Patterns of co-presence
Spatial configuration and social segregation

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Abstract

This thesis notes that there is a lack of systematic research investigating segregation patterns based on how public space is used and frequented by citizens. In order for understanding of urban segregation to reach beyond residential segregation, the extent to which public space facilitates co-presence between social groups is a key issue. The main concern in this thesis is to arrive at a deeper understanding of the critical role urban form plays in terms of co-presence in public space and in extension for social segregation. The argument builds on knowledge from other fields, arguing that co-presence is of utmost importance for societal processes: by sharing space and being co-present with others, which does not necessarily imply focused interaction, we gain information and knowledge from our fellow citizens and participate in processes that negotiate social structures, acceptable behaviours and identities. The sharing of space thus becomes a central part of ‘being in society’. It is furthermore through public space that material urban resources are accessible, an access that is dependent on both the location of the amenities in space but also the distribution of space, as structured and shaped by urban form, which creates the actual experience of access through space.

Segregation is primarily defined as a social problem. However, in this thesis, it is made clear that it is also a spatial problem. While also broadening the conceptualisation of segregation, the main focus has been upon the role of the built environment. The socio-spatial link builds on social theories. However, these theories are weak when it comes to explaining where co-presence occurs. Addressing the spatial side of the problem, the thesis primarily builds on the architectural theory of space syntax that exactly aims to study the space-society relationship from the viewpoint of space and provides empirical evidence for the correspondence between urban form – as it is shaped by urban design and architecture – and the creation of co-presence as well as variations in its intensity and its constitution. In addition, key questions such as what people may have access to ‘just around the corner’ in terms of human resources or other urban amenities
are elaborated. The distinct variations found between neighbourhoods are argued both to enrich the discussion on social exclusion and unequal living conditions and inform future urban planning and design.

The thesis demonstrates that specific configurational properties have great impact on the pattern of co-presence. More specifically, it is found that a segregation of public space, a limited spatial reach and an uneven distribution of spatial centrality appears not to favour an exchange between neighbourhoods or access to urban resources across the city – findings that are highly critical for the urban segregation issue. Detailed configurational analysis of Stockholm reveals the performative aspects of different urban layouts related not only to local circumstances and character but, more importantly, to the further context of such layouts. Increased knowledge of how spatial configuration relates to social practices offers new insight into how different neighbourhoods and urban layouts perform socially and increases understanding of the social implications of spatial configuration.

The findings of this study are argued to open up theoretical developments that address the social and political dimension of urban design with greater precision. Not least, this knowledge can influence public debate. The knowledge produced can furthermore be used in urban design practice and anti-segregation initiatives, identifying whether spatial interventions can make a contribution and if so, what physical interventions respond to the social ends in question, where the ultimate aim is an urban design that not only builds cities but societies too.

*Keywords:* co-presence, spatial configuration, public space, urban segregation, urban design, public life, spatial affordance
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1 Introduction

Segregation in a city can be manifested and be expressed in many different ways. Districts and neighbourhoods within cities often differ considerably in terms of economic, social or cultural aspects, especially in so-called residentially segregated cities. In such a situation, public space stands out as the most important site where people can participate in various societal processes as everyday activities are carried out. For many people, being co-present in public space means ‘being in the city’ and being able to observe various kinds of activities that take place in a city. Public space is a site or an arena where one may see and encounter other people, be seen by others and become aware of similarities and differences based on, for example, demographic, socioeconomic or ethnic aspects. By being co-present in public streets, squares, in parks or in public institutions such as libraries or schools, we have the possibility of gaining insight into other people’s living conditions. As Sharon Zukin describes, it becomes a place for a constant on-going process of creating different group identities and solidarities among those who share space and such identities may be further integrated into society at large, in an urban public culture (Zukin 1995, 11, 253). Zukin argues that public culture is socially constructed at a micro-level. This implies that being co-present in public space is more than just ‘being in the city’; actively or passively participating in social processes with other people and with different groups in society implies that sharing public space with others is central for ‘being in society’.

