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the production of lived mobilities within the socio-technical Metro systems in Copenhagen, London and Paris

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European Metroscapes

- The production of lived mobilities within the socio-technical Metro systems in Copenhagen, London, and Paris

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ABSTRACT

In this paper the aim is to show a mobile ethnographic account for the way lived everyday life mobilities are produced within the socio-technical systems of the Metros in Copenhagen, London and Paris. By drawing upon field studies of the physical orchestration of passenger flows as well as the regulatory passenger identity interpellations within these technical systems it is shown how mobile urbanites are constructed as well as they are performing mobility within these systems. The research aim to show that there is a top-down organisation of the material flows and regulatory arrangements creating 'real passengers' as well as imaginary 'mobile subjects'. On the other hand the everyday life mobility practices are not completely determined by such top-down systems as they are played out and performed in multiple ways and thus creating lacunas of 'other ways' of perceiving the systems as environments for mundane flows. In fact it is in the crossing between such top-down orchestration of mobility and the everyday life performances that the socio-technical metro systems produce culture. Much more than moving people from A to B, the socio-technical metro systems facilitate the meaningful and mobile engagement between systems, objects, humans and the city. However, from the three cases it is shown that this is done in different ways depending on whether one performs mobility within the metro in Copenhagen, London or Paris. Rather than being a comparative study of these three metros the paper aims to explore these thematically in order to illustrate the differences but also the overlapping ways European Metroscapes produces lived mobilities. Methodologically the paper is based on a series of recurrent field trips to the three metros from 2006 to 2008. Theoretically the paper aims to bridge elements from STS with theories from relational geography, critical mobility studies and urban design.

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1. Introduction

In this paper the aim is to show a mobile ethnographic account for the way lived everyday life mobilities are produced within the socio-technical systems of the Metros in Copenhagen, London and Paris. By drawing upon field studies of the physical orchestration of passenger flows as well as the regulatory passenger identity interpellations within these technical systems it is shown how mobile urbanites are constructed as well as they are performing mobility within these systems. The research aim to show that there is a top-down organisation of the material flows and regulatory arrangements creating 'real passengers' as well as imaginary 'mobile subjects'. On the other hand the everyday life mobility practices are not completely determined by such top-down systems as they are played out and performed in multiple ways and thus creating lacunas of 'other ways' of perceiving the systems as environments for mundane flows. In fact it is in the crossing between such top-down orchestration of mobility and the everyday life performances that the socio-technical metro systems produce culture. Much more than moving people from A to B, the socio-technical metro systems facilitate the meaningful and mobile engagement between systems, objects, humans and the city. However, from the three cases it is shown that this is done in different ways depending on whether one performs mobility within the metro in Copenhagen, London or Paris. Rather than being a comparative study of these three metros the paper aims to explore these thematically in order to illustrate the differences but also the overlapping ways European Metroscapes produces lived mobilities. Methodologically the paper is based on a series of recurrent field trips to the three metros from 2006 to 2008. The paper aims to bridge elements from STS with theories from relational geography, critical mobility studies and urban design in a cross-disciplinary research design aiming to merge the spatial planning, transportation and infrastructure and urban design fields.

This research is a reflection of a growing interest in mobile ethnography within the cross-disciplinary study field of mobility studies (Jensen 2007a, Urry 2007). Inspired by works of Goffman (Jensen 2006) and by the need for connecting wider theories of mobility with concrete experiences of movement the field study is firmly embedded within an emerging ethnographic tradition of mobility studies. Furthermore, the field work has also drawn inspiration from the situationist movement and the practice of aimlessly 'drifting' through the city (Pinder 2005, Sadler 1999). The method used may thus be seen as a sort of 'metro drifting'. Having said that it should also be acknowledged that there is deliberate bias in the exploration of the metro systems in favour of Copenhagen. That is not to say that the Copenhagen case is ranked higher. The issue is rather that from the author's greater familiarity with the Copenhagen metro spring a particular analytical gaze at the other two metros. So the Parisian and London metros are 'read' and understood through the prism of the Copenhagen metro so to say. This is, however, not only due to idiosyncratic preferences. The Copenhagen metro is much smaller by all accounts and it represent a model of metro design that is very different from the one in Paris and London. The paper will show that the Copenhagen metro (for a variety of reasons) epitomises a much more 'clean' and clear model of people circulation. It is a metro system giving 100% predominance to circulation and not accepting friction in terms of commercial activities, the presence of homeless people, vendors or even musicians. So the perspective is not that of a comparative analysis. However, the understanding of the characteristics of the metros do grow out of a 'measurement' made

possible by the mono-functional dedication of the Copenhagen metro system as the yardstick and facilitator for the wider discussion of metro systems.

The paper is organised into seven sections. In section two after the introduction the theoretical perspective of the 'city of armatures and enclaves' is presented. In here we present the contemporary network city and its flows. In section three we aim to show how sites of mobility in the contemporary city is not only sites of contestation and political engagement, but (potentially) also of new meaningful interaction. The fourth section inserts this discussion of mobility and meaning in the network city into a framework putting emphasis on the socio-technical systems of circulation. Section five is a short summary of the analytical framing. In section six the field work is presented. The paper end in section seven with a discussion of the similarities and differences between the three cases, as well as with some reflections on the usability of theories of socio-technical systems in the analysis of lived mobilities.

2. Mobility in the City of Armatures and Enclaves

The meaning of mobility to contemporary urbanism is an issue that may be approached in multiple ways. Shane points to the concepts of the 'armature' and the 'enclave' as important categories furthering our understanding of urban mobility (Shane 2005). According to Shane, the main features of armatures are that they are '*linear systems for sorting sub-elements in the city and arranging them in sequence*' (Shane 2005:199). Accordingly, armatures are channelling flows and linking nodes in complex networks of distribution. They work as sorting and sequencing devices and may come as linear, stretched, compressed or *Rhizomic* armatures. The armature resembles the notion of 'path' developed by Lynch (1960:47). The armature is the backbone of the network and is scalable from the sidewalk to the global flight corridors. Opposite the armature we find the enclave which function as a bounded territory and is defined by its ability to add friction to mobility (Shane 2005:176). The enclave is a bounded unit and come in the form of an isolated district, or enclosed site and territory. However, enclaves also differ in their relative openness towards their context. They are found from hermetically sealed off sites to permeable places crisscrossed by the flows of armatures. Enclaves are sites of friction and relative slowness. Like the armatures they may perform in various guises; as linear, stretched and compressed enclaves. The implication of the armature / enclave distinction is that the meaning of places in the city is constituted by the movement as much as by their morphological properties. In this context '*place in this sense becomes an event rather than a secure ontological thing rooted in notions of the authentic*' (Cresswell 2004: 40).

