were determined. In this chapter, these stations are further examined according to the land uses and main activities around them and their connection with other modes.

Figure 7.1 demonstrates the land uses around the Istanbul Metro corridor. According to the map based on 2006 land uses, which was also used for the last Transport Master Plan (2011) and the City Master Plan (2009), the route that the Metro stations were planned on is surrounded mainly by commercial activities, especially at the southern end of the line. The northern areas where the Metro stations opened in the last three years (after this map was produced) had mainly industrial characteristics. Moreover, the area is predominantly surrounded by military areas and the Maslak campus of the Istanbul Technical University is located here. Lastly, the northern stations are within close proximity to the Northern forests of Istanbul. Table 7.1 gives detailed information about different uses around the stations.

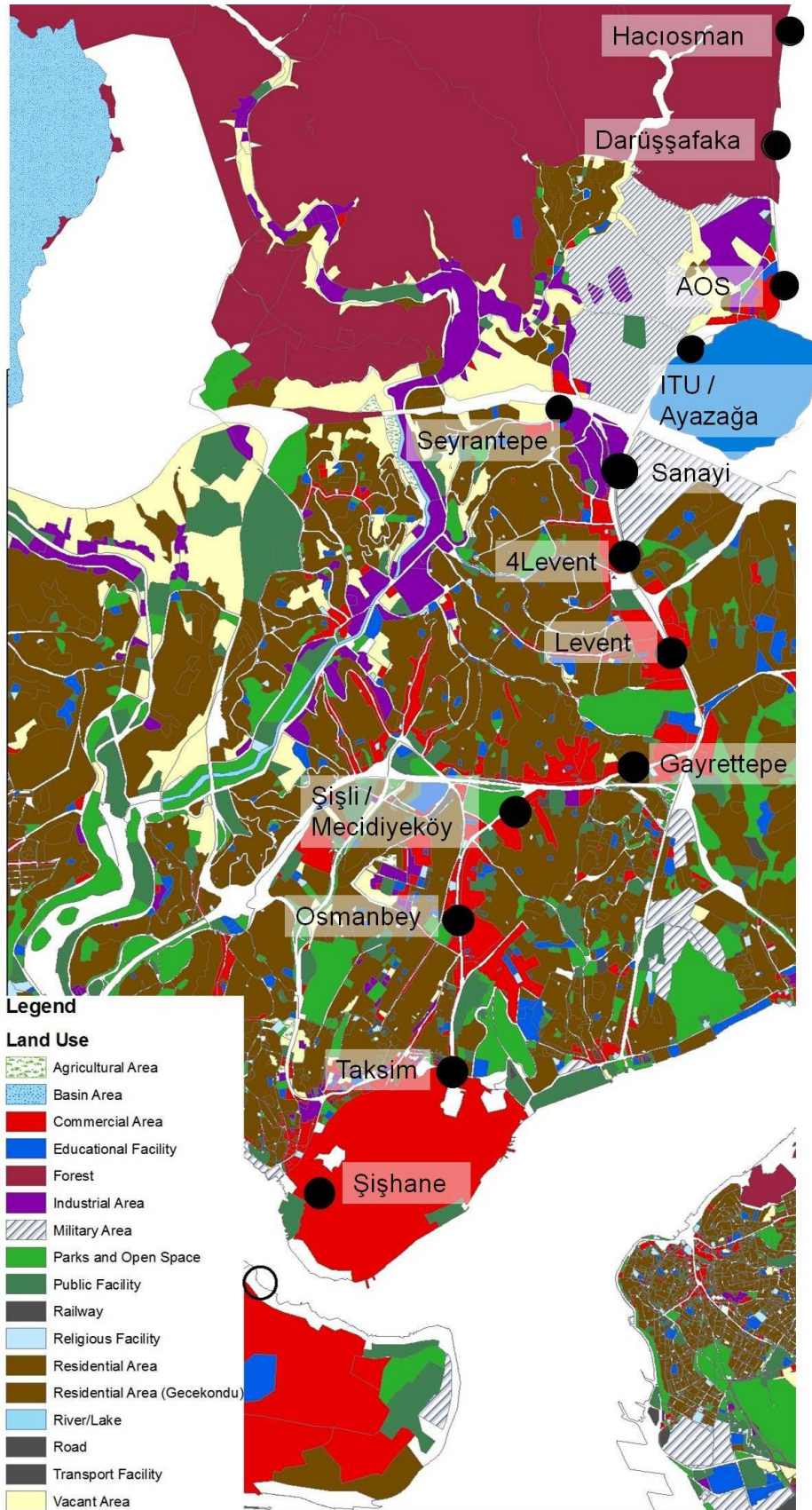


Figure 7.1 Land use map of Istanbul (Map has been obtained from the Istanbul Metropolitan Planning Centre, IMP, in 2008, and is based on the field work in 2006 for the Master Plan studies).

Stations	Opening Year	Activities	Connectivity
Şişhane (Southern end)	2009	Business, close to the old quarter of Banks, close to Istiklal Avenue – main touristic street	Tünel (funicular system) Bus; Tram within walking distance
Taksim	2000	Centre of entertainment, cultural activities, tourism, business and shopping	One of the main transport hubs: Funicular and buses and Dolmuş to every direction
Osmanbey	2000	Shopping, business	Bus
Şişli	2000	Business, shopping, residential	Bus; Metrobus*, Bridge
Gayrettepe	2000	Business, residential	Bus; Metrobus*, Bridge
Levent	2000	Business, shopping, residential	Bus, minibus, two Bridges
4.Levent	2000	Business, residential	Bus, minibus, two Bridges
Sanayi	2009	Industry, golf club, residential, education (university)	Bus, minibus, Bridge
Seyrantepe	2010	Industry, business, football stadium	Bus, minibus, Bridge
ITU	2009	Education (university), business	Bus, minibus, Bridge
AOS	2009	Industry, commercial facilities have been developing in recent years	Bus, minibus
Darüşşafaka	2010	No certain function, close to the northern forest	Bus, minibus
Haciosman (Northern end)	2011	No certain function, close to the northern forest and Sarıyer (a district by the Bosphorus)	Bus, minibus

*Metrobus line opened in 2007 after the data was collected for the Transport Master Plan

Table 7.1 The metro stations and the main activities around them. The table also shows the connection of the stations with other modes and transport infrastructure.

Table 7.1 also gives information on the connectivity of the Metro with other transport modes (also see Figure 7.2). Based on the table above, the Istanbul Metro seems like it has high connectivity with the rest of the transport network in Istanbul. Yet, public transport connectivity is poorer in areas in the northern end of the line, between Levent

and Haciosman stations, as the Metrobus does not serve these areas. Between these stations, only buses, minibuses and road transport serve as alternative modes.

It is important to note that although transfers between different public transport modes can be made at lower costs within the first two hours of the first use of a public transport mode; minibuses can be more preferable as they serve the inner parts of several neighbourhoods in the north end of the Metro line. Informal meetings during the fieldwork have shown that many residents⁶⁴ living in Sarıyer's neighbourhoods (north) prefer using minibuses for work and other purposes, although the majority of these trips are possible via Metro. Sarıyer residents are likely to choose minibuses since they are available within a shorter walking distance and provide a more flexible service compared to buses and the Metro.

The southern end of the line, between Gayrettepe and Şişhane, provides better connection with rail transport and other high capacity transport modes such as the Metrobus line (Bus Rapid Transit - BRT) that crosses the first Bosphorus Bridge connecting West and East and provides links to the Metro line via Şişli and Gayrettepe stations. However, there are currently no direct pedestrian underground connections between the Metrobus and the Metro stations⁶⁵. Therefore, the passengers need to leave the stations and walk over ground. Even though the system looks like it is well connected with alternative public transport modes such as buses and the Metrobus, the connectivity in the actual space is not seamless mainly due to design issues. This issue however is outside the scope of this thesis. Taksim and Şişhane stations of the Metro line have connectivity to the funicular system that are also linked to ferries and the tram line (LRT) which is the dominant rail transport in the South West of Istanbul.

⁶⁴ Informal meetings were held with the residents of the squatter areas in Sarıyer during Summer 2010. See Chapter 3 for details.

⁶⁵ See Chapter 8 for the details of a new pedestrian underground crossing that is being constructed between the Metrobus station in Zincirlikuyu and the Metro station at Gayrettepe.

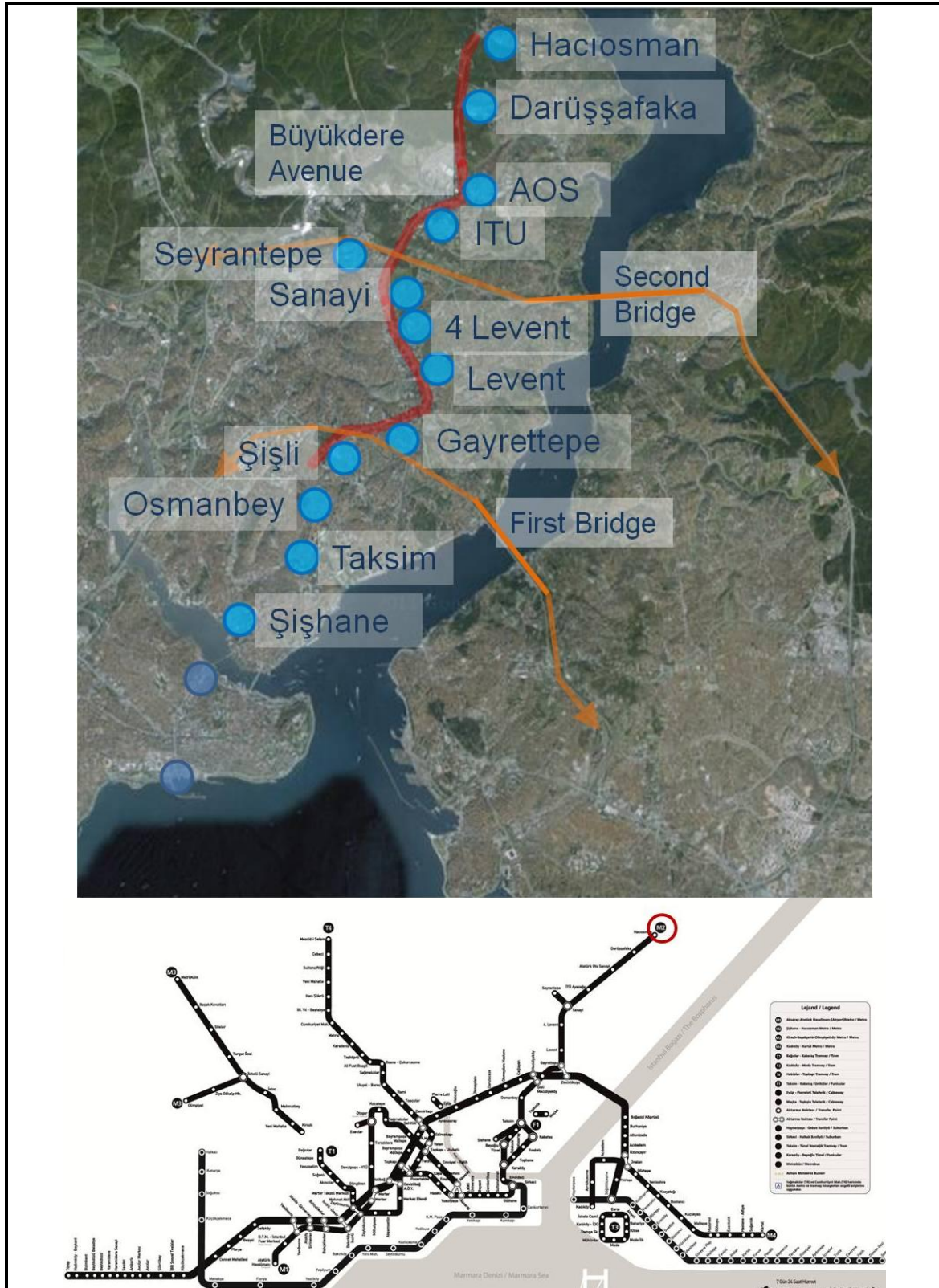


Figure 7.2 Connection of the Istanbul Metro with the rest of the transport network in Istanbul. Larger map shows the Istanbul Metro and its stations with reference to the Büyükdere Avenue and the two bridges over the Bosphorus. Dark blue circles mark the location of possible new stations in the southern end of the Metro. The small map displays mainly the rail transport system in Istanbul as well as the Metrobus (BRT) line over the Bosphorus Bridge.

According to the feasibility report of the Haciosman extension (Gerçek and Demir, 2007), the daily number of passengers is expected to be almost one million when the Yenikapi – Marmaray extension is completed. In its current form, the capacity of the Metro is 80.000 passengers per hour. The 2011 TMP mentions that the Metro has the capacity to operate using eight carriages; yet, it usually uses four carriages (IBB, 2011a pp. 74). Therefore, it is possible to state that the Metro runs under its capacity (also see Chapter 3). In fact, according to the actual numbers given by the Ulaşım A.Ş (Table 7.2), about 200,000 passengers use the Metro daily (based on the data gathered from the Ulaşım A.Ş.).

Table 7.2 displays the changes in the number of passengers using the Light Rail Transit and subways in Istanbul. Although the number of passengers using the Metro has increased over the years, so did the number of passengers of the other systems. The ratio of passengers transported by the Istanbul Metro out of all the rail passengers in Istanbul fluctuates between 22% and 28%. While the ratio of Metro passengers increased from 17% to 27% within the first two years of its opening and plateaued until 2007, this ratio has decreased since then. It was not until 2011 when the number of Metro passengers compared to other rail lines increased once again by 4%. Therefore, it is difficult to suggest that the opening of new stations between 2009 and 2011 has affected the use of the Metro directly since its level of use was the same before 2007. Additionally, the numbers indicate that in 2008, there was a slight decrease in the annual ridership levels for rail transport in Istanbul. Thus, external factors such as the economic crisis (discussed in Chapter 4) might have affected the use of the Metro and other transport modes. However, it would not be correct to make any concrete judgements on this issue based on the evidence used in this thesis.

TRANSPORT MODE (RAIL)									
	M1	M2	T1	T2	T3	T4	F1		
YEAR	AIRPORT	ISTANBUL METRO	LRT (OLD CENTRE)	LRT (SOUTH-WEST)	TRAM LINE (ASIA)	LRT (NORTH-WEST)	FUNICULAR	MONORAIL	GRAND TOTAL
1989	993742								993742
1990	11659369								11659369
1991	15336734								15336734
1992	17991036								17991036
1993	14068062		26321795						40389857
1994	23336883		43365960						66702843
1995	34042320		43306662						77348982
1996	45400191		45216110						90616301
1997	54099681		47286431						101386112
1998	56906437		46789016						103695453
1999	54939286		41602534						96541820
2000	57398597	6812038	43116562					32306	107650257
2001	55161090	20687387	46879441					326404	123054322
	45%	17%	38%	0%	0%	0%	0%	0%	100%
2002	52963072	35581375	44891357					307361	133743165
	40%	27%	34%	0%	0%	0%	0%	0%	100%
2003	56355945	38836858	43781365		61908			26981	139063057
	41%	28%	31%	0%	0%	0%	0%	0%	100%
2004	64092187	43509956	49186407		519391			248535	157556476
	41%	28%	31%	0%	0%	0%	0%	0%	100%
2005	69731999	46786372	57563183		564619			363734	175009907
	40%	27%	33%	0%	0%	0%	0%	0%	100%
2006	77622397	52576758	67273895	2851952	572339		3142783	908693	204948817
	38%	26%	33%	1%	0%	0%	2%	0%	100%
2007	81158613	56274283	78651772	12905813	660528	2174309	7714405	1363527	240903250
	34%	23%	33%	5%	0%	1%	3%	1%	100%
2008	76199671	56822745	81123202	13308675	682439	22495214	8490029	1383956	260505931
	29%	22%	31%	5%	0%	9%	3%	1%	100%
2009	68973291	55910179	82069309	12446937	632862	29791150	8011926	1356074	259191728
	27%	22%	32%	5%	0%	11%	3%	1%	100%
2010	69877628	62507918	85576995	11167270	637728	30274165	8398394	1527044	269967142
	26%	23%	32%	4%	0%	11%	3%	1%	100%
2011	71105930	75941265	104967109	0	577137	31259197	9562656	1541088	294954382
	24%	26%	36%	0%	0%	11%	3%	1%	100%

Table 7.2 Number of passengers using rail transit (Suburban train is not included as well as the recently opened Kadıköy-Kartal Metro line. Please note that although the Airport Metro is classified as a Metro system, it has lower capacity than the Istanbul Metro, and therefore, can be categorised as Light Rail Rapid Transit, LRRT) (Source: Ulaşım A.Ş.)

Although industry has been the main economic sector in the northern end of the line (First and Second Extensions), recently this situation has been shifting towards business (banking) and residential development (Chapter 6). As discussed in Chapter 4, national and international banks have been locating their headquarters along the Büyükdere Avenue since 1990s. As the transformation from industry to businesses continued, development of the Northern areas has become inevitable. Figure 7.3 shows the residential and office development in the northern end of the line. Five white blocks on the left of the picture are the Mashattan residential complex. It is possible to see the office development towards the North, visible on the right side of the picture.



Figure 7.3 Residential and office development in the Northern end of the Metro line. Photo taken from the north of the Sanayi station, looking towards the ITU station in the North. (Photo: Eda Beyazit)

The use of the Istanbul Metro is very much related to the land uses around its stations and the other transport modes it is connected to. According to the TMP 2009, the share of number of daily trips by rail transport is 5% and the share of the Metro among

eight different rail transport mode is about 25%. Therefore, the use of the Istanbul Metro within the entire transport system of Istanbul is very low (approximately 1.25%).

This section and the discussions above and in Chapters 4 and 6 have demonstrated that the location of the Istanbul Metro is crucial to our understanding of the socio-spatial impacts that the Metro produces. Despite its good connectivity with motorways, the bus network, the Metrobus to some extent and various other activities, presently the ridership of the Metro is low. However based on the feasibility report of the Northern extension (Gerçek and Demir, 2007), it is expected to increase when Yenikapı – Marmaray connection is completed. Hence it is important to understand whether the Istanbul Metro generates a specific user profile and if so, what are the factors influencing it. Such an examination is also important to facilitate future research in the area to make judgements about the social implications of the extended Istanbul Metro.

7.4 Actual use of the Istanbul Metro

In order to understand the user profile of the Istanbul Metro the actual use of the Metro stations is examined . by looking at the origin and destination of trips by metro. From this inferences are drawn about the catchment areas of the system. This exercise is carried out for four trip purposes, Home-based work (HBW), Home-based school (HBS), Home-based other (HBO) and Non-Home based trips (NHB).

Out of 2239 trips made by the Metro, 1187 trips were HBW trips (53%), 502 were made for HBO purposes (22%), 315 were HBS (14%) and 235 were NHB trips (10%) (IBB, 2008). Origin-Destination (O-D) maps in this section have been produced based on the origins and destinations of each trip made by using the Metro. The first two maps display the distribution of the origin and destination of the HBW trips (Figure 7.4). According to

this, the number of HBW trips originated from and ended in the traffic analysis zones⁶⁶ around the Metro line is higher in number compared to other zones. Moreover, there is a high frequency in HBW trips originate from and end in the west of the old city (south-west direction). In this sense, it is possible to state that the Metro trips for HBW purposes are distributed to a larger area than expected. Yet, it is limited to the West side of the city.

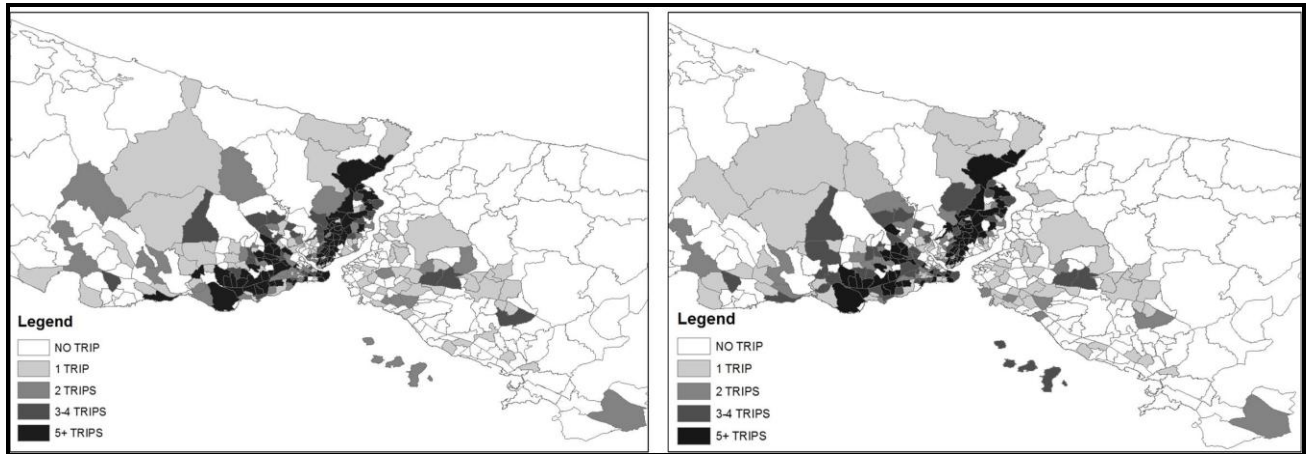


Figure 7.4 Distribution of number of trips by Traffic Analysis Zones (TAZ) - HBW trips: Origin (left), Destination (right) (Author's own elaboration of the 2006 Travel diaries, IBB, 2006)

The second set of maps illustrates the trips made for HBO purposes (Figure 7.5.). HBO trips are mainly composed of trips for social activities (26%), health purposes (17%) and for work (14%). HBO trips create a more fragmented distribution compared to the HBW trips. This is due to different activities carried out in different places within the city. The O-D distribution for HBO trips is more limited in space compared to the distribution of the HBW trips.