Cities may be described as mechanisms generating contact (Hillier 1996, 174) and in situations with a persistent urban segregation, it is relevant to question to what extent the city provides spaces that have the ability to counteract the negative consequences of segregation. Segregation is primarily defined as a social problem; however, in this thesis it is also acknowledged as a spatial problem. There is evidence too that the public space has great importance for the issue of segregation and that urban form plays an important role in this context. According to Laura Vaughan and Sonia Arabaci, an increased understanding of how the pub-
lic space domain, shaped by urban form, can create potential for encounters and co-presence between different types of social groups is essential to achieving a more nuanced understanding of urban segregation that extends beyond residential segregation (Vaughan & Arabaci 2011, 132). This thesis notes that there is a lack of systematic research investigating the segregation pattern in the urban lives of people living in public space and specifically how this may be related to urban configuration and urban form (Legeby 2010b, Legeby & Marcus 2011, Franzén 2009).

The fact that the city has imaginary (or real) boundaries that limit access, that separate, isolate and keep people apart is in no way a new reality, but the consequences of this are increasingly of great concern. Whether these boundaries (or ‘glass walls’ as they have been referred to in public debate) (Linder 2012) have become thicker or more compact is difficult to say but undoubtedly they may be seen as a threat to the urban welfare, to democracy and to society (SOU 2005:29; OECD 2006; SOU 2007:104). This strongly indicates that urban segregation is not about residential aspects only, conversely, it indicates that it is a spatial problem too. For example, if people or groups of people are limited to using only parts of the city or if groups of people are restricted to sharing not only residential areas but also restricted to sharing urban public space in general, then our everyday life practices also become segregated. Moreover, if it is possible to establish that inequalities between neighbourhoods in terms of access to urban resources and amenities can be linked to spatial properties and urban form, then the segregation problem may be defined also as a spatial problem and even as a public space problem. Still, the level of residential segregation is highly influential in terms of segregation in the public space which makes it relevant to unfolding the situation.

Sweden, like many of the European metropolitan areas, faces difficult problems including social and ethnic segregation as well as visible inequalities regarding living conditions. According to Roger Andersson (2007), the increasing geographical concentration of many immigrants in Sweden has triggered the contention that the failure of ethnic integration is linked to housing segregation (Andersson 2007, 62). This concentration is partly a result of how the arriving immigrants, who came in large numbers, were directed to vacant apartments in large housing estates in certain suburbs in the three metropolitan areas in Sweden; Stockholm, Göteborg and Malmö. Many countries have areas within the central part of the city labelled as ‘deprived’ but in Sweden the areas defined as segregated are most often found in more distant or peripheral locations in relation to the city core (Olsson 2005, 12). Primarily it is residential or housing segregation that is referred to in national investigations, defined
as the geographical separation between selections of the population, a
definition based on socio-economic, ethnic or demographic characteris-
tics of the residents (SOU1997:118, 23).

Social distance and exclusion as a result of residential segregation are
commonly pointed out to be of great concern for society as a whole (SOU
however, it is possible to see that the patterns of residential segregation
are not necessarily reflected by urban life as a result of how we use the
city in everyday practices. The urban life of the city is not necessarily re-
stricted to the proximity of peoples’ homes; it also takes place in locations
other than being close to where people live. It is likely that different social
processes with importance for segregation and/or for societal integration
to a large extent take place in the public realm as a result of our daily
activities: in streets and parks, at squares and local centres, at work and
at schools, etc., places for our everyday practices. Therefore, the prop-
erties and characteristics of such places need to be acknowledged to a
larger extent in order to increase our knowledge of how these places may
influence the emergence of urban social networks or solidarities; this in
turn may increase our understanding of the role of the built environment
and hence, increase the understanding of the relationship between urban
segregation and urban design.