We cannot deny that cities are sites of static structures, or that they host encounters at a standstill. What should be contested though is a notion of cities as if their essence is morphological structures and static enclaves alone. And related to this is the problem that the armature seems to be a priori understood as a generic non-place (Augé 1995) creating an interpretation of urban mobility practices threatening the social cohesion amongst the citizens (Sennett 1994). What is missed in this interpretation is that urban mobility is an important everyday life practice that produces meaning and culture (as well as it of course may create inhuman conditions and environmental problems) (Jensen forthcoming). Speaking from the vantage point of a relational understanding of the networked city Amin and Thrift explore another and parallel dimension of a fluid and mobilities oriented theory:

We have begun to see how urban life is placed by lines of mobilities and travel and by namings and imaginaries ... The city thus needs to be seen as an institutionalised practice, a systematized network, in an expanded everyday urbanism ... an ontology of encounter or togetherness based in the principles of connection, extension and continuous novelty ... In such a conception, the city is made up of potential and actual entities/associations/togetherness which there is no going beyond to find anything 'more real' ... In other words, it belongs to the nature of a 'being' that it is a potential for every 'becoming' (Amin & Thrift 2002:26 & 27)

Accordingly the city has to be understood equally in relation to its fluids and flows as much as to its structures and morphologies. We need to contemplate the city in a process-oriented thinking focusing on the fluids and the ephemeral qualities of the city (Massey 1999:161). Such a relational geography makes clear that we need to address the issues of urban mobility in a different language and with a different understanding of space and the flows constituting urban sites in general, and with an eye to the networks in particular:

Rather than the bounded container defined by physical resource flows and populated by socially anonymous individuals encountered in much sustainability literature, we envisage a rather different city. In the contested city a heterogeneous mix of actors and agencies shape city development, framed by their social, organisational, temporal and spatial contexts of action (Guy, Marvin & Moss 2001:204)

The city is configured as an arena for multiple flows of users as the backcloth for complex meaning and identity productions. If the city is not to be seen as a 'bounded container' in a physical sense much less is it to be seen as a surface for frictionless interaction and policy making. The social networked city contains complex layers of interactions based upon exchange amongst heterogeneous groups. The city thrives on difference, it needs difference and it produces difference (Isin 2002:26).

Within the understanding of such a relational geography the linkage of mobilities to the notion of power becomes crucial to the understanding of the European Metroscapes.

3. Between mobilities and power – politicising the armatures

According to the re-oriented mobility analysis urban metros should be theorised and understood as networked spaces of mobility production. However, it increasingly also becomes clear that this is phenomenon of not only mobility but also power. Here we will not subscribe to an understanding of power as a 'thing' or a fetisch. Rather power is a networked dimension to the multiple associations that configures the relationship between social agents and their environs. Seen this way '*... the powers of 'humans' are always augmented by various material worlds, of clothing, tools, objects, paths, buildings and so on*' (Urry 2007: 45). In some of the many analyses of transit systems and mobility the role of the socio-technical system becomes one of a forceful production of subjectivity. As is the case here in Augé's analysis of the Parisian Metro:

But one must above all admit that every day individuals borrow, so to speak, itineraries they have no choice but to follow, constrained by memories that are born of habit and that sometimes subvert it, brushing by, unaware of, but

sometimes having an inkling of, the history of others, taking paths plotted with collective memories turned trivial, whose efficacy is perceived only occasionally and at a distance (Augé 2002:25)

Against such one-dimensional interpretation stand an analysis which point at the ‘cracks’ and ‘blind spots’ of the large conglomerations of politics, planning, architecture, engineering and design making up the metro system (Richardson & Jensen 2007). The production of mobile lives may take place in-between top-down systems and bottom-up practices. However it becomes clear that the orchestrating and ordering ambitions of regulating states (Scott 1998) cannot close off the options for social agents to challenge the fixed meaning of mobility and designed trajectories of mobile and loyal subjects. We shall return to this below, but here the essential point is to re-think mobility as something that reaches beyond the instrumental movement from A to B, as something beyond mere costs, something that may be enlightening, fun and producing culture:

Travel can be a positive experience; we need not consider it pure cost ... Travel can be a pleasure, if we pay attention to the human experience: the visual sequences, the opportunities to learn or to meet other people (Lynch 1981:274)

However, there are obviously multiple examples of transportation infrastructures being ‘*designed with the positivist ethos of government institutions*’ (Ingersoll 2006:123) making it increasingly important to recognise that mobility is about culture and furthermore that space and placement indeed matters regardless of ideas like ‘the end of geography’. Cities do not disappear in the virtual spaces of the Internet Age (Castells 2004:85), rather;

...spatially dispersed yet coordinated, fluid collections of wirelessly interconnecting individuals – perhaps assembled, from the beginning, in cyberspace rather than at any physical location – are becoming a crucial fact of urban life (Mitchell 2003:161)

But the argument runs beyond this understanding of mobility as creating civic meaning, interaction opportunities and culture. Sites of multiple mobile subjects are per definition very close to the idea of public space and public domain (daab 2006:6, Sheller & Urry 2006:8). Thus armatures may carry the potential to become the new agoras of the contemporary city:

The expanded and mobile city implies a new agenda for the design of public space, not only in relation to the urban centres or in the new residential districts, but especially in the ambiguous in-between areas ... Furthermore, we seem to think too much about public space in the sense of fixed and permanent physical spaces, and we give insufficient consideration to the way in which public domain comes into being in flux, often extremely temporarily (Hajer & Reijndorp 2001:14 & 16)

What becomes crucial then is the policy deliberation, actual practices and the lived life in networked armatures. Given such a focus on infrastructures they may be thought of as inherently political spaces – or at least sites of political engagements and struggles, as well as political in the sense of being facilitators for the construction of public and civic meaning. So armatures are channels orchestrating flows in the city as well as they are sites of interaction, lived spaces of the everyday life and thus where actual lived mobility takes place.