⁶⁶ See Chapter 5 for a detailed explanation of the traffic analysis zones

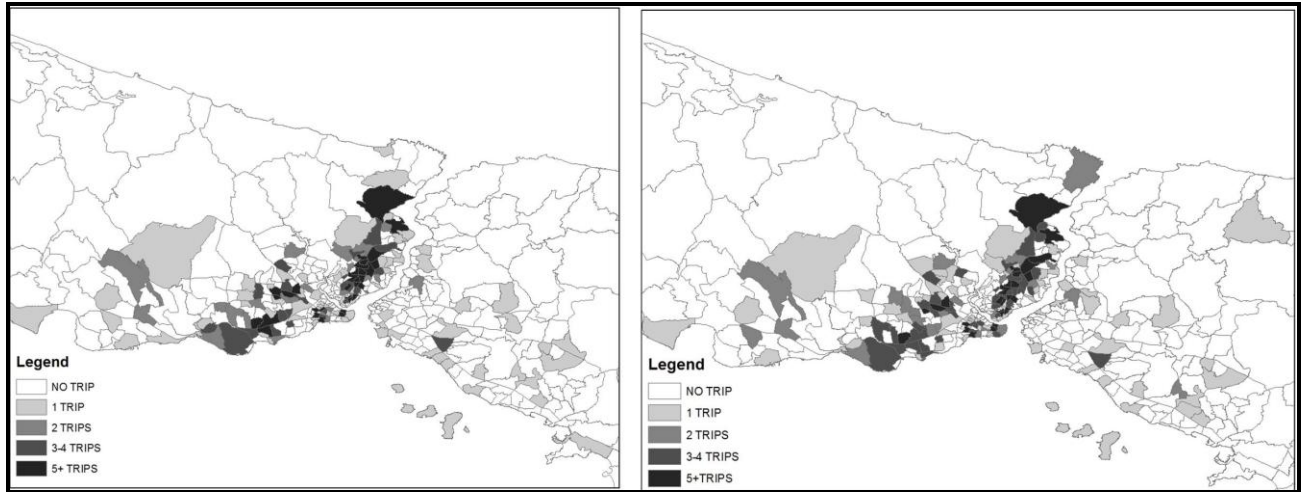


Figure 7.5 Distribution of number of trips by TAZ- HBO trips: Origin (left), Destination (right) (Author's own elaboration of the 2006 Travel diaries, IBB, 2006)

According to the analysis of the HBS trips, the departure points of the trips are concentrated in certain areas whereas the destination locations spread to a larger area (Figure 7.6). Destination locations point out to various campuses of universities such as Istanbul Technical University Maslak Campus, Istanbul University Avcilar Campus, Istanbul University Bahcekoy Campus, Beykent University and various high schools.

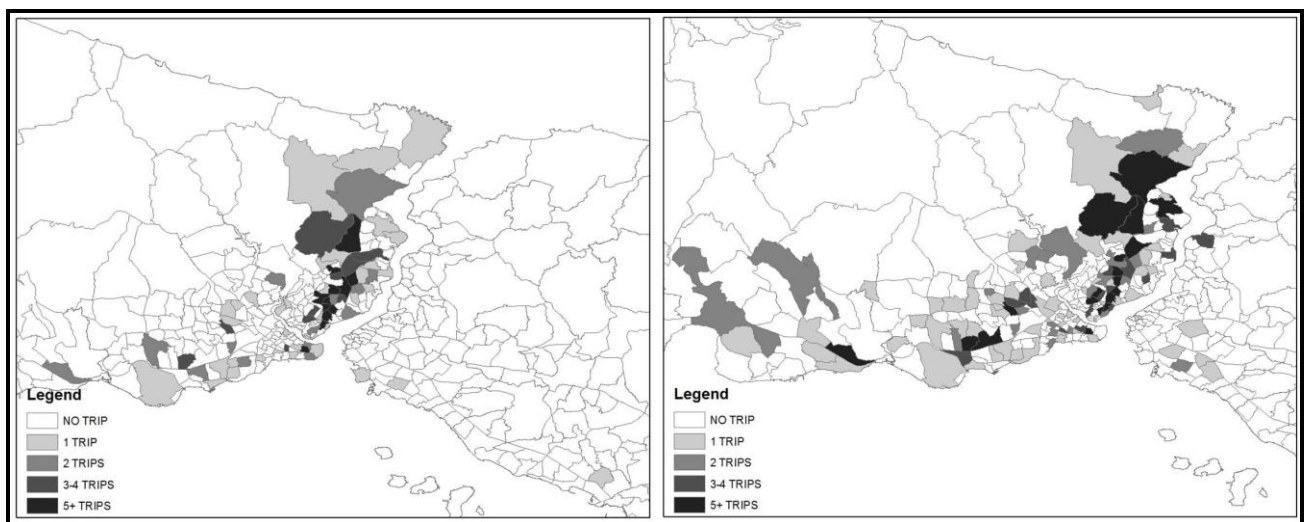


Figure 7.6 Distribution of number of trips by TAZ - HBS trips: Origin (left), Destination (right) (Author's own elaboration of the 2006 Travel diaries, IBB, 2006)

Finally, NHB trips can be seen in Figure 7.7 The main purpose of the NHB trips by the Metro is work. Respondents have recorded their trips between their work places and other areas that they need to travel to for work purposes. Second dominant reason for

NHB trips is social activities. According to this, both places of origin and destination of these trips are concentrated along the Metro line.

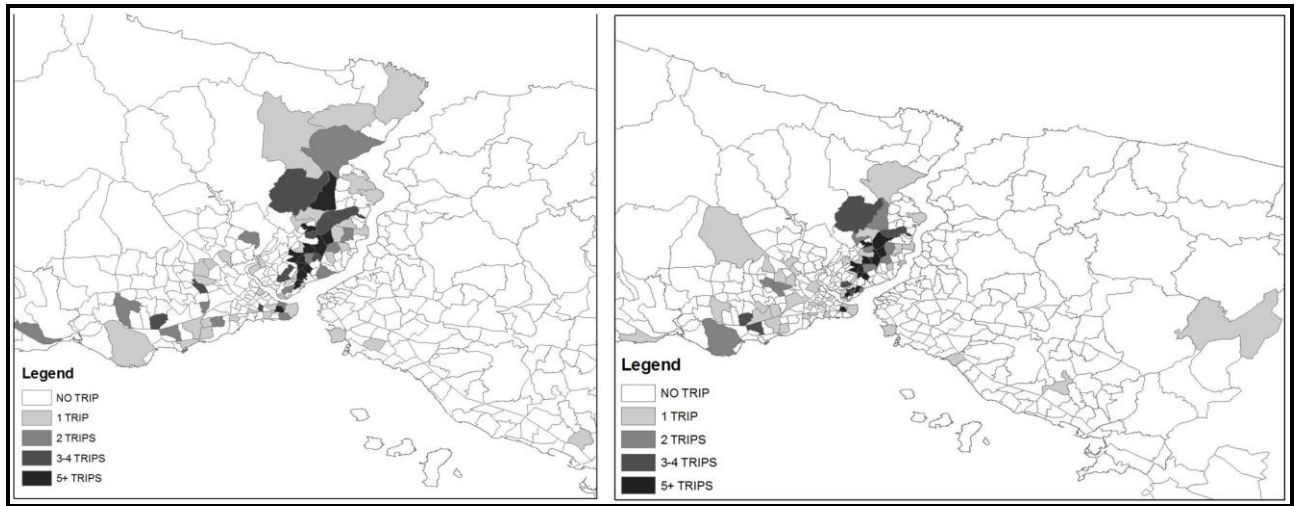


Figure 7.7 Distribution of number of trips by TAZ - NHB trips: Origin (left), Destination (right) (Author's own elaboration of the 2006 Travel diaries, IBB, 2006)

Mapping the origin and destination of the trips made by the Metro has revealed that the Istanbul Metro serves limited geography. Yet, it is important to note that the trips made for HBW purposes spread to a larger area. Also the number of trips made for this purpose has the highest proportion among all trips. Nevertheless, by looking at the distribution of the Metro trips it is possible to state that the Metro is facilitating accessibility for some areas, but it is not increasing accessibility in the wider urban area. Therefore, it is possible to state that the Metro is likely to produce unequal uses and create enclosed spaces.

It should also be noted that the new stations opened along the line may have enlarged these territories. However, it is not possible to assess the recent changes in accessibility since the only regularly collected data, the User Satisfaction Surveys, have been conducted at a larger scale and not as detailed. Nevertheless, it can be stated that the locations of origin and destination of trips are more or less similar to the areas shown in the maps in this chapter while including fewer trips from Bakırköy and Kadıköy districts (Ulaşım A.Ş., 2011). In its current form, the Istanbul Metro does not provide high levels of

usage in Istanbul but only serves the neighbouring districts. Therefore, it is likely to contribute to the production of uneven geographies. Having stated that, it should also be noted that the Metro is geographically connecting certain parts of the city where mainly commercial activities and high-profile businesses are accumulated. As pointed out in Chapter 6, the surrounding districts of the Metro line accommodate 12% of all employment in Istanbul while the rest of the European part accommodates 51% of all employment. Therefore, once again, as the land uses and activities around the Metro stations are restricted, in its current form, the Istanbul Metro spatially distributes limited accessibility benefits for the city.

7.5 User profiles

Having discussed the distributive impacts of the Istanbul Metro in terms of accessibility of the system in the urban space, this section focuses on the user profiles of the Metro. The aim is to understand whether the Istanbul Metro is mainly used by certain socio-economic groups or whether its accessibility benefits can be enjoyed by a wider society. In order to do that, first, it is important to understand whether user profiles vary for different transport modes in Istanbul.

For this purpose, a randomly selected sample from the household transport surveys⁶⁷ has been investigated according to the mode choice and socio-economic characteristics of the users based on gender, education, age, employment and car ownership. Such categorisation has also been used in Chapter 5. This way, the relationship between different socio-economic groups and the use of different transport modes can be discussed. It is important to note that in this analysis only the second trips of survey respondents are taken into consideration since the total number of people two trips are

⁶⁷ This sample has also been used in Chapter 5

the highest (Table 7.3), and the second trips on a recorded day include more variety of transport modes used by individuals compared to the first trips. Taking second trips into account, therefore, gives the opportunity to understand the user profiles for less used transport modes in the city such as the sea and rail transport systems.

0 trip	1 trip	2 trips	3 trips	4 trips	5 trips	6 trips	7 trips	8 trips	9 trips	10 trips
917 p/day	25 p/day	1302 p/day	142 p/day	185 p/day	21 p/day	18 p/day	3 p/day	6 p/day	1 p/day	1 p/day
35%	1%	49.7%	5.4%	7.1%	0.8%	0.7%	0.1%	0.2%	0.0%	0.0%

Table 7.3 Number and the ratio of people according to their daily trip frequency in Istanbul (Based on Istanbul Metropolitan Municipality, Department of Transport, 2006 – randomly selected surveys)

Following this assessment, a second analysis has been applied to the users of the Istanbul Metro in order to understand whether a certain user profile exists for this mode. Since the number of the Metro users is lower compared to the other modes in Istanbul, it has not been possible to understand the user profile of the Metro in the previous analysis. By looking at the Metro users solely, it is possible to observe demographic, social and economic differences between the Metro users in much more detail. As discussed earlier in the methodology section of this chapter, chi-square analysis has been applied to both data sets. This is followed by a comparison of percentages in order to understand the direction of the relationship between the categorical variables.

7.5.1 Users of Istanbul's transport system

Chi square analysis on the 2006 household transport survey indicates that there is dependency between the transport mode choice and gender, education, employment, age and car ownership (Table 7.4). Therefore, there is a relationship between these socio-economic variables and the mode of transport used by the individuals in daily urban mobility. Having established that such relationship is statistically significant for the entire population and not only for the sample, it is possible to draw conclusions on the likelihood of differences in the use of transport modes based on gender, education, employment, age

and car-ownership. This is done by looking at the ratios of different socio-economic groups using various modes of transport.

Gender is an important factor in determining the choice of transport mode in Istanbul. This finding is compatible with the long line of empirical work looking at influences of socio-economic characteristics and other factors on mode choice (Limtanakool et al., 2006). The first two rows in Table 7.4 show differences between the mode choices of men and women in Istanbul. According to this, women are more likely to walk (61%), while men are more likely to drive (13%), use buses (10%) and use sea or rail transport (4%).

At first, it is possible to conclude that men are more capable of using a variety of modes compared to women. Yet, when this difference is examined further according to the employment of men and women, it is possible to observe that it is the unemployed women who generate such a gender difference. As seen on Table 7.4 unemployed women are more likely to walk (70%) compared to employed women (28%) who use all the other modes. This is mainly due to high numbers of housewives doing shorter trips (Chapter 5). Therefore, when employed men and women are compared according to their mode choice, it is possible to see that the gap is not as large, especially in terms of walking. Still, the analysis indicates that employed women are more dependent on public transport and company services compared to employed men who are more dependent on cars (21%).

Women's relationship with the automobile in Istanbul shows similarities with previous research (Rosenbloom, 2006 in Hanson, 2010; Limtanakool et al., 2006). Difficulties for women in affording a car due to income inequality, women's responsibility for household tasks and childcare, male dominance in households in terms of car use are amongst many factors that influence women's access to car (Limtanakool et al., 2006) and need further examination of their capabilities.

VARIABLES		Walking	Car	Taxi & Company/ school service	Dolmuş & Minibus	Bus	Other*	Grand Total	Chi-square	degrees of freedom	p-value
GENDER	Men	498 52%	124 13%	127 13%	80 8%	98 10%	34 4%	961 100%	31.099	5	0.000
	Women	441 61%	51 7%	104 14%	61 8%	49 7%	12 2%	718 100%			
	Employed women	41 28%	15 10%	45 31%	20 14%	17 12%	6 4%	144 100%	89.001	5	0.000
	Unemployed women	400 70%	36 6%	59 10%	41 7%	32 6%	6 1%	574 100%			
	Employed men	168 34%	102 21%	85 17%	56 11%	53 11%	29 6%	493 100%	19.495	5	0.002
	Employed women	41 28%	15 10%	45 31%	20 14%	17 12%	6 4%	144 100%			
EDUCATION	Illiterate and literate no schooling	310 79%	14 4%	49 13%	8 2%	9 2%	1 0%	391 100%	182.569**	8	0.000
	Mandatory	369 54%	84 12%	84 12%	70 10%	61 9%	15 2%	683 100%			
	Higher education	101 29%	67 20%	63 18%	40 12%	44 13%	28 8%	343 100%			
EMPLOYMENT	Unemployed	729 70%	58 6%	101 10%	65 6%	77 7%	11 1%	1041 100%	242.295	5	0.000
	Employed	209 33%	117 18%	130 20%	76 12%	70 11%	35 5%	637 100%			
REASON FOR UNEMPLOYMENT	Student	158 61%	10 4%	35 13%	23 9%	33 13%	2 1%	261 100%	27.214**	8	0.001
	Retired	79 61%	14 11%	9 7%	9 7%	16 12%	3 2%	130 100%			
	Housewife	225 72%	22 7%	18 6%	24 8%	20 6%	5 2%	314 100%			
AGE GROUPS	0-18	591 51%	129 11%	201 17%	99 9%	96 8%	36 3%	1152 100%	54.706**	8	0.000
		201 67%	22 7%	16 5%	25 8%	31 10%	3 1%	298 100%			
	19-45	146 64%	24 11%	14 6%	17 7%	20 9%	7 3%	228 100%			
		427 50%	84 10%	118 14%	98 11%	94 11%	33 4%	854 100%			
CAR OWNERSHIP	No cars	113 41%	77 28%	36 13%	16 6%	25 9%	11 4%	278 100%	58.636	6	0.000
	One or more cars										

*Other modes include motorbike, bicycle, Metro, LRT, Tram, Tunnel, SeaBus, Ferries and Suburban train.

**excluding "other modes" since one observed variable is below 5

Table 7.4 Number of individuals according to the transport modes they use during their second trips. Table also shows the results of the chi-square analysis.

The relationship between education and transport mode has been assessed according to three education levels: illiterate and literate individuals who have not completed a school are grouped together to form the low education group; medium education includes individuals that have completed their mandatory education (5-8 years⁶⁸); and high education group consists of individuals who completed a high school, university or a post graduate programme. Students are excluded from this evaluation.

⁶⁸ Mandatory education has been changed from 5 to 8 years at the end of 1990s.

Chi-square analysis demonstrates that education and the use of transport modes are significantly related with each other. When the dependence between education and the use of transport modes is assessed according to the percentages, inequalities can be observed. According to Table 7.4, as the education level increases, the use of public transport modes and travel by car increase but the ratio of walking decreases. This finding is similar to the outcomes of a study in the Netherlands in terms of high levels of education being a determinant in choosing public transport in trips longer than 50km (Limtanakool et al., 2006). However, it does not provide the same outcomes in terms of travel by car. On the contrary, the analysis demonstrates that, in Istanbul, the level of car use increases as the education level increases. These results include the short trips as well; therefore, they need to be evaluated within this context. The relationship between the level of education and mode choice can be explained based on a variety of factors such as income and not having the skills to understand how the system works as social exclusion studies emphasise, or doing shorter and fewer trips (Chapter 5).

According to the chi square analysis, variables like employment and mode choice (or necessity) are also dependent on each other at $p < 0.001$. The share of transport mode use between employed and unemployed individuals indicates that unemployed people are more likely to walk (70%) than the employed population (33%) while the employed are more likely to drive (18%), take the bus (12%) or use company service buses (20%). When the unemployed group is examined according to the reason for unemployment and their mode choice, it is noticed that the housewives are more likely to walk (72%) than students and the retired population who also use the bus network. The retired population are likely to drive a car more than other groups within unemployed individuals (11%).

In terms of age, expectedly, the 0-18 age group are found to use the school services the most or be driven to school while older age groups are more likely to walk. In terms of the use of public transport, ratios are similar for each age group. Finally, when the

relationship between car ownership and mode choice is analysed it is seen that these two variables are also dependent. When the percentages of car owners and non-car owners are examined, it is possible to see that the car owners are more likely to drive (28%) compared to non-car owners (10%) who, on the contrary, are more likely to walk (50%) and use the public transport. Yet, this was an expected outcome.

Transport household surveys for Istanbul indicate that different transport modes are used by different socio-economic groups in the city. Differences between men and women in walking, using the public transport and driving; the influence of employment on women's transport; the likelihood of a highly educated population to drive more than the population with low education levels; differences between employed and unemployed population in terms of choosing to walk as the primary mode of transport and employed population choosing (or being able to choose) to drive and use public transport; and the impact of being a housewife on the choice of transport mode, demonstrate an uneven distribution of mode use among the inhabitants of Istanbul. Although this situation may not be a problem and on the contrary, it may show the variety of transport modes used within the city, the differences reported here, especially in terms of the impact of education, gender, employment and car ownership on the mode choice, point at existing socio-spatial inequalities in Istanbul's transport system. In the following section, the Istanbul Metro is evaluated to understand whether it creates similar inequalities.

7.5.2 Users of the Istanbul Metro

Based on the analysis of the household transport surveys and the modal split in Istanbul discussed earlier, it is important to remind the reader of the low demand for the Metro in Istanbul. Among the respondents of the travel diaries collected in 2006, 1331 people⁶⁹

⁶⁹ One respondent did not mention their age, therefore, has been excluded from the analysis.

mentioned that they make at least one trip a day with the Metro among more than 260000 respondents. 2239 trips in total have been made by the Metro.

Therefore, it is important to understand whether the Metro serves certain socio-economic groups rather than to the wider society. The analysis used in the previous section has been applied again, this time to understand the user profile of the Istanbul Metro. Here, purpose of the trip is taken as one of the variables and its relationship with socio-economic characteristics of the Metro users has been examined. Using trip purpose as one of the variables allows linking this exercise with the discussions on the accessibility of the Metro and land uses around the stations. Other variables such as gender, education, employment, age and car ownership are evaluated with reference to trip purpose in the case of the Istanbul Metro.

Chi-square analysis indicates that while there is dependency between most of the socio-economic variables and the trip purposes (gender, employment of women, education and general employment), some variables have no relationship with the trip purpose (employment of men and women, car ownership). In order to understand these relationships further, percentages of trip purposes for each variable are examined.

First of all, it should be noted that the majority of the Metro users are men (67%). Table 7.5 demonstrates that the male Metro users are more likely to use the Metro for HBW purposes (57%) while women use the Metro for HBO purposes (29%) as well as HBW purposes (45%). When gender is examined with reference to employment, users for different trip purposes become clearer. As expected, employed women are more likely to use the Metro for work purposes (81%) while unemployed women take the Metro to perform activities such as shopping, entertainment and friend visits (50%) and to go to school (34%). No significant difference has been found between the employed men and employed women in terms of their purpose of trips while using the Metro.

In terms of education, the case of the Istanbul Metro presents intriguing results. Having stated that the Chi-square analysis points out a significant relationship between the trip purposes and education levels of individuals, Table 7.5 shows that as the level of education increases, the likelihood of passengers using the Metro for work purposes increases (51% for low education groups, 61% for medium and 66% for highly educated individuals). Likewise, as the level of education decreases the likelihood of passengers using the Metro for HBO trips increases (20%, 29% and 39% from high to low education groups⁷⁰). These results indicate varieties between trip purposes of individuals from different education groups.

Employment is another variable that the trip purposes of individuals depend on. Expectedly, employed users of the Metro are more likely to use this transport mode for work purposes (79%) while unemployed users are more likely to make HBO (45%) and HBS (36%) trips by the Metro. In addition, housewives and retired individuals combined are likely to use the Metro for HBO purposes (79-81%) while students use the Metro primarily for HBS purposes (68%) as expected. Moreover, students are also likely to use the Metro for NHB trips (12%). Finally, when the relationship between age and trip purpose is examined, it is seen that younger individuals are more likely to use the Metro for work purposes (60%) while individuals older than 46 are more likely to use the Metro both for work (44%) and non-work activities (43%). As mentioned earlier, car ownership is not a determinant of trip purpose for the Metro users.