One negative consequence of segregation that has been highlighted is
exclusion. It has been argued that a divided city – a city characterised by
residential segregation – results in unequal life opportunities that prevent
people from integrating in society (Integrationsverket 2004, 15). Housing
segregation is arguably an impediment to the possibilities of achieving
integration in society and segregation is something that threatens democ-

racy as well as economic growth (Integrationsverket 2004). Eva Öresjö
emphasises the complex nature of exclusion:

“The problem in Sweden is not merely segregation in housing but the
strong social and ethnic exclusion mechanisms that are growing. It is
reflected in discrimination at work, segregation in secluded housing, po-

citical marginalization, etc. Today, being an immigrant no longer means
a limited phase in the life of an individual. It has become a state which
can extend over several generations, irrespective of actual citizenship or
place of birth and upbringing. Many immigrants remain in a permanent
state of cultural subordination and social exclusion.” (Öresjö 1997, 44).

It is possible to find a significant amount of research which refutes the
notion that residential segregation is inherently problematic and which
challenges the focus on segregation as a purely residential phenomenon
(Simpson 2004, Vaughan & Arabaci 2011). This opens up a more nuanced analysis of segregation, taking into account the various expressions the urban segregation phenomenon may have in our cities.

There are many examples of limited exchange between neighborhoods and the effects of urban segregation may be numerous: the increased residential segregation means that different social categories share residential neighborhoods to a lesser degree than would otherwise be the case, but what is less often addressed is that the possibilities of sharing public spaces such as streets, parks, squares are also limited which might present an even stronger threat to society.

The central point of departure for this thesis are the daily life activities and processes that take place in public space with an exploration of how spatial properties and configurations, as shaped by architecture and urban design, influence the prerequisites for different social processes to emerge in public space. It will be argued that, in order to study a phenomenon such as urban segregation in a way that has high relevance from an architectural research perspective, it is important to look at those conditions and mechanisms that are created and influenced more specifically by architecture and urban design. What such architectural research needs to be successful is an increased understanding of the relationship between urban form and its social implications.

*Figure 1:1. Daily life activities taking place in public space.*
1.1 Urban segregation

Segregation and the confused relationship with geographical areas
Ethnic, social and economic segregation are considered to be major social problems and it is argued that Swedish cities of today are impaired both by unequal living conditions and unequal access to labour markets and services (Integrationsverket 2007). This residential segregation has continued to increase in most Swedish municipalities during the beginning of the 21st century (Integrationsverket 2007). The increase has, however, abated and the situation is stabilising: long-term poverty has decreased during the last decade and the ethnic residential segregation in the three metropolitan areas is not increasing any longer (Socialstyrelsen 2010). The exception to this is the economic segregation that continues to increase in spite of the fact that income levels have risen in general; high-income groups have been favoured over low income groups to a larger degree by this development with the result that the income gap has increased. In metropolitan areas, it is found that economic and the ethnic segregation is closely related (Socialstyrelsen 2010).

According to Sven E. Olsson Hort (1995), the segregation concept includes a certain level of social hierarchy between different sections of the population. Segregation not only defines borders between groups but also places the groups in a hierarchy of power that influences collaboration and interaction. As a social construction, segregation is strongly related to social polarisation and resistance to change which easily becomes a ground for political conflicts (Olsson Hort 1995, 2). Furthermore, segregation is defined as an institutionalised form of social distance that manifests itself in physical separation. However, even if segregation implies separation between individuals and groups, it is not described as the antithesis of social integration (Olsson Hort 1995, 4). It was as late as the 1990s that segregation became a core social and political issue (Olsson & Törnquist 2009). Focus moved from a national debate about regional imbalances to the three metropolitan areas in Sweden and the problems with social distances between the inhabitants in different neighbourhoods. Furthermore, the urban sociologist Mats Franzén discusses the unrighteous aspect of segregation and that segregation establishes or confirms a hierarchical difference between at least two groups: segregation implies a superior or a subordinate position, morally and/or
materially (Franzén 2001, 25). It is stated that segregation creates insiders and outsiders, included and excluded, sublimate and stigmatised; that is, segregation is basically about power and about relations between people and between sections of the population (Franzén 2001, 25). According to Franzén, segregation becomes a problem – irrespective of class or ethnicity for example – as it is perceived as unrighteous, as a lack of recognition and hence unworthy of a respectable society. This is how segregation becomes an obstacle to processes that encourage recognition of outsiders and that encourage ‘otherness’ to be engaged by the established (Franzén 2001, 33).