4. The production of lived mobilities within socio-technical systems

The analytical understanding of metro systems and how they shape the conditions to mobile urban subjects has much bearing on the new development of theories dealing with power, politics and mobility. However, we need to add the perspective of seeing the metros as socio-technical systems (Galis 2006). Only by understanding how the assemblage of human and non-human elements within a larger socio-technical system works can we claim to have understood the production of lived mobilities. In the words of Valderrama and Jørgensen:

We suggest that it is helpful to view the design of urban transport systems as a process where the actors involved negotiate and actively distribute agency in the components of the new system (Valderrama & Jørgensen 2008:203)

The profoundness of the assembling of metro mobility reaches well beyond the ordinary as it carries repercussions to ontological assumptions of space and time:

Newtonian conceptions of space and time determine a commonsense notion that transport systems are the means to achieve mobility in a certain space, which is defined by natural principles and boundaries. Such conceptions are often found in the literature on transport systems and transport planning and translated into models of transport behaviours and needs. However, more sophisticated conceptions invert the relation and state that space is the outcome of different ways of being, affecting and organizing others (Valderrama & Jørgensen 2008:215)

Movement in the city is social to the extent that we need to pay attention to the ‘mobile other’. To Augé the transit spaces of the metro are seen as sites of ambivalence as we certainly are ‘living there’ but also (in his interpretation) in a forced-upon relationship to mobility regimes and regulations:

It is thus quite obvious that if everyone has his or her “life to live” in the metro, that life cannot be lived in total freedom, not simply because freedom could ever be totally lived in society at large, but more precisely because the coded and ordered character of subway traffic imposes on each and every person codes of conduct that cannot be transgressed without running the risk of sanction, either by authorities, or by the more or less effective disavowal of other users (Augé 2002:29)

Certainly the mobility practices of everyday life are related to ‘ways of doings’ and particular practices, norms, codes, rationalities, cultures and knowledge-forms (Jensen 2006). But there still seems to be a need for creating space and leverage in the theoretical understanding to reverse the interpretation of mobility spaces as instrumental sites only. Augé on the one hand side follow the ‘non-place’ argument developed in his earlier writings (1995) seeing the metro as an individualised, isolated, alienating and disciplinary experience. On the other hand side his anthropological (and autobiographical) encounters with the (Parisian) metro make him recognise the metro as a site of memory, personalised experience and history. As such Augé is illustrative of the ‘ambivalence of mobility’ residing in mobility experience in general. The armatures are however also socio-technical systems as argued in the introduction to this paper. Socio-technical systems must be comprehended in light of the ‘sociotechnical compromises’ (Latour 1996:99) made en route to implementation. Thus no metro system can

be fully understood without acknowledging the fusion of politics and technology, human and nonhuman. This understanding grows out of an attempt to re-valorise the 'numb objects' and technologies that makes mobility:

Our collective is woven together out of speaking subjects, perhaps, but subjects to which poor objects, our inferior brothers, are attached at all points. By opening up to include objects, the social bond would become less mysterious (Latour 1996:VIII)

Like the 'sociogram' may chart human interests and translations we should have to add the 'technogram' in order to chart the 'interests and attachments' of nonhumans (Latour 1996:58). The report on the conditions of technology in producing mobilities should be held against the insight that '*a technological project is not in a context; it gives itself a context, or sometimes does not give itself one*' (Latour 1996:133). This means that in a very profound way Metro systems (as is the example in this paper) must be seen as inherently wedded to the wider physical and social fabric of the city. Even though it might look like metros are 'just added' or simply dug down into the existing historical context of the city, it should become clear that metros contribute to creating their own contexts and environs in a complex relationship. As inspired by Latour's way of thinking we want to add a particular way of seeing the 'subject' within such a socio-technical system:

What we are exploring within these complex nexuses of physical infrastructures and technology, cultural norms and legal regulations, design codes and architecture, social practices and interaction are in fact the creation of what might be termed 'mobile subject types'. By this is meant the production of relatively clear and well defined categories of imagined mobile citizens in the socio-technical nexus of infrastructure systems (Richardson & Jensen 2008:218).

We shall argue that the 'mobile subject type' imagined within plans and policies may be manufactured to a certain extent. However, the social cannot be 'closed' and thus completely determined. Armature spaces might work as 'hetrotopias'(Foucault 1997) in the interpretation, valorisation and practices of the everyday life of mobile urbanites:

From a mobilities perspective, we see plans reflecting ideas about how certain citizens are imagined to dream and manage their future lives. In other words, mobility systems are designed for certain imagined types of citizens, and urban and regional maps are drawn to fit with the planners' and policy-makers' imaginaries of how these particular types of citizens will want to move in time and space. This means firstly, that in plans, policies and designs there might be several types of mobile subjects present, each with corresponding imagined mobilities. Secondly, it means that the governing technologies and the domains of knowledge embedded in the logic of governing may work strategically to shape these ideas of mobile subject types. Thirdly, it means that in the actual construction of infrastructures and design of urban and regional spaces, these mobile subjects and their anticipated mobilities are present, legitimising new infrastructure types such as urban transit systems, and setting the conditions of possibility for the everyday lives of citizens. Future mobile subject types are imagined and narrated across the complex intertextual fields that lead to the production of mobility systems. Their imagined mobilities are predicated upon,

and are used to make thinkable and normal, new technologies of mobility (Richardson & Jensen 2008:220-221)

So the creation of mobile subject types unfolds in this dialectic space between the state's will to orchestrate urban mobility, and the multiple actual coping practices and strategies of the individual in his or her daily moving through the city. The introduction of new transport infrastructure, then, creates new conditions for social 'condensation' as socio-technical systems create interfaces between the view from the state and the practices of everyday life. Accordingly the production of mobile subjects takes place between the policy and everyday life level and is mediated by infrastructure (Richardson & Jensen 2008:221-222).

In prolongation of the socio-technical approach Thomsen and Jensen points at the need for understanding how the Cartesian split between objects and subjects becomes a hindrance to seeing how lived mobility is produced (Thomsen & Jensen 2008). Along this route the philosopher Michel Serres uses the definition of a quasi-object as the 'third' object in this intersection between the solid and the fluid as 'a marker of the subject' (Abbas 2005:2), 'a thing that circulates' and a 'mediating object' to fix temporary relations (Abbas 2005:177). They exist in different variations within both the social and the architectural realm and are what Latour term 'mediators' (2005:39). In a time with increased communication and access to larger amounts of information, these quasi-objects gets even more important to investigate as through the access we '*establish meaning, construct knowledge, and make sense of our surroundings by associating items of information with one another and with physical objects.*' (Mitchell 2003: 120). And as per Actor-Network Theory '*each object gathers around itself a different assembly of relevant parties. Each object triggers new occasions to passionately differ and dispute.*' (Latour 2005:15). Also this connects to the argument put forward by Cresswell that mobility is movement + meaning + power (Cresswell 2006). To Cresswell it is important to understand the 'more than A to B' of mobility as related to the making of meaning and the exercise of power. Here we shall add that the making of meaning is about the creation of mobile cultures. Thus the discussion of politicised armatures could become the discussion of whether armatures contain *flows, business, and public domain* (three key concepts we shall return to after the case studies).