⁷⁰ Students have been excluded from this evaluation

VARIABLES		HBO	HBS	HBW	NHB	Grand Total	Chi-square	degrees of freedom	p-value
GENDER	Men	159	114	509	110	892	31.958	3	0.000
		18%	13%	57%	12%	100%			
	Women	127	75	195	41	438			
		29%	17%	45%	9%	100%			
	Employed women	21	3	182	19	225	195.222	2*	0.000
		9%	1%	81%	8%	100%			
	Unemployed women	106	72	13	22	213			
		50%	34%	6%	10%	100%			
	Employed men	45	7	485	77	614	3.333	2*	0.189
		7%	1%	79%	13%	100%			
	Employed women	21	3	182	19	225			
		9%	1%	81%	8%	100%			
EDUCATION	Illiterate and literate no schooling	26	2	34	5	67	15.644	4*	0.004
		39%	3%	51%	7%	100%			
	Mandatory	92	1	214	41	348			
		26%	0%	61%	12%	100%			
	Higher education	132	20	442	76	670			
		20%	3%	66%	11%	100%			
EMPLOYMENT	Unemployed	220	179	37	55	491	770.656	3	0.000
		45%	36%	8%	11%	100%			
	Employed	66	10	667	96	839			
		8%	1%	79%	11%	100%			
REASON FOR UNEMPLOYMENT	Student	36	166	14	29	245	210.169	3**	0.000
		15%	68%	6%	12%	100%			
	Retired	79	0	9	9	97			
		81%	0%	9%	9%	100%			
	Housewife	60	3	6	7	76			
		79%	4%	8%	9%	100%			
AGE GROUPS	0-18	23	79	20	8	130	70.197	2***	0.000
		18%	61%	15%	6%	100%			
	19-45	152	109	571	112	944			
		16%	12%	60%	12%	100%			
	46+	111	1	113	31	256			
		43%	0%	44%	12%	100%			
CAR OWNERSHIP	No cars	173	69	454	98	794	0.969	3	0.809
		22%	9%	57%	12%	100%			
	One or more	90	41	230	45	406			
		22%	10%	57%	11%	100%			

*HBS trips are not taken into consideration as one of the values is below 5

** Retired population and housewives have been added together. Also number of retired and housewives making HBS trips has been increased by two in order to allow Chi-square analysis

*** For this analysis, the 0-18 age group has been excluded as well as HBS purposes. It gives information on the relationship between HBO, HBW and NHB and the age groups of 19-45 and 46+

Table 7.5 Number of Istanbul Metro users according to trip purposes and socio-economic characteristics

The analysis on the user profile of the Istanbul Metro has brought up important outcomes. Although it is difficult to conclude on a specific user profile for the this mode, it

has been possible to understand that the Metro accommodates different user groups from unemployed to employed, from uneducated to highly educated; different age and gender groups. In this sense, it does not generate a specific user group as it was expected initially. However, it should be noted that the majority of the survey respondents is men (67%) and highly educated (61%). Yet, it would not be correct to generalise from the ratio of survey respondents and suggest a specific user profile. Therefore, the outcomes of this analysis are important for commenting on the diversity of users of the Metro in terms of their socio-economic background and also for drawing a conclusion on the differences within this group in terms of their trip purposes. The analysis suggests that socio-economic status is one of the determinants of the purpose of trips made by the Metro. Further implications of these outcomes are discussed in the conclusion.

7.6 Conclusion

In this chapter, the Istanbul Metro has been analysed for possible socio-spatial inequalities it may have generated. The main argument of this chapter was that the spatial distribution and location of transport infrastructures may determine who benefits from these infrastructures, for what purposes and therefore, may create specific user profiles. In order to find out whether such an argument can be made for the Istanbul Metro, the analysis in this chapter has been carried out from both spatial and social inequalities perspective. The findings of the chapter are discussed below in relation to the literature concerning socio-spatial inequalities and transport presented in Chapter 2.

First of all, the splintering urbanism literature suggests that new transport infrastructures tend to by-pass the least valued users and serve only certain groups (Graham and Marvin, 2001). The expectation of this chapter was to find that the Istanbul Metro generates limited and socially differentiated use for the city and therefore its benefits are not distributed to a large geographical area. The maps showing the origin and destination of the users prove this argument right to some extent. Although the Origin-

Destination maps of the HBW trips demonstrate that the Metro serves an extensive area within the city than expected, other uses are mainly limited to the surroundings of the stations. Reflecting on the literature, it is possible to state that the Metro corridor generates splintering effects by creating spatial enclaves due to its geographically limited usage. Yet, these effects differ based on the purpose of trips made by the Metro. Therefore, the Metro generates different splintering effects for different uses, an issue that has not been fully appreciated in previous studies of the splintering effects of new metro systems (Graham and Marvin, 2001; Richardson and Jensen, 2008).

New discussions on space and scale are also brought forward in this chapter as it has been demonstrated that the users of the Metro travel between different traffic analysis zones for different purposes. As suggested for future research in Chapter 6, the economic impacts of the Metro can be evaluated within a different geography which, as this chapter points out, can alternatively be based on the user geography of the Metro presented.

Related to this, the analysis on land use and connectivity has demonstrated that the limited use of this system is mainly a consequence of the location of the Metro and the certain land uses around its stations. Therefore, it can also be stated that the development of the Metro corridor is likely to lack planning strategies that would increase the geographical distribution of the Metro.

Other strands of scholarship that have informed the analysis in this chapter are those on gendered mobilities (e.g. Law, 1999) and on socio-economic differentiation in travel behaviour (e.g. Hanson and Hanson, 1981; Pas, 1984; Lu and Pas, 1999; Limtanakool et al., 2006; Schmöcker et al., 2008; Buehler, 2011). The analysis has shown that inequalities exist in Istanbul in terms of transport mode choice. Whether this situation is a result of choice or necessity, can, and should be explored in an extensive qualitative study, for instance, by using methods such as the Capability Approach briefly discussed in Chapter 2 (also see Nordbakke, 2013). Yet, the outcomes of the quantitative

analysis in this chapter highlight important policy implications for Istanbul, especially for reducing social exclusion based on transport. It has been discussed that specific user profiles are likely to emerge for mainly four transport modes: walking, automobile, company/school service and public transport. Hence, such an outcome suggests that mode choice is likely to generate as a result of transport inequalities in Istanbul.

Based on these outcomes, two major issues, gender and education come forward. The relationship between gender and mode choice especially requires further examination. Previous research shows that women are subject to various security and safety issues in public transport vehicles and while walking (Church and Frost, 2000; Yavuz and Welch, 2010). Since the majority of unemployed women choose (or need) to walk and employed women use public transport, producing policies to eliminate the problems women face would enhance the quality of their daily mobility. The analysis also points out that employed women prefer taking company services to work. This situation may be a result of feeling unsafe within public transport vehicles or while driving. Moreover, policies aiming to reduce these problems may also increase women's participation in the work force. Anthropological studies in Turkey have shown that women's participation in the work force is very much related with the feeling of safety not only by them, as seen in the examples of social exclusion studies, but also by their spouses (Çakır, 2011). Husbands often do not allow their wives to work as a result of unsafe transport environment during work trips.

Even though it has been possible to draw a broad image of the user profiles of different transport modes in Istanbul, such a conclusion cannot be made for the Istanbul Metro. The users of the Metro belong to different socio-economic and demographic groups and therefore, are not easy to classify as it was expected based on previous studies (Jensen, 2007). Although the expectation of this chapter was to define an exclusive user group for the Metro, composed of highly educated, middle-class and employed individuals,

the analysis suggested a mixture of users from different social and economic backgrounds. This finding is actually an important evidence for equalities provided by the Metro. The Istanbul Metro generates diversity in terms of user profiles. However, a more important and unexpected outcome is on the relationship between the socio-economic profile of the Metro users and their trip purpose.

It has been found that the HBW trips are likely to be performed by men, highly educated individuals, employed population, middle aged groups and employed women. Whereas, HBO trips are mainly performed by unemployed women, individuals with low education, unemployed groups, housewives and the retired population as well as individuals aged 46 and over. While accommodating users from all socio-economic backgrounds within the system, the Metro contributes to different uses of the urban space.

This is an important achievement for the system to be able to contribute to mixed uses of the urban space. In this sense, the Metro is conducive to the generation of sustainable living spaces. However, when evaluated within the theories of uneven geographies and within a different contextual scale, a contrasting narrative occurs. In this sense, it is possible to notice that the Metro has got an important role in the 'survival of capitalism' in this area (Lefebvre, 1976). The Istanbul Metro is not only contributing to this survival by generating economic development as discussed in Chapter 6, but also by circulating the shoppers (Jensen, 2007) who have a relatively low socio-economic profile especially in terms of education, as well as the business men and women. On the one hand, it is bringing these groups together within the same transport mode equally, on the other hand it is facilitating the capital to accumulate investment around its stations and also bring its own consumer. The Istanbul Metro contributes to the circulation of both the producer and the consumer of the capitalist system. In this sense, the Istanbul Metro is contributing to the generation of uneven geographies in Istanbul.

The above discussions are relatively new to transport research. Yet, they provide important explanations to the ways in which transport infrastructures generate social and spatial inequalities. Therefore, greater attention needs to be paid to these issues in future transport research. First of all, transport's role in the production of space can be explored further by consulting the splintering urbanism debate. There is an important potential in exploring how travel undertaken for different purposes may fragment space in different ways. Furthermore, the user profile of the groups residing within close proximity to the transport infrastructure can be investigated in order to understand whether the transport infrastructure is used by these groups. If data becomes available, such a research can be conducted for the Istanbul Metro. This way, the beneficiaries of the Metro as well as those who lose out, can be identified more clearly. Finally, the debate on the role of transport infrastructures in contributing to the survival of capitalism is quite important and unexplored. If more case studies are conducted in the future in order to understand and explain this phenomenon, a more complete narrative of socio-spatial inequalities regarding transport can be developed.

Chapter 8

Behind the curtains: on the politics of the Istanbul Metro

8.1 Introduction

The Istanbul Metro is not “the” transport system that comes to mind when transport in Istanbul is discussed, no matter what the context is. It is the Tube that comes to mind when transport is an issue in both historical and contemporary contexts in London; it is probably the Tram or the Trolleybus in the historical context of San Francisco; and the Shinkansen in Tokyo in the regional context and economic development. For Istanbul it would be the trams, ferries, the tunnel and the dolmuş but certainly not the Metro. So, why devote a study to the Metro?

In previous chapters we have seen that the Istanbul Metro produces sectoral transformation and capital accumulation which may have social consequences such as the changes in the structure of the labour force and local economic development. Additionally, the Metro has been found to generate user groups for specific trip purposes which can be regarded as a contribution of the system to the accumulation and circulation of capital in the urban space. Therefore, the Istanbul Metro is likely to contribute to the production and exacerbation of socio-economic and spatial inequalities in Istanbul. In this final empirical chapter, the significance (or the insignificance) of the Metro for Istanbul and its citizens, politicians and investors is investigated from a political point of view and its further

impacts on social, political and spatial fragmentation are examined. In combining the findings from Chapters 6 and 7, this chapter suggests a different approach to reading the socio-political meanings that are attached to the Istanbul Metro and to other transport infrastructure systems around the world.

The qualitative methodological approach of this chapter triangulates in-depth interviews with experts and politicians, court documents, images, media files and caricatures. Interviews were analysed by using the analytical hierarchy method that involves identifying initial themes and concepts; sorting these themes; identifying different elements and dimensions; detecting patterns between interviews and finally developing explanations and discussing them within wider theory and strategies (Spencer et al., 2003). This type of analysis “relates to thematic, largely cross-sectional analysis based on the interpretations of *meaning*” (ibid., 213, my emphasis) that is the main concern of this chapter. In sorting the main themes of interviews, four general concepts emerge: plan adaptation, capital accumulation, images of the Metro and its role as a political platform. In the course of this chapter, discussions on these themes are bolstered with other materials collected during fieldwork and throughout the study. The chapter itself is structured as follows: the theoretical background of the chapter is explained, followed by an extensive discussion on the power, planning and politics debate, which introduces and discusses the primary findings..

8.2 Background to the study

8.2.1 Urban land rent theory

As discussed in Chapter 2, at the heart of this thesis lies the understanding of transport infrastructures as commodities that produce socio-spatial processes, relationships and inequalities through flows of capital, information, people and images and through mobilities. Moreover, it has been discussed in detail that transport infrastructures produce and reproduce space; they reformulate economic and socio-spatial relationships.

Therefore, space also becomes a commodity that can be produced and reproduced which is likely to lead to uneven geographic development. In this chapter, such urban phenomena like socio-spatial inequalities, political and economic processes are explained through the urban land rent theory (Harvey, 1973; 2012; Evans, 1983; Haila, 1990; Jager, 2003), and contemporary urban studies, geography and sociology are consulted too for their critical understanding of cities not also as places of flows and mobilities but also as recommodified places of fixity and staticity.

In Chapter 2 it has also been discussed that the urban land rent occurs in Istanbul in the form of Differential Rent due to changes in transport and other infrastructure and commercial and residential development. In this chapter, urban land rent theory is used to explain how the economic surplus is generated by the Istanbul Metro and accumulated around its stations in the form of new residential and business development as a result of increased accessibility.

In order to understand this phenomenon, Jager's (2003) approach is used. Jager (2003) proposes to integrate the structure of the generation of urban land rent with the role of the political agency. This way, Jager (2003) aims to bring a systematic treatment of politics into land rent theory. In this chapter such an approach is taken also in order to understand the distributive structure of the differential rent in Istanbul in the case of the Istanbul Metro and the actors involved in this process. In order to do that, planning decisions and court documents against these decisions have been evaluated and discussed in terms of first, the capital accumulation and second, the tension between the political will and public resistance.

8.2.2 Socio-spatial and political meanings of the Metro

In addition to employing the urban land rent theory in order to discuss whether capital accumulation generates in relation to the Istanbul Metro, this chapter also aims to understand the politics of this transport infrastructure. In this sense, this chapter

combines the discourses of space-power in transport and debates on right to the city. In the *power, space and planning* debate, infrastructure and technology have gained a different role than just having impact on materialised world. As Graham and Marvin (2001) noted “they emerge, rather, as embedded instruments of power, dominance and (attempted) social control” (pp. 213). However, as a consequence of measureless/reckless use of power in infrastructure investment for the purposes defined by Steinberg (1987), a series of inequalities emerge. According to Steinberg (1987) political symbolism and prestige that are associated with large scale technological development contribute to the development of large scale infrastructure projects.

Political power uses infrastructure as a tool for controlling socio-spatial practices. Planning and architecture have been long seen as instruments of reflecting power on space since the first theoretical and comprehensive approaches to planning by Hippodamus, discussing that planning should comprise political, social and economic considerations and land allocation based on these premises (Burns, 1976), and through utopias (e.g. by *Utopia* by Thomas More and *City of the Sun* by Tommaso Campanella). Foucault discusses that every political debate in the 18th century onwards included also the discussions on urbanism, architecture and facilities of common life (Foucault, 1976 in Faubion, 1994). Haussmann’s Paris plan is amongst the well-known examples.

Recently, Jensen and Richardson’s analysis of Bangkok Sky Train (BST) has opened further areas to discussion as mentioned in Chapter 7 (Jensen, 2007; Richardson and Jensen, 2008). The BST creates layers of cities, overlapping but fragmented: “BST reproduces urban segregation” (ibid. 24). In another study, Richardson and Jensen (2008) explored that the Sky Train is more than a transport system but it also is an icon of Bangkok for becoming a part of the modern world and a symbol of Westernisation. For the citizens of Bangkok, a train ticket to BST is “a passport to the world above”, to the “exclusive and elevated urban realm” (ibid. 226). Yet, the Sky Train is a system that

separates different socio-economic groups with different capabilities from each other. Therefore, Bangkok Sky Train can be regarded as a tool of power embedded in urban planning and politics.

Furthermore, in this chapter various forms of urban resistance are discussed and used in explaining the resistance against the Istanbul Metro extension on the Golden Horn and the closure of the Taksim Square where one of the main stations of the Metro is located in. Urban-based resistance has got a long history (Harvey, 2012). Since the French Revolution various cities around the world have witnessed urban movements criticising and resisting the unjust processes in urban environments. Harvey (2012) emphasises that the fact that urban movements have actually become global and the global issues find their reflections in various cities simultaneously (e.g. the demonstrations in 2003 against the war in Iraq).

These movements can be mobilised under the term 'right to the city': "a right to rebuild and re-create the city as a socialist body politic in a completely different image—one that eradicates poverty and social inequality, and one that heals the wounds of disastrous environmental degradation" (Harvey, 2012 pp. 138). The Istanbul Metro provides a narrative over the two cases, the Golden Horn Extension and the Taksim Square, on one's right to protect their historical urban environment, to decide on projects that transform the urban fabric and experience, and to shape their own living environment. Struggles and resistance find their narrative in the last section of this chapter.

Following the discussion above, it is crucial to investigate the roles of infrastructures in (re)structuring the socio-spatial practices and the role of politics in this restructuring. In this sense, Chapter 8 provides an approach to understanding the politics of the Istanbul Metro as well as its embedded socio-spatial meanings for the city, citizens, developers and policy makers. As mentioned earlier, four different themes have emerged

from interviews and the fieldwork, and they have been used to explain the socio-spatial and political meanings of the Istanbul Metro. Next sections are devoted to these discussions.

8.3 Power, planning and politics

This section aims to unpack the indirect impacts of the Metro that are related to the ways in which the Metro constructs the socio-political space in Istanbul. In the following section, the plan amendment process in Istanbul is investigated. Here, the main argument is that partial *improvements* in plans suggested by the various institutions of local and national government offer exclusive construction rights for specific areas and generate differential rent and that the Istanbul Metro has an indirect but an important role to play in this process. Second, the Istanbul Metro is evaluated for its role in accumulating economic and movement capital in areas where these plan amendments are made. This section also looks at the issue of movement capital in-depth, combining findings of Chapter 7 and expert interviews and discusses that the places the Metro connects may influence the user profile of the Metro. The fourth section discusses the use of the Metro as a platform by the politicians in order to enhance their political acceptability and the ways in which they vocalise their political presence over infrastructure development and investments.

8.3.1 Conflicts: Adopting the plan or adapting it

As discussed earlier, improvements on land such as improved infrastructure, increased accessibility and additional construction rights create Differential Rent II. The Istanbul Metro creates DR II not only directly, based on increased property prices, diversified business sectors and increased CBD activities around the stations as seen in Chapter 6, but also indirectly, as the Metro is used as an additional tool to increase the attractiveness of building blocks and single plots. Planning decisions given by the Istanbul Municipal Council are important determinants of this process and are evaluated in this section. Three examples of residential and commercial buildings are used to explain this process.

After the opening of the Istanbul Metro in September 2000, surroundings of its stations have become attractive areas for investment. Although a number of shopping malls opened within close proximity to the Büyükdere axis regardless of the Metro connection before the Metro was built, some investments have been made considering this advantage (Figure 8.1). Metrocity, a shopping mall, office and residence complex comprised of three buildings with 24-26 floors, opened in 2003 at the Levent Metro station. Later on in 2005, Cevahir Shopping Mall, the biggest shopping mall in Europe and the second biggest in the world (in 2007) opened at the Şişli/Mecidiyeköy station. In 2006, Istanbul gained an extraordinary building structured like a canyon, comprised of four floors of shopping mall and separate buildings for offices and flats. Kanyon combined the features of street-shopping and shopping in a mall with its peculiar design (Kanyon AVM, 2011). All three buildings have direct access to the Metro stations and passengers can access the shopping malls without going outside.

In a personal interview with a real estate developer (2011) it has been mentioned that investors see the metro link to the shopping malls as an advantage, likewise, customers prefer shopping malls with connection to the Metro. Therefore, it is possible to state that the Metro creates additional urban rent by offering direct access to and from the shopping malls. Recent developments such as the Diamond of Istanbul, Dubai Towers, Trump Towers, Zorlu Center and other residential and office buildings are shown in Figure 8.1. These projects have been subject to legal actions as a result of the ways in which they were authorised by the Municipal Assembly despite not being a part of the local development plans. As a result of exclusive construction rights given to these plots, values increase and the economic gain for the investors of these buildings becomes larger compared to the other investors in the area. Therefore, inequalities occur. The following paragraphs discuss the structure of the process of the generation of differential rent and agencies involved in this process.



Figure 8.1 Stars point out the residential and commercial developments that the Chamber of Urban Planners has appealed to the Administrative Court about. Numbers mark the shopping malls/residential and office complexes that have direct connections to the Metro stations. 1: Cevahir Shopping Mall; 2: Astoria; 3: Metrocity; 4: Kanyon

Having stated the importance of the connection to the Istanbul Metro for developers, it is crucial to assess this issue from the standpoint of decision-makers. As briefly discussed in Chapter 4, even though the planning process in Istanbul follows a formal path that consists of various stages of urban planning, the final products, i.e. the master plans, are diverted from their aims and objectives due to interventions from

national and local authorities. Therefore, the knowledge produced and shared by academics, planners, decision-makers and other stake-holders in the process of preparing master plans is disregarded in order to implement new decisions via plan amendments, changed construction rights and new urban design projects⁷¹. This section analyses the plan amendment process in order to define the *structure* and the *actors* taking part in the generation of the differential rent.

In a personal interview with one of the members of the Municipal Assembly (also a member of the opposition party) the plan amendment process has been discussed. Based on the interview, it can be stated that this process is very straightforward and includes eight steps from the proposal to the consultation and approval of the project (Figure 8.2). However, when the process is evaluated in depth, it is far more complicated and it involves various actors especially in cases where a decision on an individual plot may have effects at a larger scale such as in the construction of shopping malls and office buildings that affect transport, density and economic gain.

First of all, differential rent is generated in two ways in Istanbul and is based on the changes of the ownership of the land. Figure 8.3 demonstrates this structure and the actors involved in various steps of this process. The figure is based on personal interviews with the representative of the Chamber of Urban Planners and one of the members of the Municipal Assembly, decisions of the Municipal Assembly, court documents, national newspapers and non-academic journals on the Internet.

⁷¹ For instance, 2009 Master Plan of Istanbul, a comprehensive study based on four years of data collection, analysis and a wide spectrum of expertise, proposes polycentric development for Istanbul in the East-West direction. However, soon after the plan was published, three major projects were suggested by the Prime Minister himself prior to the National Elections. These projects are; Third Road Bridge over the Bosphorus at the Northern end of the city, a road tunnel connecting the city from south and a new 50m wide canal connecting south to north. First two projects have been included in the latest Transport Master Plan (2012).