Several official documents and investigations focus on the fact that poverty and inequality is often concentrated in certain geographical areas and districts which indicates that architecture and urban design is somehow involved. For example, it is stated that such areas are impaired by poorer living conditions and poorer access to labour markets and services (Integrationsverket 2007). These so-called ‘problematic areas’ are often synonymous with neighbourhoods originating from the 1960s and the 1970s in Sweden. The areas have been heavily debated and criticised since the beginning and as part of that debate, their physical environments, based on the architecture and planning principles, have long been the focus. Internationally, the most well-known example of a critique of the post-war method of building cities is perhaps Jane Jacob’s *The Death and Life of Great American Cities* from 1961, where many of the modern urban areas are described as lacking in social life and social control. Jacobs argued that people professionally concerned with cities had not identified the kind of problem that they faced and that cities happen to be problems in organised complexity (Jacobs 1961). Up until today, the ‘problematic areas’ are still debated and they constitute an urgent problem that is puzzling urban decision makers as well as sociologists, architects and planners in many parts of the world.

In the investigation *Divided Cities* from 1997, the large inequalities between districts were emphasised (SOU 1997:118). From an urban design and architectural perspective, it is crucial to explore the extent to which urban form and its configuration influences such inequalities. According to the report, a physical separation between groups in society (e.g. groups residentially separated) – that by necessity involves the built environment and urban form – manifests a social distance between different social categories or groups of the population. As a result from this, some groups are excluded from important parts of daily life, and the isolation is argued to make it difficult to enter the labour market among other things (SOU 1997:118).
The suggested correspondence between a physical separation between groups in society and the lack of social relations is relevant to reflect upon from an urban design point of view. The statement indicates that there is reason to look more carefully at the extent to which configurational properties in so-called ‘problematic areas’ provide conditions that enable encounters between different social groups, both within a neighbourhood but also encounters between people from different neighbourhoods. Moreover, a limited exchange between different parts of the city indicates that mechanisms of generating contact are impaired which prepares the ground for an unfortunate urban disunion and increases the risk of polarisation and exclusion. It is argued that any society needs to create space for an exchange on a less personal basis too through, for example, simply sharing space (Hillier & Hanson 1984; Hillier 1996; Collins 2004). Sharing urban public space – be it the street, the square, the park or public transportation – implies bringing social differences together, making them visible and allowing awareness of ‘the other’ or ‘the stranger’ (Waquant 2003). However, this also raises questions about what types of social ties or social networks may appear in urban environments and this will be investigated in the second chapter of this thesis.

**Urban design and anti-segregation initiatives**

Many national and municipal initiatives with the aim of counteracting segregation have been so-called area-based initiatives, for example Blommansatsningen, Nationella exempel (a municipal initiative), Storstadssatsningen, Lokala Utvecklingsavtal and Urban Utveckling. The strong local focus has implied that the segregation ‘problem’ has more or less been placed at a local level in certain specific districts or neighbourhoods. This is, however, rather contradictory to the rhetoric in many of the reports where there has instead been an emphasis on the comprehensive perspective and that segregation problems are related to the city as a whole and cannot therefore be solved locally within a dozen (deprived) neighbourhoods (SOU 1998:25; Olsson & Törnquist 2009; Boverket 2010). In this thesis, it is suggested that acknowledging segregation as a societal problem (and related to the city as a whole) does not by necessity imply that the problem is not local. Inequalities identified as neighbourhoods are compared are likely to be expressed locally somehow. Neighbourhoods may afford significantly different living conditions of which some are argued to be highly dependent on, or even a result of, the local conditions.