5. Reassembling the Metro

The framing aiming at exploring the actual conditions of production for the mobile life within the socio-technical metro systems might be thought of in a more operational manner focusing on three analytical dimensions (analytical since they are not empirically separable but rather assembled in a hybrid socio-technical network). The three dimensions and the objects and elements related to them are the 'Technical' (e.g. trains, platforms, ticket systems, functionality, urban logistics, relation to wider city network), the 'social' ¹(e.g. user groups, public domains, metro experience, feeling of being 'moved' individually and socially, ways of experiencing power), and the 'aesthetic' (e.g. design codes, form, art, commercials/ads, signage, symbols). The field work has thus been working on these three dimensions to create an understanding of the interplay between mobilities, technologies, circulating and stationary objects, armatures and enclaves, people and technology.

¹ The 'social' here being a shorthand for the associations and interactions creating a dynamic and open field to be investigated, and not as a black box for causal explanations (Latour 2005)

- Technically
 - E.g. trains, platforms, ticket systems, functionality, urban logistics, relation to wider city network
- Socially
 - E.g. user groups, public domains, metro experience, feeling of being ‘moved’ individually and socially, ways of experiencing power
- Aesthetically
 - E.g. design codes, form, art, commercials/ads, signage, symbols

Figure 1: Reassembling the Metro

The ‘check list’ of issues and themes is meant to inspire whilst doing the field work. The model grows out of an operational frame presented to students within the urban design MA programme of Department of Architecture and Design, Aalborg University who have been studying European Metroscapes for the last three years. So basically it serves the purpose of showing metroscapes students (at all levels) ‘what to look for’.

From this admittedly short and simplistic summary of the theoretical discussion we will now take aim of the actual lived mobilities within the European Metroscapes.

6. European Metroscapes – cases of mobility-technology mediation

In this section we shall very briefly present main key figures and facts related to the three metro systems. However any comprehensive technical exploration will not take place in this paper.

Copenhagen Metro

The Copenhagen Metro began its operation in 2002 and has currently 2 lines serving 17 stations². The full length of the system is 16.8 km and has an estimated daily ridership between 115.000 and 120.000. It facilitates the inner city of Copenhagen as well as it connects to the new urban development project ‘The Ørestad’ and Kastrup Airport. The trains are driverless and monitored by sophisticated communication technologies and surveillance systems. The Metro has GSM signal repeaters installed allowing the usage of mobile telephones in the Metro. According to the Metro Company they have a ‘timeless’ and similar design for all stations and trains.

² This description is based upon accessible information from the Metro Company’s web site: <http://www.m.dk/>

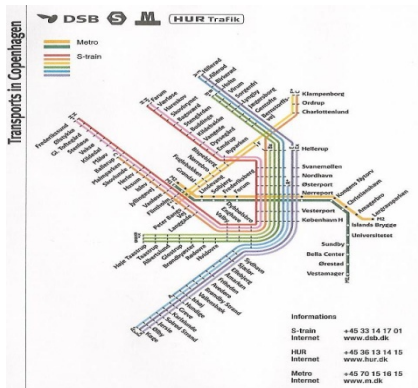


Figure 2: Copenhagen Metro Map

The fact that the stations have been designed with natural daylight is said to give the passengers a more secure feeling as they tend to think less of being 20-30 meters under the ground when they still are seeing natural daylight. Moreover, the architects that designed the Metro stations argue that the daylight feature is the key element in understanding the metro platform space as an urban space. Arguably the presence of natural light makes the link to the city above more strongly felt and the experience of being in an artificial environment less predominant. As a particular design feature utilizing the daylight on the platform the 'pyramid' that let in the daylight from above has been facilitated with prisms that in sunny weather projects rainbow images at random sites on the walls of the station. This is in fact the only 'unforeseen' impressions that one gets in the Copenhagen Metro system. The underground metro stations are owned and controlled by the Metro Company, the actual running and maintenance of the Metro is done by the Metro Service Company, and the interface to the city above ground is owned and controlled by the Municipality of Copenhagen.

The City ring

The City of Copenhagen is in the process of adding a new layer to its metro with the new 'City Ring'. The City Ring metro is a circular metro that encloses the inner city of Copenhagen. When finished in 2018 the City Ring will have a length of 16 km and a journey time of 24 minutes. The costs of the City Ring are estimated to be 15 billion DKR. The traffic model calculations estimate the City Ring to carry 275.000 persons daily, or 85 million per year. The Legal Act of the City Ring was passed in Parliament in 2007. Hereafter the Environmental Assessment is taking part during most of 2008. Alongside this process there is a public participation process that makes this phase of Metro building different from its successor. But aside from this the Metro officials are keen on underlining that the official policy for the City Ring is based on the principle of 'more of the same'. This means that the concept of 'cut n' cover' tunnels (also termed the 'metro box'), the small driverless trains, and the high frequency of train operations known from the existing metro will be used as main principles for the extension of the Metro. However due to the negative experiences with the Italian Train supplier Ansaldo Breda the train manufacturer will be changed.

The Metro in Copenhagen is linking up to a larger transnational mobility network in the Øresund region and need therefore to be understood as a much larger artefact and system that derives its meaning from a much larger context than the Copenhagen flow system. This is however a much more comprehensive story that we shall not be able to engage with within the confinements of this paper (see e.g. Jensen & Richardson 2004 and Richardson & Jensen 2004).

The London 'Tube'

According to Metro Transport for London the Underground (or the 'Tube' as the public nomenclature is) is the oldest urban metro systems in the world³. The Tube began in 1863 and has 275 stations and 408 km train line. The system serves over 3 million passengers per day and is close to its limit due to lack of continuous funding and overcrowding (Votalto 2007:60, Wolmar 2004:292). Since 2003 the Tube has been part of the Transport for London (TfL) which also operates the bus system in the city. From this date the Tube has also been operated as a Public-Private Partnership (PPP) where the lines and rolling stock is being maintained by private companies on 30 year contracts.



Figure 3: London Tube Map

The London Tube map drawn by Harry Beck in 1931 effectively set new standards for how to represent an urban metro network. Thus the total design manual from specific fonts to the principles of horizontals and verticals, and sparing use of diagonal at just one angle of 45 degrees all merged into a metro map style which has a global and lasting impact (Demuth 2004, Ovenden 2007:9). Stations in the London Tube are very different in size and in urban program. Thus some contain shopping facilities and commercial program of larger scale whereas others have more modest businesses like the odd news paper stand. The stations all differ in their layout and design, some being subject to star architects as is the case of the newest Jubilee Line (Powell 2000). Others have distinct and unique platform arts or tiles made for the respective stations only.