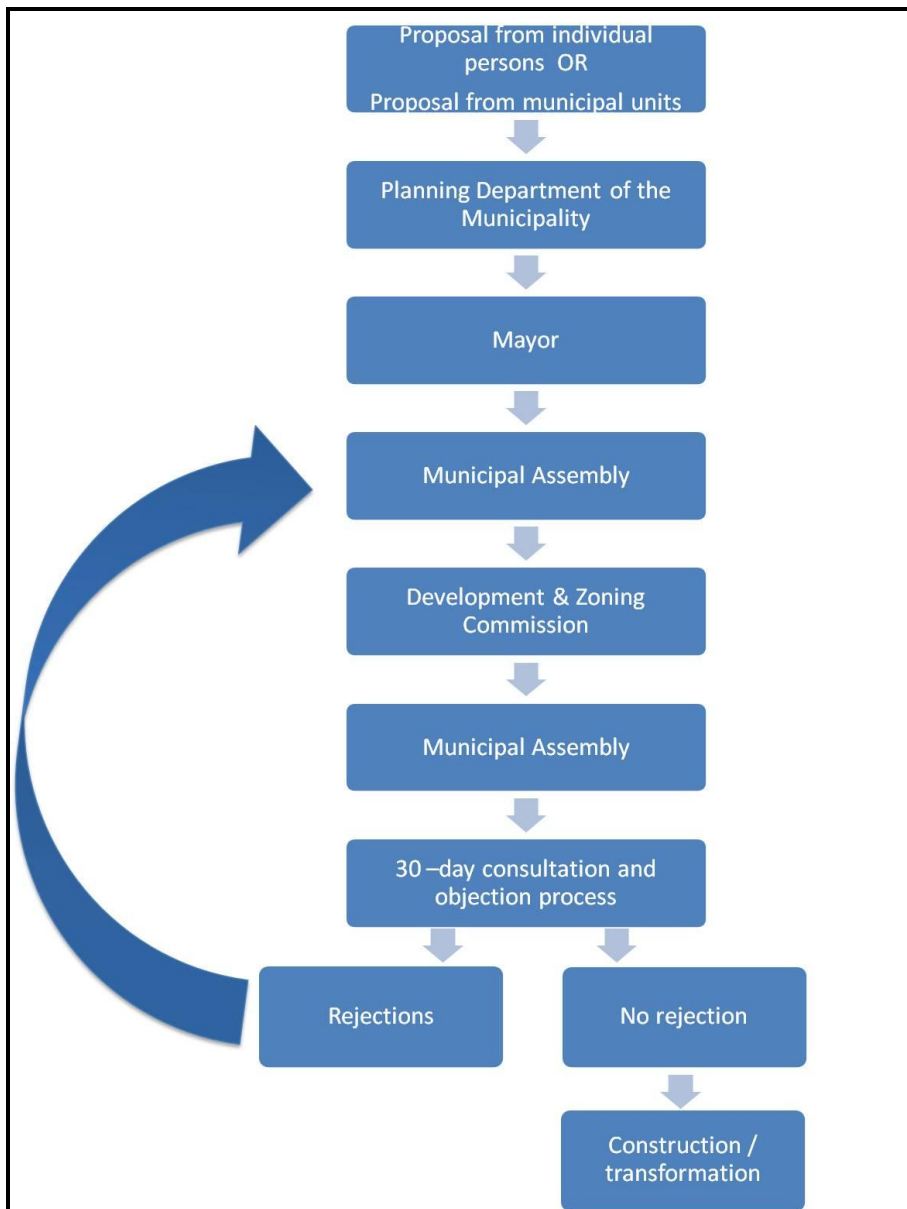


Figure 8.2 Plan amendment process

The first mechanism operates through the declaration of the publicly owned land or partially private land as a “transfer centre” or a “tourism and commerce area/centre” by the Istanbul Municipal Assembly. Following this, the assembly decides (based on the opinion of related municipal units) upon new construction rules on these transfer centres. According to the Istanbul Municipal Assembly’s decision number 1985 on Ayazağa Transfer Centre on 16.09.2010, a “transfer centre” may include:

2. Park and ride facilities, parking space, shopping mall and/or cultural centre and/or congress centre and/or education centre and/or hospital and/or tourism centre, office, apart-hotel (residence) functions.

And the plan should be implemented according to the avant (pre) project:

3. [...] Avant project will be prepared by the coordination between the Transport Planning Department and the interest groups (for spatial use, pedestrian-private and transit vehicles connectivity, parking capacity and entrances and exits, connection to the rail system, management plan for the building, parking space and protocol for the usage of the transfer centre) and will be implemented by the approval of the Greater Municipality of Istanbul.

The council defines the tourism and commerce centre as (taken from the amended plan notes of 1/5000 Sisli District Plan decided on 07.11.2010);

3. Tourism and commerce centre may include; hotels, business centres, residences, offices, shopping malls, cinema, theatre, entertainment centre, multi-storey shops, museum, exhibition hall, cultural centre, restaurant, cafes and financial institutions.

The council also suggests for this particular place that;

11. A connection to the metro station can be made.

The second mechanism operates as follows. First, the planning conditions on a publicly owned land are changed by the Municipal Assembly to a “tourism and commerce centre” or a “transfer centre”. Later on this land is sold in an auction to the highest bidder. The main difference between the two processes is the transformation of the ownership of the land from private to private or from public to private. However, in both cases the construction rights are increased before privatisation (if needed) in order to increase the value of the land before transactions. Therefore, the land is sold by the municipality or by a national institution (such as the Housing Administration and the General Directorate of Highways) after a rise is given to its value by the Municipal Assembly. Despite slight differences between two mechanisms the result is the same: generating differential rent over urban land.

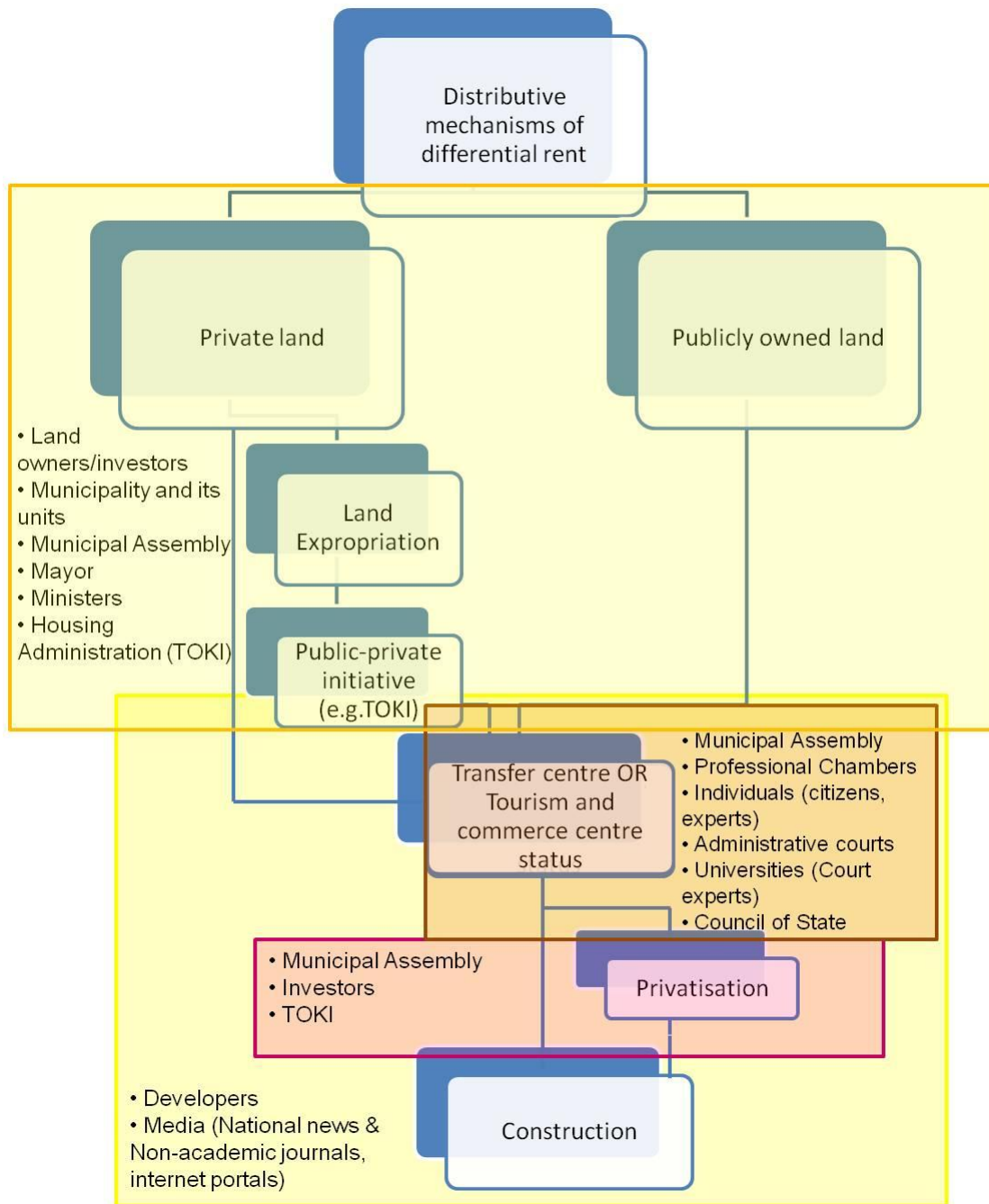


Figure 8.3 Distribution mechanisms of the differential rent on the Büyükdere Axis, the case of Metro (source: author's own elaboration)

Secondly, agency constitutes an important part of this process. Actors are involved at different stages in the process and make different contributions (Figure 8.3). While the Metropolitan Municipality, Municipal Assembly, the Mayor, Ministers of the ruling party and National government's units such as the Housing Administration (TOKI) have encouraging roles in the process in collaboration with developers and investors;

professional chambers and some individuals (experts, members of the council or the opposition party) may have opposing roles. After the decision is made, individuals or professional chambers may turn to the court in order to change the decisions. Administrative courts and court experts consulted by the court may or may not approve the decisions which may lead to either revisions of the decision by the Municipal Assembly or the case to be taken to a higher court, Council of State, by the Assembly.

In this sense, the plan amendment process looks like it is democratically structured. However, power relationships between different actors in the process are likely to influence the decision-making process.

In terms of democracy... it is based on pluralism (*not on consensus*). Decisions (*proposals*) are brought to the agenda of the Council⁷² based on the Mayor's or ruling party's will. Council decide to say yes or no to these decisions (*mentions that the ruling party would have the majority anyway, therefore, they would have the final word*). Meanwhile, people who are opposing to the decision can present their positive or negative views. They may mention that they do not agree with the decision. If they are in the *planning* commission, they can place declaratory clause to the decision; if they are not powerful enough in the commission they can address to the council in their party groups and reason their objections.... Have they got other alternatives? Well, they can take the decision to the court, object (*further*) or address to the media. That is how the system works. [...] In any case, if the Mayor does not want *the decision to be made*, he would not send it to the Council. Even if he does send it, he would ask the ruling party to object the proposal.

Politician, 2011 interview (words in italic, my notes)

It can be understood from this statement that the Mayor and therefore, the members of the Municipal Assembly from ruling party, are the most powerful actors in the decision making process. Thus, these groups are the drivers of the agenda on plan amendments. Yet, it is arguable to what extent the members of the Municipal Assembly engage with these planning decisions. Based on an observation of the decision making process in a

⁷² Municipal Assembly or City Council.

district municipality during the fieldwork, it is possible to state that the decisions are made in a very short time and without much discussion. The number of plan amendments in a year supports this argument as one of the interviewees mention.

Istanbul Metropolitan Municipality approves about 1000 plan amendments in a year. How does the Municipal Assembly work? Members of the Assembly redistribute large (*economic*) surplus from one place to another just by raising and dropping their hands and create an enormous rent in Istanbul. This rent is never taxed in Turkey, urban rent is not taxed.

Representative of the Chamber of Urban Planners, 2011 interview
(words in italic, my notes)

The above quote also suggests that as the urban rent generated through plan amendment processes is not taxed, it is not beneficial for the state, therefore, the public. Although the Municipality usually gains from the transaction of municipal land, it uses its initial gain by bringing physical infrastructure to those areas that accommodate new functions. There are cases in which the municipality negotiates with developers for new environment design or pedestrian crossings; however, it is not clear how much of the developers' gain is passed on to such projects concerning public good.

Moving on with the attitudes of the actors in the plan amendment process, it is also possible to discuss that, even though ministries do not have a say in this process, they show their support to the municipalities ruled by the same party. Moreover, as explained in Chapter 4, the Mass Housing Administration (TOKI) has the power to declare any area or a building plot as an urban transformation area and can purchase and sell land. Being a part of the national government, it has slightly more power than other investors.

Professional chambers, NGOs and individuals (citizens, academics, council members etc.) have the power to object the decisions by informing the Municipality and if they do not receive a positive response they can take these decisions to Administrative

Courts. However, legal cases *occasionally* result in their favour⁷³. Moreover, they can generate public awareness via the channels of the media and try to create a greater objection to these decisions. However, the media can also be used by the municipality to legitimise their decisions. Therefore, these groups are less likely to have a significant impact on these issues. Having said that, previous (e.g. the Park Hotel) and recent (e.g. the Transfer Centre planned in the plot abandoned by the Galatasaray Stadium, Figure 8.1) success stories exist.

Although the Istanbul Metro is not directly related to the decision making process in terms of plan amendments, it has an important part in the decision itself and a crucial role in the construction process. According to the Municipal Assembly's description of Transfer Centres and Tourism/Commercial Centres discussed above, direct connections to the Metro can be made from the plots that are given such status. Yet, many new developments that offer mixed uses with shopping malls, office buildings and residential areas mentioned earlier, have benefited from the existence of the Metro stations in the area by gaining excessive construction rights compared to the neighbouring plots. As it is discussed in the next section in the case of the Zorlu Holding, even the developments with no direct access to the Metro are seeking to establish these links. In this sense, the Istanbul Metro can be described as an important spatio-political tool in the generation of differential rent in Istanbul.

⁷³ For instance, in the case of plan amendments on the plot that Zorlu Centre has been built, Chambers of Urban Planners, Architects, Civil Engineers and Cartographers-Cadastral Engineers sued the Ministry of Public Works (currently, Ministry of Environment and Urban Planning), Istanbul Metropolitan Municipality and Prime Minister's Office Privatisation Administration as well as Zorlu Holding based on the decision being against the public good and planning principles. Even though decisions by the court were in favour of these chambers in 2008, the situation has turned in favour of investors and national and local authorities in 2009.

8.3.2 Accumulating capital

Based on the discussions in the previous section and in chapters 6 and 7, it is possible to comment on the Istanbul Metro's impacts on the accumulation of capital. Capital accumulation due to the Metro not only generates in terms of physical capital but also in terms of movement capital (Kauffman et. al, 2004) and is moderated by external forces such as local and national politics as well as the citizens and developers in Istanbul.

Although the findings of Chapter 6 about high investment levels around the Metro stations and differences in sectors compared to the rest of the Büyükdere Avenue were expected to some extent based on previous empirical evidence on the wider economic impacts of rail infrastructures, in this chapter the role of politics in accumulating capital around the Metro stations is also discussed. Changing planning and construction rights encourage connection to the Metro stations from tourism and commerce centres. Even though changes in building allowance and planning rules cannot be attributed solely to the Metro, the ways in which the Metro is used in the Municipal Assembly's decisions point to the importance of connection between the Metro and such functions.

Rights for higher densities are supplied under Transfer Centre status. What is done through these rights for high density?: Only allowing a connection to the Metro.

Especially, these rail systems (*Istanbul Metro, Kadikoy-Kartal Metro, Marmaray*) will create further consequences in Istanbul, maybe we will see that all shopping malls will move to the surroundings of these (*rail*) stations.

Representative of the Chamber of Urban Planners, 2011 interview
(words in italic, my notes)

Spatial inequalities arise as the Büyükdere Avenue and its surroundings become favourable investment areas as a result of combination of local and national politics and the existence of the Metro. The Istanbul Metro, with the help of a series of planning amendments, has fostered the functional changes in the area and has influenced the land prices.

You can see plan amendments in every station, the public buildings are sold at very high prices. Metro has affected and is affecting the functional space. There is no empty lot for sale in the area; the building density is very high; road traffic is tangled but the Metro has not reached its capacity yet.

Representative of the Chamber of Urban Planners, 2011 interview

As a consequence of high values captured through new connections made with the Metro stations, and yet the existence of limited empty lots in the area, new connections emerge between the Metro and Tourism/Commerce Centres even in cases where the plot is not within close proximity to the Metro stations. These situations occur as since investors consider such connection as an advantage (real estate developer, 2011 interview). For instance, based on an agreement between Zorlu Holding⁷⁴ and the Mayor of Istanbul, a pedestrian underground crossing between the Gayrettepe Metro station and the BRT stop in Zincirlikuyu is being built by the investors of Zorlu Centre (Figure 8.1). The 717m long pedestrian tunnel with moving walkways will not only connect these two stations with each other but also provide seamless transfer between these transport systems and the Zorlu Centre where shopping malls, office buildings and residences can be found. Even though such agreements are made between municipalities and developers in order to capture the 'public good' in exchange for exclusive construction rights given to the developers, private gain becomes more important than the public good as seen in this example since the pedestrian tunnel will also connect these transport modes with the Zorlu Centre. More importantly, since it is the local authority agreeing for such a connection to be made between a private investment and two major transport links, it is possible to state that the Municipality and the Municipal Assembly act as contractors.

⁷⁴ Zorlu Group purchased the land of the Directorate of Highways after the plans for this plot were changed to include tourism and commercial function. Zorlu Centre is being built on this plot.

In terms of transport and urban planning, the role of Transfer Centres in transport network requires greater attention. In 2009, Istanbul Metropolitan Municipality had sixty-nine Transfer Centres planned for the entire city (IBB, 2009b) and fifty-nine of these were included in the 2011 Transport Master Plan (IBB, 2011a). The location and number of these centres bring up questions on whether they are actually needed and if so, whether the construction rights given to these areas will shift the demand in the transport system. More importantly, the question of whether these centres are planned in order to facilitate the transport network still remains as discussions with experts demonstrate.

In a modern city, you cannot have transfer centres everywhere. Here *(in Istanbul)*, since transfer centre means giving exclusive construction rights, it is a preferred function over shopping malls. In terms of function, transfer centre status is preferred because it brings mixed-uses. For instance, there are 5-6 transfer centres only in Mecidiyeköy. [...] In a way, it is a nice thing *(idea)* as it creates a public function with public uses in the ground floor and *(private)* ownership *(through construction rights)* in the upper floors, but this situation is gone out of control.

Representative of the Chamber of Urban Planners, 2011 interview
(words in italic, my notes)

In terms of movement capital and the accumulation of it, the Istanbul Metro opens up important debates. According to Kauffman et al. (2004), who borrows the term from Baumann (2000) and expands it; motility can be seen as a form of capital different from economic, cultural and social capital in a way that it refers to vertical and horizontal dimensions of social position. Motility, as Kaufmann et al. (2004) discuss, differ from social and spatial mobility and becomes a notion that needs to be evaluated within local and geopolitical contexts. Despite being a local project, the Istanbul Metro should also be considered within this context defined by Kaufmann et al. (2004) since it is not only related to social and spatial issues defined in the spatial context it is in but also related to politics; to power relationships between local and national authorities and developers, citizens, NGOs, professional chambers and other actors.

Moreover, the term motility refers to the capacity to be mobile, therefore, relates to social inequalities. Furthermore, it relates to spatial inequalities, since being mobile also means moving in space whether it is a physical space, network space or a cognitive space. As it has been discussed in Chapters 6 and 7, the Istanbul Metro is likely to create socio-spatial inequalities in physical space. It provides connectivity with places such as the CBD, shopping quarters and malls, a number of university campuses and entertainment places. However, the line has poor connectivity with the rest of the transport network and other activity places such as the industrial areas, main hospitals and residential areas. Therefore, the accessibility benefits of the Metro are restricted to specific uses within a definitive geography. Additionally, the Metro stations are not entirely connected with the neighbourhoods they are situated in. As one of the interviewed experts suggests the stations were mainly planned in order to facilitate mobility for businesses supporting some of the arguments in Chapter 7.

Taksim-4Levent line (*the initial line*) targeted the business areas. Its links with its hinterland started to be planned in 2009 (*although the Metro opened in 2000*). However, city's (*Istanbul's*) dynamics have changed very fast. Residences and shopping malls were taken into consideration. On the contrary, the 'attachments' of each station (*neighbourhoods around the stations*) were not considered.

Urban Planner / Academic, 2011 interview (words in italic, my notes)

The above discussions suggest that the Istanbul Metro is a fixed capital (Harvey, 2005) that produces other fixed capitals such as shopping malls, residences, offices and transfer centres which in turn produce financial flows, labour mobility and movement capital for certain socio-economic groups. Yet, this system fails to produce equal opportunities for residents living within close proximity to the Metro stations as it is "clogged in both ends" (Interview 2011, Representative of the Chamber of Urban Planners). Therefore, it becomes a system that produces socio-economic and spatial inequalities.

8.3.3 Creating images and mobile practices

As discussed earlier in Chapter 7, the Istanbul Metro accommodates users from diverse socio-economic backgrounds. It not only carries employed, highly educated individuals but also groups with low education, students, housewives and the unemployed. Yet, their trip purposes differ. Although the Istanbul Metro creates spatial inequalities based on its relatively limited accessibility and being an infrastructure element that facilitates capital accumulation and circulation (Chapter 7), this varying user profile is regarded as a positive outcome also by the experts.

You see that in the Metro different classes come together. Every class use the Metro. People who have used buses once or twice in their lives take the Metro.

Representative of the Chamber of Urban Planners, 2011 interview

Although the Metro accommodates users from different backgrounds, its user volume has still not reached its capacity (Chapters 3 and 7). Furthermore, new businesses, shopping malls and residences opened in the last decade on the Metro line, changing urban functions and increased density have created a growing demand for private transport in this axis (Interview 2011, Transport Planner/Academics; Representative of the Chamber of Urban Planners). Therefore, one can discuss that through its interaction with land use and planning decisions, the Istanbul Metro has ‘indirectly’ changed the mobility patterns. Moreover, it has become a part of our imagination of the city in the 21st century:

When we ask the question of where the city is... we are always in cubicles: lift, car, building... When I ask you to show me an image defining the city, there is not much you can give. When we consider the Metro in this environment, even though it facilitates transport for people, it also adds to the process of “work, do shopping, be healthy and spend”. Apart from this, the city does not offer us anything. This becomes (*defines*) an imposed city life.

Urban Planner / Academic, 2011 interview (words in italic, my notes)

Although the Istanbul Metro can be evaluated within this dystopian image of the 21th century urban life it has also contributed to the city's modern image.

The Istanbul Metro is a modernist project. Metro is a project we have been longing for but had not been able to implement earlier. It is a project that was somehow constructed by the state (*local authority*) when they had the capital. That is why this modernist project has been attractive for all.

Representative of the Chamber of Urban Planners, 2011 interview
(words in italic, my notes)

Metro creates this image through the design and functioning of its stations that allow its passengers to have an experience similar to other modern subway systems around the world. The Mayor of Istanbul, Kadir Topbaş, emphasised the necessity of designing modern stations “like the examples in the West, with more aesthetic materials and better designs to make them look like furnitures that emotionally contribute to people (*the city*)” at the opening ceremony of the Maslak entrance of the Metro which resembles a spider made of glass and steel (IBB, 2011b, notes in italic).

In addition to the design of station entrances, the interior design is important to discuss not only because of their modern/western design but also for the ‘functioning’ of these stations that offer new ‘mobile practices’ for the users of the Metro. Since the opening of the Metro line, ticket officers have left their places to ticket machines, digital screens showing the next two trains and traffic situation in the city have been placed as well as various signs showing the direction of the platforms and warning passengers for safety and other reasons. Passengers started to get accustomed to these new ‘codes of travelling’ (Jensen, 2007; Jensen, 2009) that range from knowing where to stand on the platforms and on escalators to giving way to passengers that leave the carriages. Moreover, they have learned how and where to top up their travel cards by using the machines, keeping change of money with them and so on. However, such mobility

practices have taken a long time to be established by the passengers and it is still possible to observe first time users trying to learn how the system works.