During the period from early 1980s until now, it is possible to see how the government through its different reports and delegations has been
hovering between on the one hand, giving priority to social initiatives and on the other hand, giving priority to physical initiatives that include various improvements of the physical environment (for an outline, see Boverket 2010). Looking more specifically at the interventions related to the physical environment, there was initially a focus upon open space, including for example an upgrading of parks, play grounds and courtyards. This strategy was replaced during the 1980s with far more extensive changes that included demolition and complementary building, followed by a period with an emphasis on social aims at the beginning of the 1990s. Along with the Metropolitan Initiative, urban renewal and urban design-related interventions were re-introduced but now paired with social initiatives.

However, in the Governmental Proposition of 1997/98, segregation was not primarily seen as a housing policy problem but rather as a problem related to the labour market and to ethnic segregation. Changes in the physical environment were hence not identified as an efficient part of the anti-segregation ‘tool-box’ in this respect (Boverket 2010).

In this thesis, it is argued that ignorance towards urban design interventions within anti-segregation initiatives is highly unfortunate since many of the apparent and well documented unequal living conditions are related to how these metropolitan neighbourhoods are structured and planned from the beginning (Klasander 2003, 2005; Schulz et al. 2004; Olsson & Törnquist 2009, Legeby 2010b). Even though these neighbourhoods have been subject to immense investments; houses have been demolished, rebuilt and upgraded but still, according to for example Olsson et al. as well as Schultz et al., many of the important prerequisites for reproducing the segregation patterns still remain; for example, the large scale of the areas, the profound enclave structure, the differentiated traffic system which separates different modes of transportation in space and the land use zoning etc. (Olsson et al. 2004; Schulz et al. 2004; Olsson & Törnquist 2009).

Evaluation of initiatives

One of the main conclusions from the evaluation of the Metropolitan Initiative (i.e. The Local Development Agreement, launched in 1999) is, in a way, paradoxical: the Initiative made a great difference in those 24 neighbourhoods/districts that were included yet the Initiative was seen as a monumental failure since the overall goal of ending social, ethnic and discriminatory segregation was not achieved (SOU 2005:29). However, such a goal is first and foremost political and both researchers and evaluators agree in considering this goal to be overly ambitions and unrealistic (SOU 2005:29). Many improvements were made locally and many
individuals who participated in the Initiatives in different ways were strengthened and gained a chance to access and be part of new opportunities. At the same time, the evaluation report states that local interventions alone will not have an impact on the overall causes or mechanisms of segregation:

“[I]f the vulnerable area is studied without locating it as part of the wider society, only a partial understanding is achieved for the context. There is a great risk that the focus will shift from the deep-lying patterns of the segregate problem to an interpretation which is more politically manageable.” (SOU 2005:29, 28).

Hence, it is possible to reach higher living standards at the local place through interventions and perhaps achieve increased equality across the city but the city does not necessarily become less segregated or more integrated as a city as a result of this (SOU 2005:29; RTK 14:2008, 25). In spite of this strong recommendation for a stronger awareness of the limitation of area-based interventions, the government continues to propose and launch similar area-based programmes (Integrationsdepartementet 2009; Arbetsmarknadsdepartementet 2012) directed at those neighbourhoods or districts that match the criteria (e.g. having high unemployment rates, high dependent on economic subsidies, low economic activity, low education levels among the residents, as well as crime aspects etc).

The way the segregation problem is described and addressed in these official documents indicates that there is an ambivalence regarding the scale on which segregation should be approached. From what is said above, it seems that it is possible on the one hand to discuss social relations or urban social networks within an area and on the other hand, what appears to be of the utmost importance in the issue of urban segregation is to discuss social relations or urban social networks that work between different areas, i.e. relations and networks that overcome space and reach beyond the local neighbourhood or district and connect people, groups etc. across the city and furthermore, study what spatial conditions are needed for these types of urban social networks to emerge.
1.2 An urban design approach: the need for new descriptions