As a rather interesting feature the London Tube deliberately have no mobile telephone communication infrastructure as the citizens of London seem to appreciate the Tube as one of the last public domains where the mobile telephone does not dominate the character of social interaction.

Paris' Metro

The Parisian Metro is also amongst the oldest and largest urban metro in the world. According to Rapid Transit Paris⁴ the system was brought into operation in the year 1900 during the World Fair exposition in Paris. The system includes 16 lines, 298 stations and 213 km of rail

³ This description is based upon accessible information from the Transportation for London's web site:

<http://www.tfl.gov.uk/home.aspx>

⁴ This description is based upon accessible information from the Regie autonome des transport parisiens' web site: <http://www.ratp.fr/>

line. Today the Parisian Metro has approximately 4.5 million daily users which make it the second busiest Metro system in Europe after Moscow. The Metro is operated by the '*Regie Autonome des Transports Parisiens*' (RATP) which is a public body that also operates the regional commuter trains (RER), light rails and bus services.



Figure 4: Paris Metro Map

The Parisian Metro works in many respects as most other metros focusing on personal transportation as its key function. However, there is a deliberate mix of urban functions in many of the metro stations and there is a great deal of artworks in the stations as well. Furthermore, the RATP works in collaboration with researchers from MIT to create experiments with new technologies and infotainment systems in the metro. In particular the project 'Metro 2.0' made in collaboration with the Mobile Experience Lab is of interest here (<http://mobile.mit.edu/>).

Enter flow space – embarking on a smooth ride

From these very short descriptions of the three different metro systems we will now engage the field research results as we look into how mobility actually is being produced and performed.

The working and design of the Copenhagen metro is both functionally and aesthetically a hallmark of cool and smooth modernism. From the signage on the ground down through the escalators towards to clean and smooth platforms rid of any signs of ornament. The first thing one has to face as a potential user of the existing metro is to locate a station. Due to the strict design manual the signage that leads you to the station is very discrete and are at time in danger of 'drowning in the semiotic sea' of the urban signscape. As soon as the station has been located there are two options for entering. Either by the lift which is the most recognisable imprint of the metro station on the surface space due to its characteristic glass cage sticking up on the surface. Alternatively the route which handles the main flow is via the staircase to the first underground level. At this level the ticket machines and information flyers are located.

One buys a ticket from a machine as there is no staffing of the stations. There are train stewards on some of the trains (that are not operated by humans). The access to the station platform is not regulated by gates or check points that one has to pass after buying a ticket. This feature is argued by the designers to be related to the particular 'Danish way' of operating a metro service. Supposedly the customers are willing to pay but they are also subject to random ticket control.

The Parisian and London Metro systems cannot say to accommodate the 'smooth ride' to the same extent that the Copenhagen Metro. This is due to an obvious reason; the number of daily passengers clogging the arteries of the systems in both Paris and London are much higher than the numbers in Copenhagen. Also the capacity and complexity of the networks are very different making Copenhagen come out again as the smaller example. However, there is also another dimension to the lack of 'smooth ride feel' in Paris and London. That has to do with the acceptance of various activities and deliberate design of e.g. shops and newsstands within the London and Parisian Metros. As opposed to the strict design code that reserves the Copenhagen Metro spaces at platforms and gangways for passenger circulation only the metros in London and Paris are full of other types of activities, programs and 'friction'. The Metro Company in Copenhagen prides itself of having invented a clear solution to the urban mobility problem by providing a system for circulation only. However, the Company also claims to have created 'urban spaces'. This must be contested as the sense of public domain is only felt in a minimal sense in the Copenhagen metro. No musicians, homeless, shopkeepers or vendors contributes to making the smooth flow space a venue for social interaction and culture – as would be required to fulfil any minimum definition of 'urban' in general terms. Here the adding of commercial programs and also the (partly) acceptance of musicians and people living in the Metros of London and Paris give rise to a completely different ambience and meaning. Clearly this may also then produce some of the problems with lack of circulation. In this respect London and Paris are much more comparable to each other making Copenhagen stand out as a special case of fully fledged flow space.

Metro space and new ways of engaging the public

The Parisian metro aims at relating three dimensions into its design and planning philosophy. Accordingly a metro station is a people mover focusing on transit, but it is also related to commercial programmes and shopping activities making it a market intervention. Furthermore, a metro station is now recognised to be a public realm and a meeting point between different social groups in the city. The last dimension is partly related to a change in philosophy from the RATP metro operator that has recognised that rather than fighting the presence of social groups that 'hang out' (in many metro stations large groups of the city's black population has transformed metro stations into public domains where different civil society activities flurries) in the metro spaces the presence of these groups are considered to be an expression of social richness and diversity. The RATP authority relates the change in the view of the metro as a social space and public realm partly to their mission of creating public transport and thus catering to the public will. But moreover, the inclusion of the social dimension and the public domain element is a sign of a shift in the way mass transit and public transport is understood. To RATP the 'mobility' dimension is much broader than the 'transport' dimension. The shift in understanding means seeing everyday life mobility as a meaningful and culturally important activity. As such it is related to a broadening of the cultural significance of mobility and different attempts to 'add meaning' to the urban travels by means of e.g. new mobile technologies, interactive facades and other technological experiments. The Parisian experience thus differs from both Copenhagen and London⁵. In the field studies there was not much expression of civil society or street performance activity within the London Underground. During a whole day of 'metro drifting' we met one singer at the Canary Warf underground station in London. It seems that commissioned 'artists' can perform in the Tube but only on a strictly regulated and controlled basis. In Paris by comparison, there are many more street musicians.

⁵ It should be mentioned that this is based on the RATP's own positive report on the motives of making a distinction between mobility and transport.

Bikes in bundles

A particular 'hot issue' in relation to the Copenhagen Metro is the bikes. Bike parking is a major issue in relation to the spaces on the ground above metro stations. The planners and architects fight a battle of keeping the bikes in the designated parking spaces. However most biking metro users (and that the majority) seem to prefer to 'park' (or throw) their bike at the very doorstep of the metro station. The stations have bike parking facilities below the surface level which you can access by elevator, but the solution is sparsely used. According to the Municipal planners from the Road and Park Department this is not just an issue of expert aesthetic judgement. Many residents neighbouring the stations complain about the bikes being scattered over the urban squares and above ground surfaces. There is a dilemma here as the metro is dependent on the bikes drivers and may in fact be said to encourage the use of bikes, at the same time as the parking issue trigger complaints and make the metro interface with the city a contested issue. This reaches beyond a discussion of aesthetics or order as it in particular is an issue to blind people to whom the bikes outside designated areas is a major problem. In London and Paris this seems to be much less of a problem, probably partly due to the differences in national mobility cultures of cycling (Jensen 2007c). In London we saw a few bikes at St Pancras station and there seem to be a shift in both London and Paris in favour of biking but not on a scale which has left any serious imprint on the surface level (yet).