Projects that would accelerate the process of getting used to the Metro have not been conducted. People learned about the system from here and there, by experiencing it and it has started to become a tradition based on other people's experiences. This transformation could be a lot quicker. ... For example, tourists use the system easier.... Turkish people ask more questions (*compared to tourists*).

Urban Planner / Academic, 2011 interview (words in italic, my notes)

In addition to this modernist image of the Metro based on its design, different uses of the stations have been introduced by the Municipality. Temporary exhibitions have been held in designated spaces of the main stations such as Taksim. Newsstands, bakeries and coffee shops started to open in every station in order to serve commuters and other users. Recently, cash machines of different banks started to be placed in stations. Musicians started taking place in every Metro station similar to the other subways around the world. Moreover, a flash mob performance was held by an a-capella group within the Metro carriages⁷⁵.

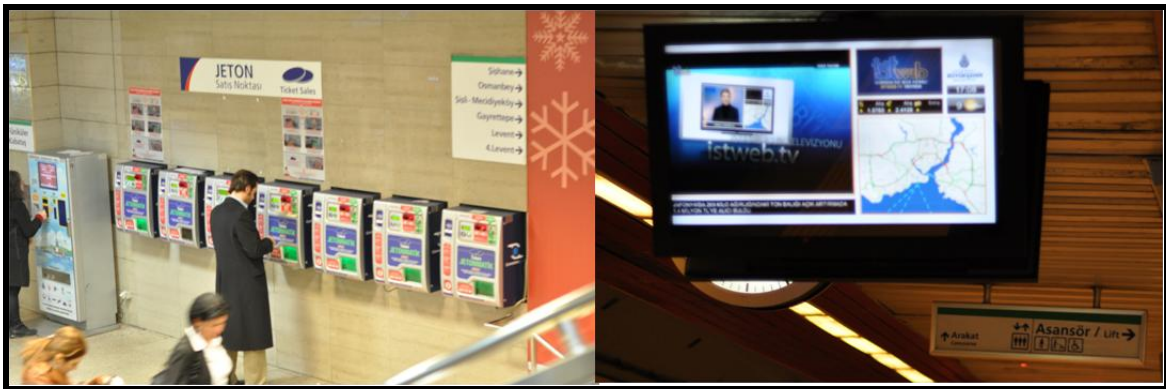


Figure 8.4 Left: Ticket and travel card top-up machines Right: The official web TV channel of the Istanbul Municipality showing congested roads, weather and other information
Photo: Eda Beyazit

⁷⁵ See the performance by BUMC Jazz Choir on 09.06.2011
<http://www.youtube.com/watch?v=lvjVH9zUMMI>

Discussing about the assessment of musicians in order to secure time slots at the Metro stations, the representative of the Chamber of Urban Planners mentions the high levels of control over this process by the Ulaşım A.Ş. and suggests that it might be this 'control' that makes the Metro a desirable transport mode in Istanbul (2011 Interview). As a result of terrorist attacks in various places in Istanbul in 2003, security measures have been increased in the city. In terms of the Metro, security cameras, guards and security checks at the entrances are some of these precautions taken. Moreover, filming and taking photos inside the stations are only allowed through special permissions. Therefore, it is possible to talk about Metro's image as a secure transport mode.

Finally, it can be discussed that the Istanbul Metro has been presented as an icon of progress. For a city that has had historical urban form shaping daily mobility practices and Western influence since mid-19th century (see Chapter 4), the Istanbul Metro has been a step forward to achieving the global city goal. Local and national authorities use this progressive image and present the Metro as a bridge between Eastern values and the Western ideal on progress and technological improvements, a bridge between the past and the future. In an advertisement film introducing Turkey prepared by the Turkish Ministry of Culture and Tourism, images of the past and the present are used in order to present the country as a blend of historical values and modern features (Kultur, 2011a, 2011b). In these films, the Istanbul Metro is used as one of the few icons that symbolises modernity along with the bridge over the Bosphorus Strait and skyscrapers.



Figure 8.5 Ottoman soldiers clashing with the metro carriage on the left. Azra Akin, Miss Turkey and World 2002, waiting for the metro at Taksim station (Source: www.kultur.gov.tr)

Design elements of the metro stations also reflect the image of the Metro as a bridge between the past and future, old and new, traditional and modern. Along the moving walkway inside the Taksim station there are several pictures demonstrating the history of Istanbul's transport system since the 19th century. These pictures are placed on the walls, separated by mirrors on which the Metro logo is put next to a writing saying "and now" emphasising the progress of the transport system in Istanbul (Figure 8.6).



Figure 8.6 The moving walkway at Taksim Station Photo: Eda Beyazit

8.3.4 Metro as a political platform: political will and resistance

Transport infrastructures are often seen as political tools that, in cases of success, may help people in power to be re-elected or in unsuccessful cases, may cause them to lose power. The rationality behind large-scale infrastructure projects, their effects on political

realm and their image as political symbols have been discussed in detail by many scholars in terms of different projects in various scales (Steinberg, 1987; Altshuler and Luberoff, 2003; Siemiatycki, 2005; 2006; Flyvbjerg, 2006; Van Der Westhuizen, 2008). In this sense, it would be shortsighted to assess the Istanbul Metro entirely as a political symbol⁷⁶.

The construction of the Istanbul Metro took six years and three Mayors to complete. The main purpose in constructing such an infrastructure was to provide a seamless transport between the old CBD and the new CBD in the north (Interview 2011, Transport Planner/Academic). As two mayors (1989-1998) could not maintain their place in the office for following terms due to various legal reasons, the Metro was completed by the Mayor Gürtüna. Yet, Gürtüna was not re-elected after the opening of the Metro. Therefore, it can be stated that the Metro did not provide a high political profile that would secure re-election for Gürtüna. However, in terms of the success of political parties, the Metro is likely to have generated positive effects as the following Mayor, Topbaş, was also a member of the same political party⁷⁷ and has been in power since 2004. Therefore, the political consistency was sustained. Yet, it is difficult to assess to what extent the Metro has had a role in this process. Nevertheless, the opening ceremony of the Metro was like a festival and all three mayors were invited and were given commemorative plaques for their efforts (Can, 2000).

In this section, the Istanbul Metro is evaluated not only as a political platform that serves politicians for improving their image but also in terms of urban resistance and rights to the city (see Chapter 2). It is suggested that in the case of the Istanbul Metro,

⁷⁶ In the interviews, there was a general consensus on the positive impacts of transport infrastructures and other major infrastructure projects on the image of politicians. However, the BRT line (Metrobus) was more pronounced than the Istanbul Metro as an example.

⁷⁷ Even though the name of the party was different due to the closure of the previous political party, the political views have remained the same.

political narrative is generated in three forms. While the first and second forms present different types of resistance at the urban scale, the third form is observed in the cases where the Metro is used as a tool for expressing political views, opposition or agreements. The first form is directly related to the construction of the Metro extension, while the second and third forms are indirectly related to the Metro.

The first type of resistance is observed in the case of the construction of the Golden Horn Metro Bridge (GHMB) crossing. The GHMB was a part of the original Metro network planned during the 1988 Transport Master Plan, connecting the Metro line with the Airport LRT line and the Marmaray crossing at Yenikapı Transfer Centre (Table 8.1; Figure 8.8). The first plans for the route of the Metro crossing were produced by the Istanbul Municipality as early as 1990s. However, the Committee for the Conservation of Cultural and Natural Heritage (KTVKK)⁷⁸ rejected any proposal until 2005. In 2001 the KTVKK proposed the Metro crossing to be planned on a motorway bridge towards the west of the Golden Horn⁷⁹. In 2004 the Committee proposed several criteria for the implementation of the bridge and agreed to evaluate new projects only if they met these criteria⁸⁰. In 2005 the KTVKK⁸¹ have approved the final proposal of the Metro Bridge⁸².

⁷⁸ KTVKK is a central body operating at the local level. Three members were appointed by the Ministry of Tourism and Culture and two by the Higher Education Institute from experts in archaeology, history of arts, architecture and urban planning until 2004. Since then until 2011 the Ministry of Tourism were given rights to appoint five members. In 2011 the law was altered again and led to all seven members to be appointed by the Ministry.

⁷⁹ KTVKK Decree number 12923, 25.06.2001

⁸⁰ KTVKK Decree number 16329, 06.07.2004

⁸¹ Before the decision was made the issue was carried to National News (Erdem, 2005). Here, changes that the AKP government did to the Conservation Law 2863 were discussed and mentioned that with these changes the Ministry of Culture and Tourism had the right to appoint five members. Moreover, it was discussed the objectivity of the Committee members was under threat as two new members of Istanbul No.1 Conservation Committee were previously involved in the Metro plan.

⁸² KTVKK Decree number 965, 06.07.2005

DATE	EVENT
1988	Istanbul Transport Master Plan
1990	First plans for the Golden Horn Metro Bridge
1990-2000	Rejections to the plans from the KTVKK
2001	KTVKK suggests the Bridge to be planned in the East of the Golden Horn and to be combined with a motorway crossing
2004	KTVKK suggests that a new project may be reassessed if 3D drawings and design concept are submitted
07.11.2004	Interview with the Mayor of Istanbul: Topbas mentions that he would like to design the Bridge
April 2005	Tunnels that will connect the Bridge with the rest of the subway network are completed
06.07.2005	KTVKK approves the plan and the design
09.04.2006	Architects protest the Mayor by organising a different ceremony for the Architect Sinan and not joining the Mayor
June 2006	UNESCO – WHC emphasise their concerns over the project and mention that they had not been consulted
11.04.2007	KTVKK asks for a design project for listed buildings
06.10.2008	The plan is put out to tender
14.11.2008	KTVKK notes that the construction may start once the design is submitted
18.12.2008	Agreement with the constructors
02.01.2009	Construction starts
14.06.2009	KTVKK asks for documentation of previously demolished listed buildings
07.01.2010	KTVKK approves excavations in other areas
June 2010	UNESCO sends another warning
01-04.04.2010	European Social Forum meets in Istanbul
01.07.2010	Istanbul S.O.S. publishes a public declaration
05.07.2010	Istanbul S.O.S. is founded
09.07.2010	“Istanbul is in Danger” campaign
21.07.2010	Meeting with activists and academics at Mimar Sinan Fine Arts University
25.07-03.08.2010	UNESCO approves the draft report on Istanbul’s Historical Areas and asks for the revision of the project
August 2010	Construction work on hold temporarily
October 2010	Istanbul S.O.S. and Atlas started Istanbul sightseeing tours with mention to projects
15.04.2011	State Party informed the UNESCO-WHC but no details were given
12.10.2011	“Another Bridge is possible” campaign started
06.03.2012	Istanbul S.O.S. organised another meeting with academics and delivered more than 4000 signatures to Istanbul Metropolitan Municipality
January 2012	Construction continues rapidly

Table 8.1 Timeline of the Golden Horn Metro Bridge development (Source: Author’s own elaboration)

In an interview with the Mayor of Istanbul published in November 2004 in a national newspaper, the Mayor mentioned his design of a Metro Bridge on the Golden

Horn (Figure 8.7; Hasol, 2010). Later on it was largely discussed in the media that the final proposal was prepared by Architect Hakan Kıran, a friend of the Mayor, and Kadir Topbaş, the Mayor himself. In an interview Kıran mentioned that he was the architect of the project but he and the Mayor decided on the design of the two pylons and on the location of the station in the middle of the Bridge (Erbil, 2011).

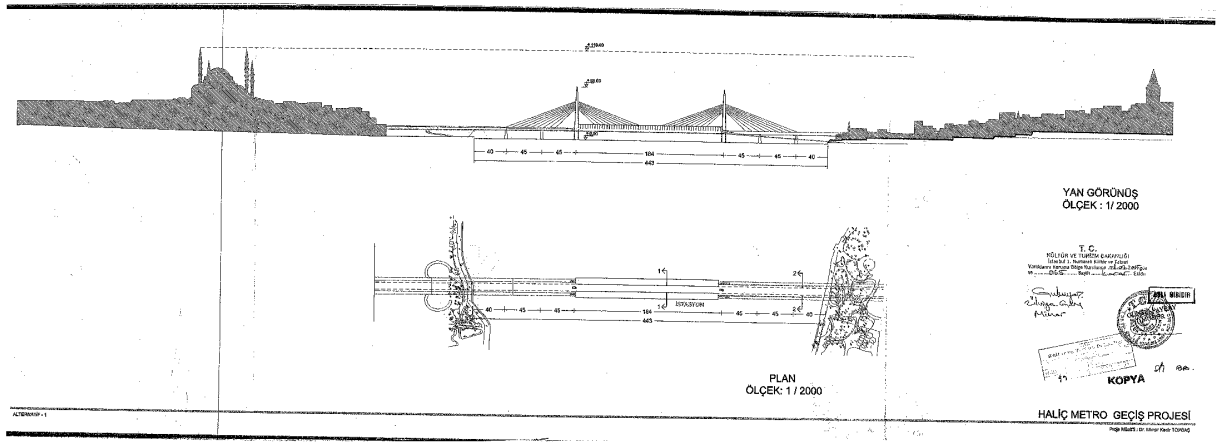


Figure 8.7 Design of the Golden Horn Metro Bridge by Mayor Kadir Topbaş

However, since UNESCO's World Heritage Committee (WHC)⁸³ was not consulted during this process, the WHC urgently requested the State Party (Turkey) to implement the recommendations of the joint World Heritage Centre/ICOMOS missions⁸⁴. UNESCO have repeated their requests between 2006 and 2010; yet, the Istanbul Metropolitan Municipality did not make any radical changes neither to the location of the bridge nor to its design. Furthermore, the construction of the Bridge started on 07.01.2009.

⁸³ Historical areas of Istanbul have been in the World Heritage List since 1985.

⁸⁴ UNESCO WHC delivers their concerns about the Bridge in the report of the Joint ICOMOS/UNESCO Expert Review (WHC, 2006). The Committee reported that "(t)he new bridge across the Golden Horn could have a negative impact on the setting of the Historic Peninsula, particularly the Süleymaniye Mosque, and should be the subject of international consultation before the design is finalised." Moreover, they have noted that "(t)he 27th session of the Committee requested a progress report on the impact of construction of the subway system on the archaeological deposits at the site, as part of a fuller report to be used by the Committee to consider the inscription of the property on the List of World Heritage in Danger". <http://reclaimistanbul.files.wordpress.com/2011/04/unescocomis356-2006.pdf> The report was discussed at the WHC meeting in Vilnius, Lithuania 8-16 July 2006.

Consequently, the WHC published a draft report in June 2010 stating that the Committee's views on the significant adverse effects of the Bridge were clear even though the Bridge's pylons were reduced from 65m to 55m. The Committee once more warned the State Party that Istanbul's Historical Peninsula may be downgraded to the World Heritage List in Danger from the World Heritage List if no action is taken (UNESCO, 2010).



Figure 8.8 Clockwise starting from left top corner: The location of the Bridge; Hakan Kiran's model of the Bridge; Istanbul S.O.S's illustration of the Bridge showing Suleymaniye Mosque when the Bridge is completed; part of Istanbul's silhouette, from Topkapi Palace and Hagia Sofia on the left to Suleymaniye Mosque on the right. Photo: Eda Beyazit

Even though there has been criticism of the Bridge from academics and professional chambers before summer 2010, more organised resistance started after UNESCO's warning during the European Social Forum which was held in Istanbul on 1-4 July 2010. During these meetings a platform specialising in historical and natural conservation issues in Istanbul was established along with other urban movements that focus on a range of issues. Istanbul S.O.S. started a petition called "Istanbul is in Danger" both in Turkish and in English. Moreover, it has done demonstrations, sightseeing tours

and meetings and finally delivered over 4000 signed petitions to the Metropolitan Municipality.

Meanwhile, in July 2010 the UNESCO approved the draft decision of the WHC (2010) and warned the authorities for the possible inscription of historical areas on the List of World Heritage in Danger in 2011. Yet, a similar statement has been made by the WHC in 2011. In 2012, the WHC reported that “as construction work has progressed, no further structural changes are possible” and the Bridge “will have an overall negative impact on the Outstanding Universal Value of the property” (WHC, 2012).

Despite severe criticism from professionals, academics, UNESCO, ICOMOS, NGOs and some citizens, the Metro Bridge construction continues rapidly (Figure 8.9). The Golden Horn Metro Bridge has created an important political platform where rights to the city have been discussed in terms of people’s right to decide on their living space and their right to participate in the decision making process. Table 8.2 evaluates the position of the actors as well as their actions during this process. Although Istanbul’s rail network will largely benefit from such a connection between the Istanbul Metro and the Marmaray, this process has shown that historical and natural values of Istanbul are of more importance than accessibility for an important part of the society.

AGENCY	ACTION	POSITION
Ministry of Culture and Tourism	Asking KTVKK for revision of their decision	Advisory Neutral-against
UNESCO	Writing reports; sending warnings to the Municipality and the Ministry	Advisory Against
ICOMOS	Joint reports with UNESCO	Advisory Against
Mayor	Advocating and Designing the project	For Encouraging
Architect	Designing the project; advocating the project and the Mayor	For Encouraging
Municipal Assembly	Plan amendments	For
Chambers of Architects and Ch. of Planners	Suing the Municipal Assembly; Offering professional view to KTVKK	Against
KTVKK	Approving plans; asking for revisions	Shifts from against to <i>for</i> but also has an advisory role
Academics	Declarations; petitions; authoring non-academic journal papers and newspaper columns	Against
NGOs, Platforms	Declarations; petitions; demonstrations	Against Proactive
Media	Reports; articles; news	Neutral Against For
Shopkeepers	Mentioning their nuisance	Against
Public	Supporting petitions or supporting the project	Against For

Table 8.2 Actors and their position in the process of the construction of the Golden Horn Metro Bridge⁸⁵

⁸⁵ Please note that in February 2013 some of the Cabinet Members were re-appointed by the PM and the Minister of Culture and Tourism was released from his duties. He has been replaced by Ömer Çelik who is known to approve PM's proposals. Therefore, KTVKK is expected to approve more plan amendments suggested by the Istanbul Municipality.



Figure 8.9 Picture showing the construction of the GHMB Photo: Eda Beyazit

The second form of resistance related to the Istanbul Metro is based on the deteriorating accessibility of the Metro due to Taksim pedestrianisation project⁸⁶. The project has had tremendous impacts on pedestrian accessibility to areas within close

⁸⁶ Taksim pedestrianisation project was a part of the 61st State programme that was introduced on 08.07.2011 as a part of AKP's election strategy (*Taraf*, 2012). The plan was declared on 22.11.2011 and the construction started a year later on 31.10.2012. Meanwhile, Istanbul N.II Conservation Council (KTVKK) rejected the construction of four tunnels out of five and allowed one of them to be constructed (Erbil, 2012). However, the construction continues in various sections of the area. During this period, academics, professional chambers, activists, shop owners and citizens have emphasised their objections to the plan. Academics sent their comments to the KTVKK on 03.02.2012 and the Taksim Platform, which has been formed by the actors listed above, have done demonstrations and meetings in Taksim Gezi Park. Along with other NGOs, professional chambers, neighbourhood associations and political parties they have founded Taksim Solidarity (15.02.2012) and delivered 50.000 signatures against the project on 18.12.2012 to the KTVKK. On 17.01.2013 the KTVKK rejected the reconstruction of the army barracks on the Taksim Park as a part of the project, however, mentioned that they would reconsider a different design for the area. Yet, the Prime Minister Erdoğan recently stated that he would "reject the rejection" and declared that the army barracks would not only become a culture centre as the Mayor of Istanbul promises but also would accommodate a shopping mall, residence area and a hotel (*Cumhuriyet*, 2012). As a response the Taksim Solidarity and Taksim Gezi Park Beautification Association organised a day-long festival at the Gezi Park.

proximity to Taksim Square, where one of busiest stations of the Istanbul Metro is located⁸⁷. Taksim pedestrianisation project includes the traffic to be taken underground with five road tunnels and construction of a shopping mall/residence/hotel in Taksim Gezi (*promenade*) Park⁸⁸. Within one month of the tunnel construction, the lifts connecting the square to the Metro for the accessibility of disabled people were closed. Istanbul Metropolitan Municipality placed a sign on the 12th of November apologising for any inconvenience, however, did not suggest an alternative route for this closure which might last for several months (Figure 8.10). A petition was started by a disabled citizen and by the 26th of December 2722 signatures were delivered to the Istanbul Metropolitan Municipality (*Bianet*, 2012). Yet, no suggestions have been developed since then.



Figure 8.10 Disabled access of the Taksim Station has been closed. (*En Son Haber*, 2012; İnce, 2012).

Accessibility of Metro stations in Taksim Square has been corrupted not only for the disabled but also for other pedestrians. The square has been surrounded by temporary separators, building sheds and the police to make sure that people (and the protestors) do

⁸⁷ According to the data obtained from Ulaşım A.Ş., Taksim station is the second most used station after Şişli.

⁸⁸ Taksim Park (Gezi Parkı) was designed in 1939-1942 by Architect Henri Prost as a part of the Istanbul Master Plan. The Park replaced the old, already half demolished army barracks which were no longer in use. Moreover, it was designed in order to allow pedestrian circulation from İstiklal Street and Taksim Square where various celebrations, demonstrations and commemorations are held. In 2012 hundreds of thousands met in Taksim Square for the 1st of May celebrations.

not enter the construction site. Pedestrians have been forced to walk on busy roads in between moving cars and buses (Figure 8.11).

Moreover, plans for reconstructing former army barracks to accommodate a multi-functional centre (cultural centre, shopping mall, services, residents and hotel) raise questions on the production of rent over urban public space. Therefore, the critique of the Taksim Pedestrianisation Project has been on a range of issues: from securing democratic rights to decision making; rights to maintain squares, parks and the environment as natural and cultural heritage; dictation of urban space with top-down policies; the production of rent through the consumption of public space; rights to use the public space freely; and being able to access places freely.



Figure 8.11 Pedestrians are forced to walk along the construction site with very little direction given to them Photo: Eda Beyazıt

In this sense, the resistance finds its form not only through meetings and demonstrations but also through street art, stickers placed on temporary walls and through social media. In Figure 8.12 it is possible to read a sprayed writing saying “RANTİSTANBUL” (Rent Istanbul) which points out to the differential rent that will be produced by local and national governments via the transformation of Taksim Park from a public commodity to a semi-public/private commodity to be sold to investors. Moreover, the poster on top of that writing can be read as “Yayalar için mecburi son” (“mandatory end for pedestrians”) which rhymes with “Yayalar için mecburi yön” (“mandatory path/direction for pedestrians”), a sign that has been placed by the Municipality after the closure of the Square. All in all, it can be stated that, the second form of resistance generates from the discourses of control of public space, accessibility of public space and commodification of public space.