Commercial buzz or smooth aesthetics

Representatives from the Architectural firm hired by the former Ørestad Company now the Metro Company has a difficult time with the dilemma of a very strict and detailed codification of the design manual governing the metro stations, trains and signage on the one hand. And on the other hand a massive pressure to let in more commercials and adverts in the metro – both on the platform walls and on the trains themselves. There is a battle of the semiotics and economics calculus to be made here. This is both a conflict to be played out in the existing metro space as well as it may become an interesting issue in the construction and design of the new City Ring. There are in fact commercials and sales events in the Copenhagen metro nowadays but they are still a contested issue. Mostly we see poster commercials mainly at the concourse levels in the stations and the metro increasingly is being used as launching venues for new commercial products (e.g. within cosmetics).



Figure 5: London Tube

In London and Paris the commercial buzz has annihilated the subtle concerns for aesthetics. However the strategy also seems to be one of explicitly embracing commercial activities as an urban feature of the metro in both cities. There are lots of billboards and commercial ads at platform levels and along escalator shafts in both the London and Paris Metro systems. Furthermore the explicit and deliberate linking of commercial programs to the metro stations is part of both London and Paris' ways of orchestrating their metro spaces. Some developments have even taken to the commercial as the prime target for many visitors. Thus the new St. Pancras International station in London (Jones 2006) that hosts the new Eurostar terminal, up-marked restaurants, shopping, and the longest Champagne bar in Europe (!) has become a meeting point for Londoners who are not going anywhere on trains and underground but simply wants to meet and thrive on the cosmopolitan atmosphere of this new node. St. Pancras has become a place of choice beyond mobility alone⁶.

Generic design or site specific place markers?

In Metro constructions in general one find a discussion of whether the metro design should put an 'imprint' on the surface space of the city or whether the local site above the station should provide the identity of the station area. Moreover the way that the design is carried out below surface level may be subject to discussion. In the previous phases of the metro construction the Copenhagen Metro Company has put emphasis on design control and identical station layout on all the stations. In contrast to for example the existing London Jubilee line or the planned Metro line of Naples where the different stations are deliberately designed in order to give each individual station its own identity and characteristics. The discussion here is one of brand and image control versus difference and heterogeneity. The argument in favour of the latter would also stress the fact that it is hard already to navigate under the city surface. When shooting off through the dark tubes the person travelling by Metro has no sense of location or geography at all. Only when the metro arrives at station will there be signs of location as the station name will serve as a geographical marker. But in the identical layouts of the stations used until now there is not much resonance with the shifting urban geographies 20-30 meters above the traveller. By designing the stations different the traveller is more aware of where in the city he or she is. Furthermore, the urban sites above may be 'mimed' by using identity markers of specific features of the above geography (e.g. particular urban functions like football stadiums may be indicated in the metro station by art or graffiti referring to the particularities of the site). According to the Copenhagen Metro Company's news letter the Chief Architect do not foresee any changes in the design philosophy for the new City Ring as she explains in this quote from the March issue of the news letter:

'A Metro is not a Shopping Centre. In this respect I am probably a hardliner. It is also about overview where the traveller quickly must be able find the right way. Therefore the City Ring will have the same simple and straight forward form language as the existing Metro' (www.m.dk/nyheder, accessed March 13 2008, author's translation)

Accordingly we shall not expect that the City Ring will become an extreme bombardment of the senses as we know it from big cities for example in Asia.

⁶ Thanks to Professor Mark Tewdwr-Jones for this observation.



Figure 6: The Copenhagen Metro

As mentioned, the design codes in both Paris and London are of a completely different nature to the one of Copenhagen. In both of these systems we find unique station design and even signature architecture breaking away with the model of ‘more of the same’ found in Copenhagen.

Flow machine or urban space?

As described above the architects that designed the Copenhagen metro stations find the presence of daylight on the platforms below an argument in favour of understanding the stations as de facto urban spaces. However, one might argue that the mono-functionality of the stations would make most travellers feel outside an urban space – and perhaps even in a generic ‘non-place’ (Auge 1995). However, compared to the London and Paris the metro stations in Copenhagen may feel very sterile and cleared of any other programming than the things that are narrowly related to get people from point A to point B.

According to the designers another ‘positive’ effect of keeping the metro a mono-functional space is that fewer of the ‘less wanted people’ are inclined to seek shelter in the Metro. In a subtle relationship between power and design we are not facing severe policing and military tactics. For example the ‘benches’ are not really benches but sort of leaning devices designed deliberately so that they will not function as place where people can lie down and sleep. The senior citizens and less mobile users have complained about these ‘relaxing devices’ as they cannot use them. Such metro furniture is likely to be re-designed in the City Ring stations but for certain still in a way where the control of usage is secured and where you cannot sleep on them. The lack of benches in the Copenhagen metro as an deliberate attempt to restricted ‘unwanted staying’ resembles the quasi-military tactics invented in the fight against homeless people and the ‘militarisation of urban space’ in Los Angeles or ‘fortress L.A’ as Davies term it (Davies 1990). In London and Paris much more ‘friction’ occurs in the stations as well as at the platforms. This is the case both in terms of commercial activities but also in terms of street musicians and people ‘hanging out’ in the metro system.

The Symbolic importance of infrastructure

The metro may be discussed on the basis of functional mappings of flows and traffic forecasting. Needless to say it is very important to understand the attempts to make the metro in general take over e.g. car journeys in the city. However small the increase in public

transportation after the first round of metro-building in Copenhagen might be the new City Ring does not only fulfil such specific goals (in fact the existing Metro system has boomed with an increase of 28% users from 2007 to 2008). Not to be underestimated is its semiotic and branding values. Next to the Copenhagen Metro's capacities for moving people and passengers, we should realise that the Copenhagen Metro is an important symbolic marker of a city in transition. Copenhagen's transformation from an industrial city towards a post-industrial city is a distinct underlying dimension to this symbolic valorisation. By narrating the new metropolis as one of global competitiveness and status the metro makes an important symbolic storyline in a narrative of urban transformation (Jensen 2007b). The metro has become an important symbolic and semiotic device working as a vehicle for the narrative of Copenhagen as a creative and innovative city. The symbolic importance and meaning of the metros in London and Paris seems much more attached to the history of the metros. Both have long histories that make them associated with the urban fabric. They are now an inherent part of the city's system of circulation as well as they have become symbolic sites in the historical memories and images of the cities (Augé 2002, Delaney 2006). In London the Tube logo and the Tube map even has become globally noticed icons which help branding London and show the symbolic importance of infrastructure.