Figure 8.12 Resistance finds its form as street art: RANTİSTANBUL / Pedestrians walking along busy roads as the square has been closed for construction Photo: Eda Beyazıt

As mentioned briefly, the third form of political narrative related to the Metro is mainly associated with politics at the national level. This narrative is discussed here over two caricatures: first one supporting the government, second one criticising it. At the opening ceremony of the Kadıköy-Kartal Metro line on the Asian side of Istanbul, the PM Erdogan addressed the press, “In the 10th Year March⁸⁹ it says ‘We have woven motherland all around with railways’. What have you woven? It is us weaving Turkey with railways” (Milliyet, 17.08.2012). After this statement the PM was largely criticised by the opposition, republicans and some leftists, however, some praised his argument and used it for criticising the opposition⁹⁰. Salih Memecan, a caricaturist at a right-wing newspaper, caricatured AKP, the ruling party, opening the Metro line and the opposition party chanting the 10th Year March (Figure 8.13; Memecan, 2012).



Figure 8.13 Political support through caricatures, Memecan, 2012

⁸⁹ 10th Year March (10.Yıl Marşı, 1933) celebrates the 10th anniversary of Turkish Republic and mentions important achievements over the first ten years, one of which was nationalising foreign-owned railways and building more lines to increase accessibility of cities and towns. As discussed in Chapter 4, railway network doubled between 1923-1950 while only 1000km of railways were added to the network between 1950 and 2004. The march also highlights the glories of this young nation that is based on the ideal of progress and modernisation. Moreover, it praises the founder of the Republic, Kemal Ataturk whom has been largely criticised by conservative and radical Islamic groups in Turkey due to his policies towards secularism and equal rights for men and women.

⁹⁰ Opposition party is CHP (Republican People's Party) which is the first political party of the Turkish Republic, also established by Ataturk.

Cem Dinlenmiş, caricaturist at Penguen, presented a different approach to understanding politics and discussing them over transport infrastructure investments. Within ten days of Memecan's caricature, Dinlenmiş published a cognitive map of the rail transport network in Istanbul (Figure 8.14, Dinlenmiş, 2012). In his caricature, he used different lines and stations to express the social, economic and political issues in Turkey. For instance, the Istanbul Metro (blue line) was named as *Freedom of Press*, drawing attention to the recent capturing of journalists mainly due to their criticism of the government, and the stations were named as “*call to strike; punishment; auto sensor; sensor; sacking; suing; meeting with bosses; putting into jail; obedience; contented; psychological war and hatred with a note that Hatred is the terminal station, change here to go to Peace*”. These caricatures contribute to the ways in which politics is discussed in public space.

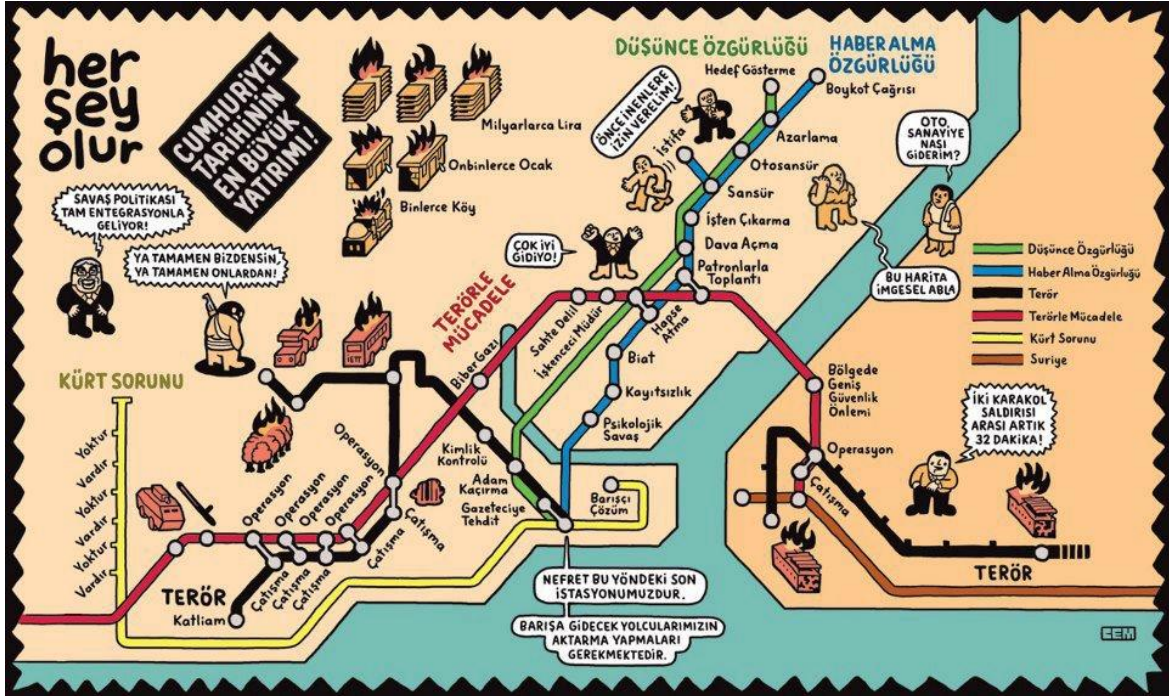


Figure 8.14 A cognitive map of the rail network in Istanbul. Dinlenmiş, 2012

8.4 Conclusion

This final empirical chapter adopts a political lens to understand the socio-economic implications of the Istanbul Metro. In order to develop a political perspective that favours socio-spatial equalities over uneven geographical development, it is important to examine uneven geographies of power. This chapter includes discussions on the power of politics in generating unbalanced spatial development preventing equal participation to decision making processes and disregarding planning decisions that are based on expertise and knowledge. Following an approach based on structure and agency analyses of various political processes, in this final chapter, it has been possible to complete the development of a narrative on socio-spatial inequalities related to the Istanbul Metro.

The discussions on the plan amendment process demonstrate that even though the Istanbul Metro is not the main concern in this process, the ways in which it is used by the Municipal Council makes it significant to the process in two ways. First, the Istanbul Metro creates the conditions for an area to become a Transfer Centre and helps the area gain additional construction rights. Second, it increases the value of the property that is constructed with a direct access to one of its stations. As a result of the Municipal Council's decisions, differential rent is generated in the city over the existence of the Istanbul Metro and distributed unevenly to certain groups in the society, allotting spaces based on which company or companies provide the highest tender.

Moreover, due to changing construction rights and its economic impacts discussed in Chapter 6, the Istanbul Metro fosters the accumulation of economic capital in areas within close proximity to its stations. As seen in Chapter 6, CBD-related businesses, ICS and service sectors have clustered around the Metro stations within the first ten years of the Metro. This chapter revealed the importance of access to Metro stations for investors as it makes the investment (e.g. shopping mall) preferable for customers. The Istanbul

Metro, therefore, facilitates the circulation of capital as well as the accumulation of it in certain areas.

Another critical finding of the chapter is that the Istanbul Metro has become the modern face of a metropolis that has historically been a bridge between the west and the east, north and south of the city. However, since the Istanbul Metro was long-awaited for so many years, it has become an important image not only for Istanbul but also for the country to an extent that it featured in the adverts of the Ministry of Culture and Tourism. Moreover, it has “modernised” the ways in which its users perform mobilities in that its users’ mobility practices are shaped by the new features added to the Metro system from time to time.

Last but not least, it has been possible to bring forward main political discourses on the Istanbul Metro from different perspectives which are believed to help to develop new political narratives of other transport infrastructure systems around the world. In this sense, the Istanbul Metro has not only been evaluated as a platform for politicians to share their success and to guarantee their re-election but also as a socio-political infrastructure upon which these narratives can be established.

Similar to the ways in which the voice of the opposition was “drowned out” in the case of the Delhi Metro (Siemiatycki, 2006 pp.287), resistance against the construction of the Metro Bridge was also disregarded. In transport blogs, protestors were labelled as anti-progress sympathisers even though they did not ask for the abolishment of the project but suggested the possibility of a different bridge design instead of the one with two 55 metre pylons, creating an eyesore. The Mayor, the architect of the project and even the PM accused protestors across the board of being against city improvement and development. The struggle over conservation of the historical image of the city was suppressed by the dominant political power. Just as the ways in which politics is performed varies, so does the use of the Istanbul Metro in the political arena. Some

examples have shown how politics can be praised or criticised by using the Metro (or other infrastructure). This chapter, therefore, succeeds in demonstrating the existence of geometries of power in planning, organising and policing the socio-spatial and political processes in cities using the example of the Istanbul Metro.

Chapter 9

Conclusion: Reducing socio-spatial inequalities in transport

9.1 Introduction

The main hypothesis of this dissertation is that socio-spatial processes produced by transport infrastructures are not distributed evenly in urban space and therefore, generate social, economic, spatial and political inequalities. In order to test this hypothesis and to understand in what ways and contexts these inequalities occur, the main research question on the distribution of the impacts of transport infrastructures has been unpacked to form five sub-questions at the beginning of this thesis. It would be useful to remind the reader of these questions before discussing the main concluding points in this final chapter:

1. What is the role of transport in generating socio-spatial injustices and what are the key issues related to the unjust applications of transport that the transport policy needs to tackle?
2. Is there a relationship between the socio-economic status of the residents in cities and their physical mobility levels in the urban space?
3. What are the in-direct economic benefits of transport infrastructures? To what extent, do they foster uneven economic growth and may be beneficial for specific socio-economic groups in the society?

4. Who are the users of transport infrastructures? Is it possible to discuss the existence of specific user-profiles for different modes of transport?
5. What are the socio-political meanings of transport infrastructures? In what ways can we discuss democratic rights to the city in terms of rights to transport and mobility? Is there a need for transport planning and policy to reformulate itself in order to include issues of inequalities in transport? If so, how can this objective be achieved?

The last four questions have been assessed in four empirical chapters (from 5 to 8 in the above order) at different scales in order to deal with the issues of causality and complexity; while the first set has been addressed in the literature review (Chapter 2). Transport itself provides a complex set of relationships, and when it is evaluated within the context of equalities, social, economic and spatial processes, these relationships become even more complicated and difficult to comprehend fully. Therefore, an extensive empirical work has been presented in this thesis and in each empirical chapter the complex relationship between transport infrastructure and socio-spatial equalities is evaluated from a different angle i.e. spatial, social, economic and political.

In this sense, empirical work has been useful not only for testing previously defined theories in the literature of transport and socio-spatial inequalities, but also for generating new arguments in this context. For instance, the findings of Chapter 7 on the mixed user profiles of the Metro demonstrate that unlike some transport systems that create socio-spatial fragmentation (e.g. Bangkok Sky Train), the Istanbul Metro accommodates users from almost all socio-economic groups. Yet, it generates other socio-spatial inequalities in different contexts. In terms of testing results of previous empirical work, this thesis has produced similarities with different studies. For instance, analysing women's mobility levels in Istanbul, Chapter 5 argued that women make shorter trips than men unlike the developed countries (Turner and Grieco, 2000), however, employment is

an important factor as it is the women who are not in paid employment that make less and shorter trips than their employed counterparts and men. Furthermore, a relationship between level of education and journey length has been found similar to the findings of Sandow and Westin (2010) as well as it has been confirmed also for Istanbul that car owners spend longer time travelling (Lu and Pas, 1999). Last but not least, the Istanbul Metro has found to contribute to economic development to some extent but not in every aspect (e.g. employment).

Chapters 5 and 7 engage with the spatial and social processes created by transport infrastructures. In these chapters, the spatial distribution of transport infrastructures has been examined with reference to social, economic and demographic characteristics of the public which were then explained in relation to the existing transport element at different scales. Chapter 6 focused mainly on the economic processes that the Istanbul Metro generated and the co-benefits of this transport infrastructure and the distribution of these benefits have been elaborated. Finally, in Chapter 8 the socio-political processes related to the Istanbul Metro have been discussed.

Results have demonstrated that inequalities are even more diverse than expected in Istanbul. This is an important outcome in the context of inequalities in major cities. Although the findings on unequal mobilities in Istanbul were expected as they are inevitable in global cities as discussed in Chapter 2 (Sassen, 2001), the arguments made for the Metro in terms of sectoral transformation and business growth which are likely to have negative impacts on local businesses and unskilled labour (Chapter 6); and the accumulation and circulation of capital facilitated by the Metro as it carries both the producers and consumers of the system in the same physical space (Chapter 7) were unexpected findings and have proved the complexity of the relationship between transport and socio-spatial processes once more.

The purpose of this dissertation is to advance the understanding of social and spatial inequalities in transport in order to reformulate transport research, planning and policy. Moreover, it aims to establish a link between different scales and contexts that the inequalities emerge within. As discussed in Chapter 2, scale is important for the survival of politics as well as for the purposes of the capitalist system. From national to district borders, social and political control is maintained through all scales⁹¹. Spatial, economic and social inequalities are generated not only in a range of scales between global and the local but in changing and converging scales and contexts. Therefore, the issue of scale contributes largely to the debate on enhancing the understanding of inequalities in transport.

The main motivation for this thesis has been the growing number of unjust applications of urban planning and urban policy in Istanbul. Lack of public participation, forced relocation and favouring interests of some groups over others' are creating socio-spatial inequalities⁹².

⁹¹ In the case of Istanbul, changing district borders provides important evidence for the power of scale. For instance, in mid 1990s, exclusive construction rights were given for the construction of a skyscraper (known as Gökkafe where the Hotel Ritz Carlton is located). The district municipality, Beyoğlu, did not approve this decision as the area had a construction ban inherited from the Ottoman Empire. However, the border of the municipality was changed in one night from Beyoğlu to Şişli by an order from the Turkish PM, Mesut Yılmaz, and later on the plan was approved. This political intervention to the city's spatial and economic form can be seen as an important example to how scale matters not only in terms of the geographic scale but also in terms of the scale of politics that political power tries to establish their hegemony on different scales. Moreover, the scale of investment also comes forward as an important condition of political power. Recently, changes in district borders in Istanbul have been discussed widely as political parties try to increase their seats in the Parliament by trying to balance their elective geographies.

⁹² Furthermore, this thesis has been written in an era in Turkey when democratic rights are under threat, about a hundred journalists are in jail due to criticising the government; almost eight hundred university students are in jail (*Taraf*, 2012) mainly because of protesting the government in various events about their rights to free education and the dominance of the government on the

This final chapter draws together some concluding points and arguments this thesis has developed through the literature review and the four empirical chapters. It aims to highlight some key implications of the findings. In the following section, reflections on theory based on the empirical study are discussed. The third section of this chapter is devoted to the contributions of this research to the methods of assessing inequalities in transport. Following this, a discussion is made on how transport planning and policy can be reformulated in order to overcome issues of uneven geographical development. Finally, some suggestions are made for future research.

9.2 Restructuring socio-spatial discourses in transport research

The arguments in this thesis have been situated around the necessity to reformulate transport planning with the aim of a just distribution of the benefits of transport infrastructure investments. As discussed in the Literature Review (Chapter 2), research on social and spatial impacts of transport infrastructures has evolved in the last two decades to include discussions on equalities. Theories have been developed within disciplines ranging from sociology to geography, from transport to urban planning, economy and philosophy. Although there are examples of disciplines collaborating with each other such as the feminist geography and transport research carrying out the discussions on women and transport (Law, 1999) and transport research and sociology producing debates on mobilities (Urry, 2000) especially in Western Europe, such research can (and should) be extended to explain further the complex socio-spatial processes that are generated by transport systems and the inequalities related to them.

university management and education. It is an era in which urban space has become a giant socio-spatial platform of public and academic struggles, a platform of battles in order to (re)claim the rights to the city. Despite focusing on transport infrastructures and the socio-economic and spatial processes created by them, the positioning of this thesis has been very much influenced by these anti-democratic and unjust processes occurring in the country the case study is based in.

Moreover, a new approach to transport theory is needed to link the existing theories explaining transport inequalities in various disciplines. This approach includes unpacking the main research question by theme and forming sub-questions accordingly. Following this, literature on existing theories from different disciplines has been analysed and issues have been grouped thematically in order to answer these questions and develop a systematic approach to ex-post analysis of transport infrastructure investments in order to understand the inequalities emerging from them.

Such an approach has been developed in Chapter 2 where key issues on transport inequalities have been discussed as well as the gap between the mainstream theory on socio-spatial justice and transport research has been bridged. Chapter 2 has revealed the importance of applying an approach that is interdisciplinary and has demonstrated how the discussions in different disciplines on socio-spatial processes can be brought together in order to understand the uneven development that transport infrastructures generate. In this sense, geography, transport economy and planning, urban policy and planning, sociology and philosophy and other related disciplines all provide important sources.

Grounded within both the literature on transport geography and the literature on social justice, this thesis contributes to the theory of uneven geographical development by exploring the in-direct economic impacts of the Istanbul Metro generated by this system in specific areas (Chapter 6); second by investigating the issues of urban splintering resulting from the spatial distribution and the connectivity of the Metro line with the rest of the transport network (Chapter 7); and finally, by examining the socio-political processes that transport infrastructures generate and by consulting to the debates on space and power in order to understand the ways in which urban planning, democratic rights to the city and participation issues are handled in cities in terms of transport policy and planning (Chapter 8). Issues of social, economic and spatial inequalities and their relationship with the transport element, the Istanbul Metro, have also been discussed with reference to the

socio-spatial inequalities in Istanbul (Chapter 5). Therefore, the theory of uneven development has been elaborated in order to understand a range of inequalities that generate at different scales.

There are two themes that emerge from this research. *Horizontal* and *vertical socio-spatial inequalities* are proposed as two notions that lead us to a comprehensive understanding of uneven geographic development that transport infrastructures generate. These themes are not to be confused with horizontal and vertical equity developed by Levinson (2010) who defines these terms respectively as the equal distribution of gains and losses to individuals within same and different classes. Here, the discussion on horizontal and vertical socio-spatial inequalities focuses on processes and relationships between individuals and different socio-economic groups rather than focusing on the outcomes only. In this sense, this thesis also refers to the Capability Approach developed by Amartya Sen and Martha Nussbaum (Nussbaum and Sen, 1993; Sen, 1999a, 1999b; Nussbaum, 2000, 2006; Sen, 2009), an approach that is also believed to have influenced the mobility studies with its focus on processes and experiences rather than outcomes⁹³.

The term horizontal socio-spatial inequalities describes the relationships across a horizontal space and suggests that transport inequality occurs as a result of the spatial distribution of transport infrastructures and unequal access to these infrastructures by different socio-economic groups of the society. The latter argument, the vertical socio-spatial inequalities, has a more individualistic perspective suggesting further inequalities

⁹³ Although such a link is not clearly established in transport and mobility studies, Urry (2007) discusses the possible elaboration of this approach in understanding the freedom to mobility and discusses the freedom to drive. Likewise, different notions of the Capabilities Approach can be linked with various issues/themes in transport (Beyazit, 2011). However, there is a more general conceptual link between the mobilities research and the CA as they both value experiences (whether through a trip or through life) that change from one person to another and that are related to one's capabilities.

occur within those socio-economic groups, even within the same household, at the individual scale. The two concepts are interwoven and exist in the case of Istanbul either separately or together.

Horizontal socio-spatial inequalities may exist in different contexts and at various scales from rural to urban and from local to global. These inequalities also consist of a range of issues from economic organisation of cities and regions to accessibility of different social groups to various services, and from the social dynamics within cities and regions to the distribution of environmental problems in urban space. Such an argument is partially based on the outcomes of Chapter 5 where socio-spatial inequalities have been examined at the macro scale in relation to physical mobility in Istanbul. Unlike the suggestions of previous empirical work on socio-spatial inequalities and transport in Istanbul (Guvenc, 2009), where the major roads were demonstrated to act as barriers separating the spatial distribution of different socio-economic groups and therefore, generating spatial fragmentation, this thesis has argued that transport infrastructures are not necessarily the sole barriers generating spatial separation between different socio-economic groups; cities generate such horizontal socio-spatial inequalities in various ways.

A similar statement can be made for horizontal inequalities generating in local scales, especially in terms of accessibility of different transport infrastructures. Situating the discussion within the social exclusion and transport poverty debate, the findings of this thesis support the arguments of Church and Frost (2000) on various categories of social exclusion, especially on geographical exclusion in London. However, rather than investigating the city as a whole or another spatial unit, in Chapter 7, such a conclusion has been reached by looking at the accessibility of a single transport mode, the Istanbul Metro line, and by understanding the actual use of this line rather than potential accessibility. The actual use of the Istanbul Metro was defined by mapping the point of origin of the

Metro users instead of taking a defined radius around the stations. It has been found that the accessibility benefits of the Metro are limited to a specific geography around the Metro stations. Hence, it is possible to discuss the existence of horizontal socio-spatial inequalities in terms of accessibility of transport networks. Yet, it has also been observed that the extent of this geographical area changes according to different trip purposes. While the Metro serves a slightly larger urban area for work-related trips, it serves to a smaller area for other purposes. Therefore, the accessibility benefits of the Metro are enjoyed across a larger horizontal space by the working population.

Another context that the horizontal socio-spatial inequalities emerge within is the relationship between spatial impacts of economic processes and their interaction with transport infrastructures. Transport infrastructure's impacts on local and regional economy have been widely discussed in Chapter 6. Previous empirical studies have demonstrated that transport infrastructure projects are important elements in the generation of agglomeration economies, network economies, labour markets and increased land rent (Banister and Berechman, 2001; OECD, 2008; Vickerman, 2008; Graham, 2008; Graham and Van Dender, 2009; Chatman and Noland, 2011; Mejia-Dorantes et al., 2012; Hensher et al., 2012; Cervero and Landis, 1997; Cervero and Duncan, 2001; Bowes and Ihlanfeldt, 2001; Cervero, 2003; Debrezion et al., 2007; Cervero and Kang, 2011).

Such elaborations are yet to be developed further to include the inequalities produced as a part of these processes. Such an understanding has been an important part of this thesis. In Chapter 6, the case of the Istanbul Metro has been investigated for its possible wider economic benefits, and these benefits are assessed with regard to the spatial inequalities. The Istanbul Metro facilitates sectoral clustering as well as capital accumulation around its stations. For instance, the analysis has shown that the areas with a Metro connection for the last ten years have developed CBD-related activities and retail,

while areas with recent connections to the Metro line have maintained their industrial characteristics despite being on the same arterial, Büyükdere Avenue, the main motorway connection to the CBD.

Despite its likelihood of generating positive results for the economic development in Istanbul, such accumulation is also likely to create exclusion of employees and local businesses from the area. Since the number of employees and the number of businesses have not grown significantly in the Metro-served areas, and on the contrary, the total investment has grown and sectoral changes have occurred, it is likely that the employment and business structure may be shifting from low profile – low investment to high profile jobs with higher investment. This process is likely to generate horizontal inequalities by driving off local businesses and unskilled labour from the area. The analysis of user profiles in Chapter 7 has shown the possibility of such a process as it is mainly highly educated, middle age groups travelling for work-related purposes by the Metro. Such an elaboration of transport's economic impacts within an approach that puts socio-economic and spatial inequalities forward is important for the development and future of transport research. Moreover, it emphasises the need for being cautious in assessing the wider economic benefits of transport infrastructures and suggests that negative impacts of transport systems on local economies should also be included in these assessments.

The second group of inequalities, vertical socio-spatial inequalities, are mainly based on the power relationships between individuals (between man and woman, educated and illiterate, rich, poor and disabled), political groups, citizens and public authorities in a society. Turning to Bauman's (2000) formulation of the modern, light and instantaneous liquidity, and using his statement, "people who move and act faster are the people who rule" (pp. 119), we can suggest that people and groups who are dominant in daily relationships and decision-making processes are the people who benefit the most from the networked systems such as the transport system. Processes creating such

relationships have been discussed in four empirical chapters that focus on different contexts and scales.

Power based on gender, ethnicity, income, employment, age and disability determine people's relationship with transport. In the case of Istanbul, the expectation was to reach a conclusion that the income level of individuals is one of the main determinants of trip frequency and travel time. However, unexpectedly, in Chapter 5 it has been found that the main determinants of travel time and frequency happen to be gender and education in the case of Istanbul. The dominant mobile groups are individuals with high education levels and mainly men and the employed. Thus, it can be stated that gender and education are important determinants of mobility in Istanbul which is a crucial input in advancing the understanding of social exclusion based on transport in a metropolitan city like Istanbul

Similarly, in the case of the Istanbul Metro, in Chapter 7, vertical socio-spatial inequalities have been found to exist in terms of the use of the Istanbul Metro between men and women, individuals with high and low education profiles, working population and the unemployed. It has been found that while employed men and, to some extent, employed women, highly educated individuals and middle age groups use the Metro for HBW trips, those who are not in paid employment, individuals with low education profiles, housewives and the retired use the Metro for HBO purposes. Although the Metro accommodates different user profiles there are inequalities based on different uses of the Metro.

So far, horizontal and vertical socio-spatial inequalities have been evaluated separately. However, these two types of inequalities may exist together in some cases. When the user profile of the Metro was investigated it was found that the differences based on socio-economic status in terms of trip purposes for using the Metro demonstrate that despite bringing different socio-economic groups together, the Istanbul Metro

generates the accumulation and flow of capital in the urban space via the flow of two socio-economic groups mentioned above, having two different purposes: to produce the capital and to consume it. Likewise, the analysis of the politics of planning and decision making processes of the Istanbul Metro investigated in Chapter 8, has revealed that the decision making process may create vertical uneven relationships, as it is a hierarchical process based on political and personal relationships, and in most cases it lacks participation of different groups. However, the decision making process also creates uneven horizontal development especially during the planning and the implementation stages. In the case of the Istanbul Metro, a number of high-rise developments took place around the stations regardless of the decisions of the previous master plans and solely based on municipal council's decisions. Therefore, it is possible to talk about situations where horizontal and vertical socio-spatial inequalities take place together.

The analyses on Istanbul's transport infrastructure system and the ways in which it contributes to the generation of socio-spatial inequalities, and the various inequalities found in the case of the Istanbul Metro have all revealed the existence of multiple inequalities in the city in different contexts, contributing to the scholarly understanding of the wider economic impacts of transport, social exclusion, distributive impacts of transport infrastructures and mobilities.

In this sense, the empirical work has provided important evidence on the socio-spatial inequalities that the transport infrastructure generates in Istanbul and helped both testing the existing theories and developing new narratives of socio-spatial inequalities based on transport. Moreover, the suggestion on discussing socio-spatial inequalities in different dimensions i.e. in horizontal and vertical social space provides an important contribution to the existing theories.

To establish a new narrative of socio-spatial inequalities in transport research, this thesis has to a considerable extent relied on theories of social and spatial justice. The

advantage of relying on those theories is that the historical development in scholarly discussions on justice could be taken into consideration. There has been some discussion in the literature on the difference of justice and equality (Sampson, 1975; Arneson, 2008), but there is ambiguity regarding the differences between these two terms. There are cases where justice and equality are used interchangeably (UN, 2006) or inequalities are described, not explicitly, as expressions of justice (Soja, 2010). Yet, based on the discussions in this thesis it is possible to argue that there is in fact a degree of difference between these two terms.

It can be stated that not all inequalities are also unjust. Inequalities may be the source of injustice. Yet, unjust processes do not always cause inequalities. Relating back to Sen's Capability Approach (Nussbaum and Sen, 1993; Sen, 1999a, 1999b; Nussbaum, 2000, 2006; Sen, 2009), we can say that justice can be regarded as a process based on comparisons between different individuals according to their wants, needs, values, opportunities, freedom and capabilities. Such comparison, as discussed by Dorling (2011) is one of the five reasons of injustice. However, based on Sen's approach to social justice, unequal access to different advantages in life does not necessarily lead to injustice if that advantage is not valued or desired by different individuals.

In the case of the Istanbul Metro, the displacement of low profile jobs and employees from the surroundings of the Metro stations due to sectoral transformation and capital accumulation might not be seen as a disadvantage by some if they do not value these areas. Likewise, housewives and the unemployed who use the Metro mainly for home-based other activities such as shopping and entertainment might not feel a degree of injustice. Therefore, the horizontal and vertical socio-spatial inequalities discussed in this thesis, are not always a source of injustice. However, in order to prevent the generation of injustice, there is a need for reducing socio-spatial inequalities. Since equality involves communion, collectivism and cooperation (Sampson, 1975), reducing inequalities at a

range of scales not only from urban to international and emerging scales in-between but also at political, social and economic scales is crucial in order to reduce the risk of creating injustice. As it is discussed in Chapter 1, enhancing equalities and thus, reaching higher levels of justice is one of the prerequisites of reaching happy cities (Ballas, 2013).

9.3 Understanding socio-spatial inequalities in Istanbul's transport network

Istanbul is a dynamic city; not only in terms of continuously changing flow of people, finances, global connections and information but also in terms of fast changes in the networked urban infrastructure, legal regulations and in the level of public awareness. The transport system of Istanbul itself has witnessed major decisions recently. The third Transport Master Plan (TMP) has been published in May 2011 as one of the sub-plans of the 2009 City Master Plan. Although the TMP needs to analyse the transport decisions taken in the master plan in detail, give feedback to it and to take decisions in consensus with this plan, it included several transport decisions at different scales that do not correspond with the 2009 Master Plan decisions. Some of these decisions and others made prior to this plan in recent years both at the urban scale and local scale have created tensions between the local authority, national government, the public, NGOs and the professional chambers. Especially, the announcement of the plans of the Third Bridge over the Bosphorus Strait, the Road Tunnel under the Bosphorus, the Golden Horn Metro Crossing and the pedestrianisation of Taksim Square along with its road tunnels have attracted a great opposition from the public, universities and the social platforms (such as Istanbul SOS and the Taksim Platform). The Chamber of City Planners took several of these decisions to the court and even the Master plan itself. In Chapter 4 such planning decisions are discussed within historical and spatial contexts. Such dynamism and political tension have influenced the course of this research. In order to understand the issues of social, spatial and political inequalities fully, Chapters 4 and 5 provided contextual background,

the latter focusing on transport inequalities in Istanbul, while a more detailed research has been carried out in Chapters 6 to 8.

Chapter 5 has revealed first, transport inequalities in Istanbul at both the aggregate level by presenting a spatial understanding of the distribution of the volume of HBW trips in the city and the trip frequencies per person and at the individual level by analysing the relationship between time, trip frequency and socio-economic differences. The findings of Chapter 5 have demonstrated that socio-spatial inequalities exist in Istanbul based on the daily travel of individuals. This finding is not surprising. Yet, both similarities and differences with other urban areas have been observed in Istanbul emphasising the peculiarities emerging in each city. It has been found that gender, employment and education are major determinants of daily mobility. Even though no significant difference has been found between employed men and women in terms of travel time and daily trip frequency, unemployed women tend to make shorter and fewer trips than their employed counterparts and also than unemployed men in Istanbul. Moreover, similar to the findings of Sandow and Westin (2010) for Sweden, it has been found that individuals with higher levels of education make longer and more daily trips. These results demonstrate that even though daily mobility in Istanbul may have similarities with developed countries in terms of the impacts of education, in terms of gender, it does not produce similar results to developed countries where women are likely to make longer trips than men (Turner and Grieco, 2000).

Some unexpected outcomes occurred as a result of the analyses in Chapter 6. Since the Büyükdere Avenue is a very dominant transport infrastructure within the catchment area of the Istanbul Metro, the main assumption was that the Metro had generated no or very little changes in terms of business development in the area. However, as a result of the analyses, it has been seen that the number of new CBD-related facilities, businesses in ICS sector and retail stores has been higher around the Metro stations than the areas

around the Büyükdere Avenue. Moreover, these sectors are more likely to have clustered around the Metro stations that are within the Old and the New CBD where the Metro line was established in 2000, rather than around the newly opened stations that are also on the Büyükdere Avenue. Therefore, it is possible to comment on the likelihood of the Istanbul Metro in accumulating the CBD-related businesses around its stations.

Moreover, the Metro is likely to have attracted more investment to its catchment areas than the rest of the Büyükdere Avenue. Although in Chapters 4 and 8 external factors such as the increased construction rights and the planning of this area as the new CBD that are also influential on investment growth around the Metro line have been discussed, Chapter 6 provides significant evidence for commenting on the impacts of the Metro in business growth as it demonstrates that the growth in Metro catchment areas is larger than the growth in other areas of the Büyükdere Avenue. Yet, it should be noted that both the growth and sectoral changes cannot directly be attributed to the Metro investment but other factors, mentioned above, are also influential in this process. Having stated that, decisions for moving the new CBD to the north of Büyükdere Avenue were made in conjunction with newly planned transport systems such as the Metro, therefore, neither the Metro nor the planning decisions are the sole determinants of the business growth and sectoral changes in the area; they are both highly influential.

In terms of economy, such clustering and investment growth may create positive surplus for some business developers. However, for the rest, accumulation of economic benefits in certain areas may bring negative results. Chapter 6 also demonstrated that, despite the growth in business investment, the number of businesses opening annually has not increased. This finding suggests that small-scale businesses are likely to leave their places to larger investments – a negative result for the local economy. Moreover, according to the findings of Chapter 6, employment has not increased within the catchment areas of the Metro. Therefore, the Metro has not generated new opportunities for the working

population. Additionally, as it fostered sectoral changes, it is likely to drive off the unskilled labour from the area. According to Chapter 7, the HBW trips are more likely to be made by employed and highly educated individuals while HBO trips are made by groups with low education profiles and unemployed individuals. This finding also supports the dominance of skilled working population in the area. Overall, it can be suggested that the Istanbul Metro generates spatial inequalities based on economic development that are likely to have social inequalities in the city.

The findings of Chapter 7 on socio-economic differences between groups using the Metro for different purposes indicate further socio-spatial inequalities. A narrative can be established on the survival of capital over the existence of the Metro. The Istanbul Metro not only carries the working population who helps the production of capital within the catchment areas of the Metro but also circulates shoppers who consume the capital accumulated in these areas via shopping malls that have mixed uses (Chapter 8). Therefore, it can be stated that the Metro is likely to generate socio-spatial inequalities through accumulation, production and consumption of capital.

In various cases, transport modes serve specific social and economic groups in societies (Richardson and Jensen, 2008). In the case of the Istanbul Metro, the expectation was to find such a specific user profile for the Metro. Based on the land use around its stations the user profile was expected to be dominated by employed and highly educated groups. However, the analysis in Chapter 7 has demonstrated that the Metro accommodates users from every socio-economic group. This is a surprising outcome of the thesis and suggests that in exploring the social inequalities of transport infrastructures, some transport infrastructures may be more inclusive than expected. Yet, by looking at the catchment area of the Metro and the trip purposes of different socio-economic groups, it can be stated that the Metro also generates socio-spatial inequalities. The study shows that in its current form, the accessibility benefits of the Istanbul Metro are confined within an

enclosed area. In this sense, it can be suggested that the Istanbul Metro creates *socio-economic and spatial enclaves* in its existing form, a notion discussed by Graham and Marvin (2001). Although such an impact is not easy to observe, the analyses in Chapters 6 and 7 propose such *closure* effects.

Rather than being merely a transport element that moves people from A to B, the Istanbul Metro has produced many socio-political processes. Chapter 8 does not only provide an important contribution to the literature in terms of understanding the ways in which different groups load different meanings to transport systems, but it also presents an important methodological approach in constructing socio-political narratives over urban transport systems. In this sense, employing the urban land rent theory with a special emphasis on actors involved in the production of urban rent and applying power-politics-planning debate to the assessment of the socio-political processes produced by the Metro have provided different perspectives to the understanding of socio-political inequalities. Chapter 8 also revealed how resistance in the urban space can take place in different forms based on the same transport infrastructure.

9.4 Further reflections on theory and methods

This thesis contributes to the transport geography literature mainly in two major areas: first with its theoretical framework, linking hitherto unconnected research strands in geography, economy, politics and transport research in order to understand socio-spatial inequalities, and second the breadth of the analysis conducted in these different fields.

First of all, this thesis positions itself across a range of theories from Marxist understanding of socio-spatial inequalities (Lefebvre, 1976; Harvey, 1973; 2000; 2003; 2006; 2008; 2012; Castells, 1983; 1996; 1997; 1998) to explanations from the liberalist tradition in political theory (Nussbaum and Sen, 1993; Sen, 1999a; 1999b; 2009; Nussbaum, 2000; 2006) and to approaches combining these theories (Soja, 1980; 1989;

1996; 2000; 2003; 2010). These different traditions have not been synthesised in this thesis, but the differences in which they seek to understand and explain socio-spatial inequalities have been appreciated and consulted. None of the scholarly traditions has been regarded superior to others; they have rather been used in conjunction with each other in order to carry the debate to an extensive level. Therefore, a combination of theoretical ideas, i.e. urban land rent theory, wider economic impacts of transport infrastructures, splintering urbanism and right to the city debates provided an important source for this thesis. Such an approach can be used in future research and in different fields.

Furthermore, conducting the empirical analysis in four different areas – a spatial, social, economic and political evaluation of the effects generated by the construction of a metro line – is also not very common in the transport studies literature. Researchers tend to focus on one of these areas and explore it fully. However, in this thesis, all four areas have been investigated and the narrative on socio-spatial regarding transport has been developed to a greater extent. Therefore, this thesis is exemplary in its area.

There are many issues and questions that the thesis has fallen short of answering. Despite discussing the relationship between transport and socio-spatial inequalities from different aspects in Chapter 2, the empirical analysis has not allowed the development of a deep understanding of the interrelationships concerning social exclusion, environmental justice and economic development and the Istanbul Metro. Nevertheless, some suggestions are made in this chapter on how future research can reach a fuller understanding of socio-spatial inequalities regarding transport. Moreover, discussions in the following paragraphs demonstrate the main contributions of this thesis to theory.

The Marxist analysis of urban land rent has been very useful for understanding spatial inequalities resulting from transport infrastructure investments. Although the role of transport infrastructures in generating differential land rent has been discussed in the

literature (Harvey, 1973), the relationship between urban land rent, politics in terms of decision-making and planning, and transport had not been explored before. Despite the idiosyncratic and place-specific elements of the plan amendment process in Istanbul, the methods used in this thesis to understand the structure and agency of the decision making process and its impacts on urban land rent can be applied to other urban areas.

In addition to the generation of differential land rent due to the transport infrastructure investment, decision making and planning processes, this thesis has also explored the role of transport infrastructures in locking investment in certain areas and thereby, creating spatial fix (Harvey, 1981). In the case of the Istanbul Metro, it is seen that the business investment has accumulated around the Metro stations more than anywhere else on the Büyükdere Avenue. Therefore, it is possible to discuss the impacts of the Metro in terms of locking investment in its surroundings.

Although not a new finding (Harvey, 1981), one result is especially crucial to understand how capitalism beats such spatial fix. In the case of the Istanbul Metro the number of businesses did not increase within the first ten years of the Metro, but the level of investment became significantly larger around the Metro stations compared to other areas on the Büyükdere Avenue. This finding suggests that low-capital investments are displaced from the surroundings of the Metro. In this sense, we begin to see how the Metro aids the survival of capitalism instead of acting as a barrier for it. This is an important explanation of the relationship between investment, infrastructure and capital.

Another finding that supports the impacts of the Metro on the survival of capitalism is its role in the circulation of both the producers and the consumers of the system. As Jensen (2007) discusses, the BST carries businessmen, tourists and shoppers in horizontally and vertically splintered urban areas in Bangkok. Adding to this debate, the Istanbul Metro is found to circulate employed individuals with high-education profiles for HBW purposes while circulating housewives, individuals with low-education profiles who

are not in paid employment for HBO purposes. Such outcome suggests that the Istanbul Metro not only aids the survival of capitalism by mobilising its producers and consumers but also generates splintered urbanism through different trip purposes and creates a different understanding and use of space by different socio-economic groups. This finding contributes to the splintering urbanism and networked infrastructures debate by Graham and Marvin (2001).

Transport research has not really engaged with the Right to the City debate (Lefebvre, 1968; Harvey, 2003; 2006; 2008). Some links have been made (Soja, 2010), but these are not related to the construction or use of transport infrastructures. In this sense, this thesis has opened new areas for debate. Concerns over the right to the city exist in different forms in the case of the Istanbul Metro. First of all, reclaiming rights to conserve the historical image of the city as opposed to the construction of a new Metro bridge is a new debate which is slightly different to the previous examples where for instance, the basic rights for housing were discussed against forced expropriations and evictions (e.g. the case of the Delhi Metro, Siemiatycki, 2006). In this sense, the resistance against the construction of the Istanbul Metro Bridge Crossing is not entirely concerned with the basic rights but more with the rights to be involved in the decision making process regarding the changes occurring in one's living environment. Moreover, the ways in which the resistance against the construction of the Bridge is shaped resembles the ongoing world-wide protests asking for more democratic rights to the city⁹⁴. Another form concerning the right to the city debate regarding the Istanbul Metro is the right to maintain access to transport infrastructures. The users of the Istanbul Metro showed their disapproval of the

⁹⁴ For instance, the 'occupy movement' – e.g. occupy Wall Street, London, Gezi Park. Please note that this thesis was completed before the Gezi Park events started in Istanbul. However, it is possible to find comments on the Taksim Pedestrianisation Project which is one of the reasons leading to the protests. Chapter 8 holds some discussion on that issue.

projects that restricted their access to the Metro stations by holding petitions against the closures. All in all, the analysis of the Istanbul Metro in terms of the Right to the City debate has demonstrated that a wider spectrum of discussions exist when it comes to reclaiming democratic rights to decision-making, protecting the environment and historical features with regard to transport and maintaining accessibility to transport infrastructures. It is believed that in-depth analysis of such issues using different case studies will enhance the understanding of the rights to the city regarding transport.

All these discussions regarding socio-spatial inequalities based on transport can be evaluated under the theme of horizontal and vertical socio-spatial inequalities as discussed in earlier sections of this chapter. Such a formulation of socio-spatial inequalities is a new and comprehensive way of defining inequalities that transport infrastructures generate. This evaluation can be extended in future studies as a narrative of socio-spatial inequalities based on transport.

In terms of the contribution of the thesis to methodology, it is possible to state that the mixed-methods approach has proved to be very productive for research on socio-spatial inequalities. In recent years, studies using mixed methods in transport research have become increasingly common. The benefits of using a mixed-method approach have been discussed widely in Chapter 3. Mixed-methods approach extends the way the researcher comprehends the research subject, and how it helps her/him to reduce the possibility of making errors by solely focusing on one area and gives opportunities to cross-reference between different findings of the research. Such an approach has been important to fully comprehend the socio-spatial processes related to transport in Istanbul and the Istanbul Metro in particular. Furthermore, a mixed methods approach helped commenting on the unequal reflections of such processes in Istanbul and for different socio-economic and political groups, and therefore, helped to draw more comprehensive conclusions.

Combining different methods has helped understanding the relationships between the economic impacts of the Istanbul Metro and the political decisions on the planning regulations in the area. Such a discussion is generated through the findings of Chapter 6 and Chapter 8 where economic impacts of the Metro and the political meanings that can be attached to the Metro have been discussed. By solely looking at the results of Chapter 6, it would be possible to think that the economic benefits that generated in the area within the first ten years of the Metro line could be attributed to the existence of the Metro as a new, fast and high-quality transport link. However, when the discussions in Chapter 8 are taken into account, it is seen that the decisions given by the Municipal Council have altered the image of the Metro axis by allowing the construction of high-rise buildings, increasing densities in certain areas especially around the Metro stations and enabling underground links from the buildings to the station platforms, and therefore, proliferated the economic growth in the area. As a result, it is possible to conclude that socio-spatial inequalities generate not only due to the economic impacts of transport infrastructure investments and the accumulation of physical and monetary capital in certain areas, but also due to unjust planning decisions favouring some areas and socio-economic groups while ignoring others. Overall, it can be stated that this thesis highlights the importance of using mixed-methods in transport research and it contributes to the growing number of empirical work using such methods.

9.5 Reformulating transport policy and planning

As mentioned in the last research question, this thesis seeks an approach to developing transport policy and planning with the aim of *just* transport for all. Therefore, the need for reformulating transport policy and planning to include an understanding of the social and spatial inequalities has been one of the objectives of this thesis. In this sense, the ex-post analyses given in four empirical chapters have produced important outcomes that would help developing ex-ante assessment methods for transport projects.

Figure 9.1 is an attempt to simplify the complex set of issues that this thesis has discussed and to define the direction of their relationships with transport policy and planning. Moreover, it is an attempt to discuss the political ground of different actors within the planning and policy making process and to understand their motivation for participation to it. This structure not only benefits from the outcomes of the empirical chapters on socio-spatial inequalities regarding Istanbul's transport system and the Istanbul Metro but also from the discussions in the literature review. Although it is based on the case of Istanbul in terms of transport planning, policies and socio-spatial inequalities generated from the applications of transport infrastructure projects, such an approach can also be used for other cities. This proposal should be regarded as a road map, guidance, a list of principles for future transport plans and policies. Therefore, the whole structure is open for further evaluation.