Figure 7: The Paris Metro

Social interaction and public domain

The social mix as mentioned before is more evident in London than in Copenhagen. Perhaps this has to do with the deliberate strategy in Copenhagen to exclude the homeless, the drug addicts and the socially deprived. This is done not only by means of surveillance and policing but also more subtle in the way mobile subjects are interpellated in Copenhagen as 'people on the move only'. So the construction of the mobile subject in the Copenhagen metro is an idealised metro traveller that is in the metro to get from point A to point B. Not to get an experience, to meet people, to shop, or to be entertained.

In Copenhagen you clearly feel that you are moved in a seamless and almost frictionless machinery without long waiting hours. So the metro 'work' if one is looking for minimum friction. However, minimum friction also equals minimum interaction. The Copenhagen metro is less inviting to social interaction given the fact that the stations and platforms are cleaned from commercials, business activities, long time waiting, homeless people, street performances. However looking at London and Paris the serial experience of being an isolated individual on your own trajectory within a shared space of fellow mobile subjects clearly

supports an equally interaction-less environment. The masses and density in the London underground surely makes you feel like a herd on the move. You may have chosen your destination but you don't have any sense of control over the speed and comfort of travel as you get into an over-crowded underground car. You do feel in a company of strangers numbly being circulated without much interaction.

7. Concluding remarks

From the analysis of European Metroscapes we have come to see that our lives are not just what happen in static enclaves, but also in all the intermediaries and circulation in-between places. The way we bodily engage with places through multiple ways of circulating in, out of and across them shape an important part of the practical engagement with the world that ultimately construct our understandings of self and other. Valorisation of the socio-spatial relation depends on the bodily experience of mediated practices in time-space. As we are linked-in-motion and thus not just passively being shuffled across town such 'being-on-the-move' is an important contemporary everyday life condition in the city and should as such be re-interpreted. Furthermore, the discussion of '*politicising the city of armatures*' have pointed the argument in the direction of a different gaze on mobility. What is needed is a dynamic gaze on the city in such a way that it is not the enclave alone that works as requisite for identity building, but rather that we understand that sense-making and identity construction takes place in a more and fluid relationship facilitated by urban armatures that we may think of as intrinsic 'political'. In this respect the armatures of the contemporary city are potential venues for new articulations of politics and does as such deserves particular attention.

The field trips to the three socio-technical metro systems have pointed at three particular themes and features of importance to metro systems in general. Thus, the relative importance and weight put to *flow*, *business* and *public domain* seems to be distinct features (see figure 8).

	Paris	London	Copenhagen
Flow	X	X	X
Business	X	X	
Public Domain	X	(X)	

Figure 8: Flow, Business and Public Domain

Clearly this is too crude a representation to be acknowledged as a strict comparative study. But less can do. Here we shall argue that this heuristic device points to some of the profound differences in the way lived mobilities are being produced within the three metro systems. As discussed in the theory section, *flow*, *business* and *public domains* are important features of

contemporary metro systems. From the field studies we find that the Parisian Metro is the one that most thoroughly caters not only for movement of passengers, but also for including business. Moreover we find the Parisian Metro the most open in creating and allowing for social interaction and meeting spaces. The number of homeless people and street musicians (by way of a simple indicator) is thus much higher in the Parisian Metro than in any of the two other metro systems. In London the circulation of people and the creation of commercial incentives and spaces are the primary goals. There is however a certain amount of public domain in some of the stations. However this is so to a much lesser degree than in Paris. In Copenhagen there is no commercial activity in terms of shops or boutiques. Neither did we find any social interaction beyond the co-travelling with ones fellow metro user. This is very much in accordance with the design principles behind the Copenhagen Metro which is not supposed to be anything other than a flow system. This also apply to the deliberate tactics of not having benches or other types of furniture at the platform level that might encourage waiting, hanging out and 'friction'.

There are a set of general conditions in the three cases as well as they contain their own specificities related to their embedding within their particular regulatory, cultural and physical networks. So trains, trails, stations, platforms, escalators, metro staff, travellers, signs, commercials, musicians, homeless, police force, tickets, ticket machines, power supplies, news paper stands, coffee shops, customers etc. are assembled into socio-technical systems producing the lived mobility of metro travellers in London, Paris and Copenhagen. The specific assemblage within the socio-technical system is 'what makes metro mobility' by means of sorting, filtering, circulating, and orchestrating mobilities. However, as it becomes clear from the field reports there are also noticeable differences between the three metros. The most conspicuous difference seems to relate to the design code and aesthetics of the Copenhagen Metro. By its generic design code the metro has been deliberately designed with an eye to Scandinavian modernism and functionalism. This design principle has been followed through all the way from ticket machines to train carriages and is meant to provide a sense of seamless circulation and rational transit. However, the design code is connected to a social philosophy of 'pure transit'. Thus it is not unintentional that there are no panhandlers, homeless or street musicians in the transit space of the Copenhagen metro. Neither are shops and cafes to be found as the metro expresses a fully coherent system of flow, not friction. This however, has the repercussion that it fails to work as an urban space with a public realm. On the other hand side, this has clearly been the goal of the Metro Company; to provide a flow machine and nothing more.

The story of how the socio-technical metro systems in London, Paris and Copenhagen produces lived mobilities is obviously a story of friction versus flow. It is a story about the merging of the social (e.g. regulations, people, and cultures) and the technical (e.g. trains, platforms, and tickets). But furthermore it is a window into the socio-spatial processes of organising flow that creates the everyday life situation to the contemporary urbanite. By exploring the production of lived mobilities within these socio-technical systems we get an insight into how cities create and shape 'European Metrosapes'.

Author's note

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gathered during yearly study trips with urban design students from the Architecture and Design programme at Aalborg University since 2006. This includes talks with Metro officials and professionals working within the respective organisations related to the three metro systems. Here a special word of gratitude is due to Dominique Laousse of the RATP in Paris and Chief Architect Lise Lind, the Metro Company in Copenhagen. However, the theoretical contributions of this work must still be considered to be work-in-progress.

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Consulted Web Sites

Copenhagen Metro (<http://www.m.dk/>)

Transport for London (<http://www.tfl.gov.uk/home.aspx>)

Rapid Transit Paris (<http://www.ratp.fr/>)

The Mobile Experience Lab, MIT (<http://mobile.mit.edu/>)

Bibliography

- Abbas, N. (2005) *Mapping Michel Serres*. Ann Arbor: University of Michigan Press
- Amin, A. & N. Thrift (2002) *Cities. Reimagining the Urban*, Oxford: Polity Press
- Augé, M. (1995) *Non-places. Introduction to an anthropology of supermodernity*. London: Verso
- Augé, M. (2002) *In the Metro*, Minneapolis: University of Minnesota Press
- Castells, M. (2004) "Space of flows, space of place: materials for a theory of urbanism in the information age" in Graham, Stephen (ed.) *Cybercities reader*. London: Routledge
- Cresswell, T. (2004) *Place. A short introduction*, Oxford: Blackwell
- Cresswell, T. (2006) *On the Move. Mobility in the Modern Western World*, London: Routledge
- daab (2006) *Traffic Design*, Cologne: daab gmbh
- Davies, M. (1990) *City of Quartz. Excavating the Future in Los Angeles*, New York: Vintage Books
- Delaney, A. (2006) *Paris by Metro. An Underground History*, Northampton Mass.: Interlink Books
- Demuth, T. (2004) *The Spread of London's Underground*, London: Capital Transport
- Foucault, M. (1997) Of Other Spaces: Utopias and Hetreotopias, in N. Leach. (Ed.) (1997) *Rethinking Architecture. A Reader in Cultural Theory*, pp. 350-356 (London: Routledge).
- Galis, V. (2006) *From Shrieks to technical reports: technology, disability and political processes in building Athens metro*, Lindköping: Lindköping University, Studies in Arts and Science no. 374
- Graham, S. & S. Marvin (2001) *Splintering Urbanism. Networked infrastructures, technological mobilities and the urban condition*, London: Routledge
- Guy, S., S. Marvin & T. Moss (Eds.) (2001) *Urban Infrastructure in Transition. Networks, Buildings, Plans*, London: Earthscan
- Hajer, M. & A. Reijndorp (2001) *In search of New Public Domain*, Rotterdam: Nai Publishers
- Ingersoll, R. (2006) *Sprawltown. Looking for the City on its Edge* (New York: Princeton Architectural Press).
- Isin, E. F. (2002) Ways of Being Political, *Distinktion*, No. 4, 2002, pp. 7-28.
- Jensen, O. B. (2006) Facework, Flow and the City. Simmel, Goffman and Mobility in the Contemporary City, *Mobilities*, Vol. 2, No. 2, July 2006, pp. 143-165
- Jensen, O. B. (2007a) City of layers. Bangkok's Sky Train and How It Works in Socially Segregating Mobility Patterns, *Swiss Journal of Sociology*, vol. 33, no. 3, pp. 387-405
- Jensen, O. B. (2007b) Culture Stories: Understanding Cultural Urban Branding, *Planning Theory*, vol. 6(3), pp. 211-236

- Jensen, O. B. (2007c) *Biking in the Land of the Car – clashes of mobility cultures in the USA*, paper for the conference Trafikdage, Aalborg 27-28 August 2007
- Jensen, O. B. (2008) Networked mobilities and new sites of mediated interaction, Paper for the Critical Digital 'What Matters(?)' Conference Harvard Graduate School of Design April 18-19 2008
- Jensen, O. B. (forthcoming) Flows of Meaning, cultures of Movement – urban mobility as meaningful everyday life practice, forthcoming in *Mobilities*, vol. 4:1, March 2009
- Jensen, O. B. and T. Richardson (2004) *Making European Space. Mobility, Power and Territorial Identity*, London: Routledge
- Jones, W. (2006) *New Transport Architecture*, London: Mitchell Beazley
- Latour, B. (1996) *Aramis or the love of Technology*, Cambridge Mass.: Harvard University Press
- Latour, B. (2005) *Reassembling the social*, Oxford: Oxford University Press
- Lynch, K. (1981) *Good City Form* (Cambridge Mass.: MIT Press).
- Sheller & J. Urry (Eds.) (2006) *Mobile Technologies of the City*, London: Routledge, pp. 137-151
- Massey, D. (1991) *A Global sense of Place*, in Burnes, T. & D. Gregory (eds.) (1997): *Readings in Human Geography. The Poetics and Politics of Inquiry*, London: Arnold, pp. 315-323
- Massey, D. (1999) *On Space and the City*, in Massey, D., J. Allen & S. Pile (eds.) (1999) *City Worlds*, Milton Keynes: The Open University Press, pp. 157-170
- Mitchell, W. J. (2003) *Me++, The Cyborg Self and the Networked City*, Cambridge: MIT Press
- Pinder, D. (2005) *Visions of the City. Utopianism, Power and Politics in Twentieth-Century Urbanism*, Edinburgh: Edinburgh University Press
- Powell, K. (2000) *The Jubilee Line Extension*, London: Laurence King
- Richardson, T. & O. B. Jensen (2008) How Mobility Systems Produce Inequality: Making Mobile Subject Types on the Bangkok Sky Train, *Built Environment*, vol. 34, no. 2, pp. 218-231
- Sadler, S. (1999) *The Situationist City*, Cambridge Mass.: MIT Press
- Scott, J. A. (1998) *Seeing like a State. How Certain Schemes to Improve the Human Condition Have Failed*, New Haven: Yale University Press
- Sennett, R. (1994) *Flesh and Stone. The Body and the City in Western Civilization*, New York: W. W. Norton & Company
- Thomsen, B. S. & O. B. Jensen (2008) *Performative Urban Architecture – place-making in-*

between socio-technical systems, paper for the Annual Meeting of the American Association of Geographers, Boston, April 14-20, 2008

Trip, J. J. (2007) *What makes a city? Planning for Quality of Place. The case of high-speed train station area development*, Delft: TU Delft (PhD dissertation)

Urry, J. (2003) *Global Complexity*, Oxford: Polity

Urry, J. (2004) *The 'System' of Automobility*, *Theory, Culture and Society*, Vol. 24 (4/5): 25-39. London: Sage

Urry, J. (2007) *Mobilities*, Cambridge: Polity

Valderrama, A. & U. Jørgensen (2008) Urban Transport Systems in Bogotá and Copenhagen: An approach from STS, *Built Environment*, vol. 34, no. 2, pp. 200-217

Votolato, G. (2007) *Transport Design. A Travel History*, London: Reaktion Books

Wolmar, C. (2004) *The Subterranean Railway*, London: Atlantic Books