First of all, planning may adopt a *comprehensive* approach in order to reduce the spatial inequalities due to partial decisions. As discussed in Chapters 6 and 8, exclusive planning rights and construction permits given to single plots, and their increased connectivity with major transport infrastructures such as the Istanbul Metro, generate uneven spatial development. A comprehensive approach to planning would help balance these impacts and distribute them to a wider society and space. In this sense, *integration* of transport infrastructures and different *land uses* in the urban space is an important planning objective. In cases where transport infrastructure lacks connectivity with other modes and different land uses, accessibility benefits cannot be enjoyed within wider the space and society (Chapter 7). Therefore, the land use-transport integration would increase the accessibility of different areas in cities. However, in order to enhance *accessibility* for all, the needs of different socio-economic and demographic groups need to be integrated within accessibility planning. Apart from connecting places, people need to

be connected according to their needs, desires and capabilities. Opportunities need to be supplied to all.

Transport planning also should adopt principles with the aim of inclusiveness. It should be able to provide solutions for different socio-economic groups residing in cities. Transport planning should meet everyone's needs and the desire to live in liveable environments. Moreover, it should aim to design safe transport systems in order to increase the participation of different groups such as women, children and the other mobility poor groups to the daily urban life. It also needs to provide user-friendly transport modes in order to make the system more accessible for low education groups as well as for the disabled. As discussed in Chapter 8, new transport systems may be difficult to get accustomed to by different parts of the society and therefore, need to be made easily comprehensible.

Chapter 7 revealed social inequalities based on the use of different transport modes in Istanbul where gender, education and employment have been found to be the determinants of the automobile use and public transport modes. Based on these findings and the discussions in Chapter 2, it can be stated that while aiming to integrate different socio-economic groups to daily urban mobility, transport planning needs to improve public transport with the aim of supplying alternative transport modes for all, and reducing the need for automobiles as not everyone has access to them.

Second, transport policy also needs to be reformulated in order to increase the *awareness* of the policy-makers to the socio-spatial inequalities generated by transport infrastructures, their *willingness* to reduce these inequalities and to achieve *transparency* and inclusiveness of all related bodies while producing such policies. Policy-makers often disregard the consequences of their decisions concerning spatial development such as the changes in planning permits which may lead to geographic inequalities through *over-accumulation* of economic benefits (Chapter 8). Decision makers should not concentrate

on achieving economic growth but on even distribution of this growth. They need to produce policies that would allow them to control the urban land rent generated by transport infrastructure investments and other planning decisions.

Policy-makers also need to have the political will to understand the reasons for social inequalities to a greater extent and design policies to reduce them. Some of these policies may include supplying affordable transport for all and flexible transport services not to restrict accessibility to certain hours of the day. Moreover, the evidence from Chapter 8 has demonstrated that lack of transparency and consensus in the decision making process and the hierarchical approach in this process generate vertical socio-spatial inequalities and restrict people's right to the city. Policy-makers, therefore, need to be understanding of these processes and be willing to employ consensus based approaches in decision making.

Moving on from the last comments on transparency in decision making, participation of different actors to the decision making process is an important element for reducing socio-spatial inequalities. In order to increase the public acceptance of projects and plans, local authorities, civil society (NGOs, social platforms and professional chambers) and public should collaborate and produce economically and socially sustainable projects and plans. Lastly, the above proposal suggests the local authorities to have the full autonomy of local policy making and the central government to minimise its intervention of the local politics and planning process.

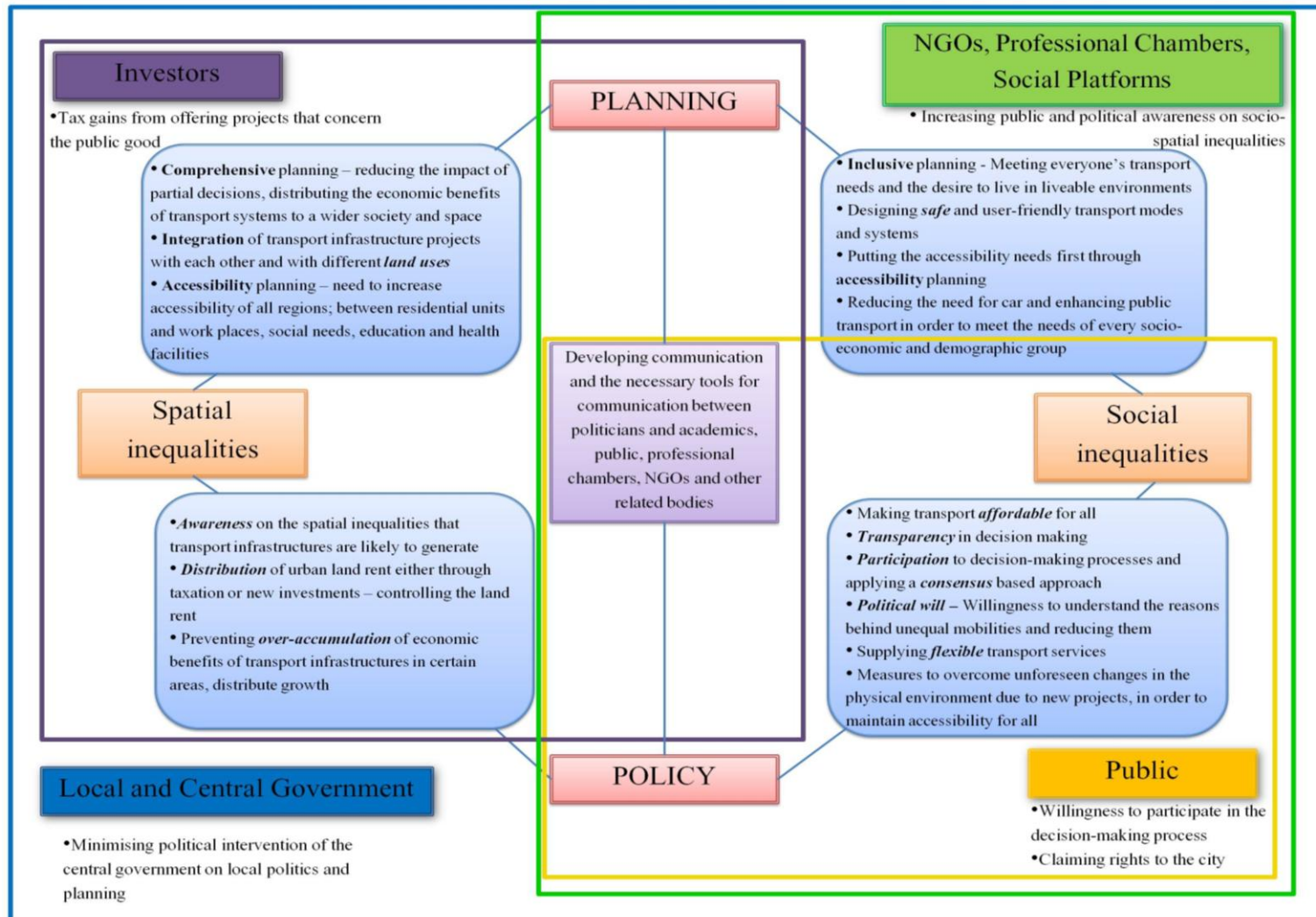


Figure 9.1 A proposal for reformulating transport policy and planning with the aim of a just transport system. The figure shows principles, actors and their motivation in the process.

9.6 Future studies

While making key contributions to the literature and methodology of transport research, this study is inevitably partial and limited and requires further evaluation of some issues. This thesis has argued the inequalities related to transport by using two major theories; social justice and spatial justice. It largely focused on the ways in which these theories feed each other in order to create an understanding of social, spatial, economic and political inequalities in transport. However, it is believed that more emphasis could be given to the issues of social justice in order to understand the issues of especially gender and education that appear as important barriers in levels of accessibility to transport in Istanbul. Therefore, further research can be carried out to analyse these issues in-depth by using more disaggregate and qualitative methods. Such an approach would unveil the reasons behind the lack of physical mobility in Istanbul. It may answer the questions of why being a woman or having low levels of education matter in terms of physical mobility levels. Furthermore, an analysis that tries to understand the geometries of power between different socio-economic groups and various transport elements would contribute to this research. Such discussions can be carried out by using the Capability Approach, which has not yet found an empirical basis in transport research, despite its strength in understanding the processes individuals go through in their lives. In this sense, the Capability Approach has potential to explain various reasons that define a person's relationship with transport and mobility. As the number of such studies increases, a better understanding of socio-spatial inequalities regarding transport can be established.

Another possible key area for future research is to expand the research on spatial and economic impacts of transport infrastructure investments. Although this dissertation has generated important results on the economic impacts of the Istanbul Metro, results can be extended further to understand the influence of the labour market in generating

agglomeration economies. Moreover, changes in the office floor space, office rents and real market prices (selling price) of residential properties can be analysed at a more local level in order to make a more accurate judgement on the relationship between transport infrastructures (in this case, the Istanbul Metro) and local economic development. This research would be dependent on data becoming available to researchers and collected over a period of time. It is important to note that in this thesis such a quantitative research has been supported by qualitative analysis of the changes in political and planning decisions that have influenced the economic impacts of the Istanbul Metro. Therefore, it is crucial to maintain such a useful, mixed-methods approach to understand the causalities and external factors determining spatial and economic inequalities regarding transport.

Finally, this thesis also attempts to draw together different perceptions of the Istanbul Metro from the various political groups in the city. Politicians, professional chambers, NGOs, academics, authors, artists, caricaturists and inhabitants of Istanbul are amongst these groups. In-depth expert interviews have been used to assess these perceptions, along with media files, images and observations in order to understand the importance of the Metro for its citizens and politicians. Such an evaluation is useful to expand our view on other issues related to social, spatial and economic inequalities. This approach can be developed further to include studies discussing the perceptions of a wider society using, for instance, focus group research or other qualitative methods. Such research would explain not only the relationships between the transport element and the public, politicians and other actors in cities but also would support the analyses of economic and social inequalities related to transport.

9.7 Conclusion

Socio-spatial inequalities may occur in various ways in the urban context. It is a central premise of this thesis that transport infrastructures create vertical and horizontal socio-

spatial inequalities based on the spatial distribution of investments, power relationships between different socio-economic groups, through the dominance of politically powerful groups (public and politicians), and the historical development of the urban space. The thesis documents some of the unequal processes that produce such inequalities from a transport planning and policy perspective. Further research is also suggested to advance these premises.

The departure point of this dissertation was to determine principles of social and spatial justice in order to create 'just' distribution of transport infrastructure benefits. The theoretical discussions that have built up the empirical research and the outcomes of the fieldwork have shown how ambitious such an objective would be for a complex research area such as transport and socio-spatial inequalities. It has been observed that defining principles for a just distribution of transport infrastructures or policies is not straight forward. On the contrary, they require an in-depth analysis of external factors, economic and social characteristics of the country that the investment decisions are given and the political forces within. Moreover, the issues of what is just are difficult concepts to describe as discussed in Chapter 2, for they change continuously within the fluidity of global politics and economy. Therefore, it is neither easy nor correct to produce such principles of just distribution of transport infrastructure investments. However, this thesis presents the set of issues that need to be investigated when the issues of social and spatial justice are concerned. In this sense, this thesis has been an attempt to produce such principles of social and spatial justice and therefore, is an important contribution to solving the problem of justice in transport policy and planning.

Further implications for policy are on the management of economic surplus created by transport infrastructures and on ways in which transport poor can be included in the transport network in the current system. At the moment, in Istanbul, like in many other cities

around the world, there is no system that would allow the use of economic benefits gained from transport infrastructure in the development of the transport network itself. As discussed in Chapter 8, in 2007 the Mayor of Istanbul declared in terms of a single case (Levent Bus Station) that the profit from the transaction of a municipal land in exchange for exclusive construction rights given to a company would in turn be used for the development of the Metro network. However, there is no monitoring system to prove this right, nor there are consistent policies that would require a similar approach for future transactions. Moreover, in this statement the economic benefits that a company would gain from being located in the centre of the CBD and close to the Metro are disregarded. Therefore, such gains (including increased taxes) are not used for the public good. Should such exclusive construction rights continue to be given to certain groups by the public authorities, profit needs to be used for the public good and be distributed among all the members of the society through infrastructure improvements and in other areas. However, the objective of achieving the public good through such agreements between businesses and public authorities cannot become commonly used policies for policy makers as the hegemony of powers that benefit from such urban rent created via exclusive planning rights and the distribution of this surplus among certain groups in society, form the largest of all socio-spatial inequalities in cities like Istanbul. Therefore, the notion of the public good is not to be used for such policies that are overall against the public good. Moreover, policy makers need to be cautious in developing such policies, not only in Istanbul but in cities in the Western world since they largely are subject to such policies (for instance the use of Tax Increment Financing (TIF) system in the USA).

Furthermore, apart from the issues discussed in the thesis on the importance of considering socio-spatial inequalities in transport planning and policy, there are cases that need fast solutions in Istanbul. Inequalities due to gender and education and the existence of vulnerable groups in Istanbul in terms of physical mobility are amongst these issues. In order

to understand why and how women and uneducated citizens spend less time travelling, whether such uses are based on wants, needs and values or based on being excluded from the transport system for various reasons, transport policy and planning need to engage with such issues more deeply. A road map including a list of issues, principles and actors that are involved in these processes is drawn in this concluding chapter, and is expected to help in reformulating transport planning and policy with the aim of *just* transport for all.

If there is a final conclusion that can be drawn, it is that there is a need for a better understanding of socio-spatial inequalities related to transport and an application of greater equality in transport planning. In its current form, transport systems cannot fulfil their tasks as they cannot act as catalysts that produce urban space, social and economic capital, and sustainable living spaces that can be enjoyed by every member of the society. Policy makers need to recognise the wider impacts of their decisions and need to include issues of social, economic and spatial inequalities in the decision making process to a greater extent. Only then will concerns over justice in every aspect of life diminish.

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APPENDIX

Appendix A: Supplementary information for Chapter 6

Explanation of business groups

GROUP		DESCRIPTION
1	Production of food products	Food (fresh food, animal products), beverages and nicotine products and their trade
2	Industry	Industrial products (including iron and steel) and their trade
3	Textiles (manufacturing)	Textiles (clothing, carpets, leather) and shoe manufacturing
4	Information and Communication Services (ICS)	ICS and Media. Also publishing and telecommunication
5	Construction	Construction sector and related products. Also co-operatives
6	Retail	Small-medium retail. Food, clothing and shopping
7	Support services	Laundry, dry cleaners, electricians, plumber, air-conditioning retail and maintenance. Also petrol stations and energy providers
8	Home products	Luxury items, electrical items, jewellery and furniture
9	Health services	Health related services
10	CBD-related businesses	Banks, insurance companies, consultants and real estate
11	Education	Education, cultural and sports facilities
12	Service sector	Hotels, restaurants, hairdressers
13	Transport	Travel and logistics, international and regional transport firms, company and school buses travel agencies
14	Automobile sector	Automobile and motorbike repairers and showrooms

Appendix B: Supplementary information for Chapter 7

Number of second trips (1679 trips) made by the survey respondents (2596 individuals) using different transport modes in Istanbul

VARIABLES		Walking	Automobile	Taxi	Company / school minibus	Dolmuş	Minibus	Bus	Motorcycle + Bicycle	Metro	LRT/Tram / Tunnel	Sea transport	Suburban train	Grand Total
GENDER	Male	498	124	19	108	12	68	98	4	4	13	8	5	961
		52%	13%	2%	11%	1%	7%	10%	0%	0%	1%	1%	1%	100%
	Female	441	51	22	82	10	51	49	1	4	3	2	2	718
		61%	7%	3%	11%	1%	7%	7%	0%	1%	0%	0%	0%	100%
	Employed women	41	15	2	43	4	16	17	0	4	1	1	0	144
		28%	10%	1%	30%	3%	11%	12%	0%	3%	1%	1%	0%	100%
	Unemployed women	400	36	20	39	6	35	32	1	0	2	1	2	574
		70%	6%	3%	7%	1%	6%	6%	0%	0%	0%	0%	0%	100%
	Employed men	168	102	9	76	9	47	53	4	3	11	8	3	493
		34%	21%	2%	15%	2%	10%	11%	1%	1%	2%	2%	1%	100%
	Employed women	41	15	2	43	4	16	17	0	4	1	1	0	144
		28%	10%	1%	30%	3%	11%	12%	0%	3%	1%	1%	0%	100%
EDUCATION	Illiterate	66	4	4	4	0	5	4	0	0	0	0	1	88
		75%	5%	5%	5%	0%	6%	5%	0%	0%	0%	0%	1%	100%
	literate no schooling	244	10	4	37	0	3	5	0	0	0	0	0	303
		81%	3%	1%	12%	0%	1%	2%	0%	0%	0%	0%	0%	100%
	Mandatory	369	84	18	66	11	59	61	2	1	7	1	4	683
		54%	12%	3%	10%	2%	9%	9%	0%	0%	1%	0%	1%	100%
	Higher education	101	67	10	53	8	32	44	3	7	7	9	2	343
		29%	20%	3%	15%	2%	9%	13%	1%	2%	2%	3%	1%	100%
EMPLOYMENT	Employed	729	58	30	71	9	56	77	1	1	4	1	4	1041
		70%	6%	3%	7%	1%	5%	7%	0%	0%	0%	0%	0%	100%
	Unemployed	209	117	11	119	13	63	70	4	7	12	9	3	637
		33%	18%	2%	19%	2%	10%	11%	1%	1%	2%	1%	0%	100%
REASON FOR UNEMPLOYMENT	Student	158	10	5	30	3	20	33	0	0	2	0	0	261
		61%	4%	2%	11%	1%	8%	13%	0%	0%	1%	0%	0%	100%
	Retired	79	14	8	1	2	7	16	0	1	1	0	1	130
		61%	11%	6%	1%	2%	5%	12%	0%	1%	1%	0%	1%	100%
	Housewife	225	22	14	4	2	22	20	1	0	1	1	2	314
		72%	7%	4%	1%	1%	7%	6%	0%	0%	0%	0%	1%	100%
AGE GROUPS	age 0-6	388	102	13	147	11	57	64	4	7	11	6	3	813
		48%	13%	2%	18%	1%	7%	8%	0%	1%	1%	1%	0%	100%
	7-14	155	24	2	16	3	9	14	0	0	1	3	0	227
		68%	11%	1%	7%	1%	4%	6%	0%	0%	0%	1%	0%	100%
	15-18	48	3	2	21	3	16	18	0	0	1	0	0	112
		43%	3%	2%	19%	3%	14%	16%	0%	0%	1%	0%	0%	100%
	19-24	40	9	3	1	2	5	12	0	0	1	0	0	73
		55%	12%	4%	1%	3%	7%	16%	0%	0%	1%	0%	0%	100%
	25-35	97	8	4	2	1	6	7	0	0	0	1	1	127
		76%	6%	3%	2%	1%	5%	6%	0%	0%	0%	1%	1%	100%
	36-45	64	5	4	2	0	11	12	0	0	0	0	0	98
		65%	5%	4%	2%	0%	11%	12%	0%	0%	0%	0%	0%	100%
	46-55	73	10	3	0	0	6	10	1	1	1	0	3	108
		68%	9%	3%	0%	0%	6%	9%	1%	1%	1%	0%	3%	100%
	56-65	42	8	4	1	2	6	8	0	0	1	0	0	72
		58%	11%	6%	1%	3%	8%	11%	0%	0%	1%	0%	0%	100%
	66+	31	6	6	0	0	3	2	0	0	0	0	0	48
		65%	13%	13%	0%	0%	6%	4%	0%	0%	0%	0%	0%	100%
CAR OWNERSHIP	No cars	427	84	29	89	11	87	94	4	5	10	7	7	854
		50%	10%	3%	10%	1%	10%	11%	0%	1%	1%	1%	1%	100%
	One or more	113	77	6	30	7	9	25	1	3	4	3	0	278
		41%	28%	2%	11%	3%	3%	9%	0%	1%	1%	1%	0%	100%

Appendix C: Supplementary information for Chapter 8

Interview Questions (Interviews were conducted in Turkish between October and December 2011)

Interview questions addressed to urban planner/academic and transport planner/academic

1. What was the reason behind the construction of the Metro? What was the initial aim and has it been achieved?
2. What were the criteria used while deciding on the route of the Metro?
3. Connection to Yenikapı has not been completed yet. Moreover, the Metro has been decided to be extended to Sarıyer which was not included in the original plan. How do you evaluate these changes in terms of costs and benefits of the Metro?
4. Do you think the Metro might have created a specific user profile? What do you think will be the impacts of the two new Metro stations in Darüşşafaka and Hacıosman in terms of the user profile of the Metro?
5. According to the table including the Transfer Centres published by the Metropolitan Municipality in 2009, there are 69 transfer centres in Istanbul. How do you evaluate this situation?
6. How do you evaluate the connection of the Metro with shopping malls around its stations in terms of the connections between urban functions and transport systems in cities? Do you think such connections increase the use of these urban functions? Do you think these connections increase the attraction of shopping malls and other functions?
7. How do you evaluate the Metro in terms of the urban image?
8. What has the Metro achieved and how? *Some key ideas for guidance:* reduced traffic congestion or increased it; increased accessibility for all or for certain groups; increased the use of public transport; contributed to sustainable development and reduced carbon emissions; increased land and property values; attracted investment in the area; developed the image of the city; created an icon towards development and modernism; contributed to the image of the politicians; etc. (please indicate)

Interview questions addressed to the representative of the Chamber of Urban Planners

First and the last questions of the previous questionnaire were asked to the representative of the Chamber of Urban Planners as well. Additional questions are:

1. Plan amendments are being decided on around the Metro stations. Your chamber has had objections to these changes in the past and still continuing to have. Do you think the Istanbul Metro is directly or indirectly affecting these changes?
2. How do you evaluate the plan amendment process, especially in terms of its role in transforming urban functions and creating urban land rent?
3. Can we assess the Istanbul Metro as a tool for political power or a prestige project?

Interview questions addressed to the representative of the real estate developer

1. Could you give information on the rental prices of offices and shopping malls around the Metro stations?
2. Do you think the Metro has generated an increase in property values along the Metro line?
3. Do investors regard the Metro as an advantage in the area for their investments?
4. Do you think direct access between shopping malls and the Metro stations has an impact on the value of the shopping malls - are those shopping malls preferred by the shoppers more?
5. Do you think the investors/owners of shopping malls and offices around the Metro stations are taxed sufficiently to compensate the urban rent they gain from such investments? Do they contribute to the public good?

Interview questions addressed to one of the members of the Metropolitan Municipal Council

1. How do you describe the plan amendment process?
2. Do you define this process as a democratic process? Are there dominant groups in Municipal Councils? How powerful is the Mayor of Istanbul?
3. Is the public good considered while decisions are made at Municipal Councils?
4. What does the Municipality receive in return from the transaction of municipal land to private owners and developers?
5. Do we need plans?