Synthesising the social and the spatial
It is important to stress that the issue of urban segregation refers to many fields of knowledge and to deepen our understanding of the subject, one needs to draw from all of these. However, the very word ‘segregation’ has essential spatial implications and it is more or less impossible to conceptualise segregation without considering physical space, the built environment. When focusing specifically on architecture and urban design, the spatial dimension of segregation is essential to its understanding and its successful study on a theoretical level. However, the segregation debate more or less overlooks urban form. Since segregation in the urban context is about separation – a separation of people or a separation of activities and functions – it is very difficult to understand such separateness without considering space as being shaped and structured by built form. Mats Franzén suggests that social categories and social activities are not only social phenomena but also are spatial phenomena by arguing the following:

“[…] if people and activities are of different kinds, space can be supposed to be implicated in not only the reproduction, but also and more importantly, in their constitution.” (Franzén 2009, 1).

If the physical environment can either impede or support sociability, it would be questionable to conceptualise the built environment only as a neutral background and in descriptions of social phenomena neglect the variable of urban form and its configuration. To develop such knowledge appears to be an important and urgent task for architectural research. The question is how. If development of knowledge starts with descriptions, it is crucial to explore how the problem can be framed to actually address questions concerning the relationships between urban segregation and urban form. The city may, in a simplified way, be seen as being composed of different layers: a structural layer formed by streets and public space, a built layer including for example buildings and greenery as well as social and cultural layers including the population and different kinds of cultural, historical and social structures. In the current segregation debate, the relations created between the social and spatial phenomena are rarely well developed. On the one hand, one may find descriptions of the
city according to how it is residentially segregated based on (often large) administrative geographical units (Anderson et al. 2001). On the other hand, one may find urban morphology typologies, such as the building typologies of Stockholm, identifying twelve different typologies in the city of Stockholm (Kallstenius & Fredlund 2001).

Figure 1.2. Stockholm: segregation index, born outside of Sweden.
But what about the relationships between the spatial and the social? One weakness in these kinds of descriptions is that very little is revealed about how the spatial networks relate to the social networks. What spatial relations are created as a result of urban design and how may these relations influence the social relations and vice versa? Drawing on the assumption that the social and the spatial are closely related means that it is urgent that descriptions and analysis of cities as physical systems somehow acknowledge possible social consequences produced by urban form. One
example of such a description is an analysis of so-called foreground and background networks, illustrating a kind of spatial centrality for all street segments in the urban system (Hillier 2009b). The foreground network is argued to facilitate socio-economic exchange and renewal through high accessibility in the urban spatial system, while the background network is argued to facilitate socio-cultural continuity and reproduction through low accessibility. Such a pattern is derived from choice-values that are similar to what is known in network analysis as ‘betweenness centrality’, a measure that captures how often one specific street segment is part of all potential routes within the street system. These kinds of descriptions will be developed further since, from an architectural research perspective, it is relevant to increase knowledge about the social impact of urban design and therefore it is important to link social phenomenon to spatial features and properties.

**Space: not a neutral background**

It needs to be spelled out immediately that, in this thesis, urban space is not seen as a neutral background for social and cultural processes, rather urban space is assumed to have an inherent social logic as claimed within the space syntax theory and thus assenting to the idea that “[…] spatial pattern can, and does, in itself carry social information and content” (Hiller & Hanson, 1984). Furthermore, Bill Hillier and Julienne Hanson argue that architecture and the spatial network have a very direct influence on social life:

“By giving shape and form to our material world, architecture structures the system of space in which we live and move. In that it does so, it has a direct relation – rather than a merely symbolic one – to social life, since it provides the material preconditions for the patterns of movement, encounter and avoidance which are the material realisation – as well as sometimes the generator – of social relations. In this sense, architecture pervades our everyday experience far more than a preoccupation with its visual properties would suggest.” (Hillier & Hanson 1984, ix).

Hillier and Hanson suggest that co-presence has importance for social systems:

"[…] in the sense that random encounters and awareness of others may be a vital motor of social systems at some, or even all levels. Whatever the case, there seems no doubt that this basic, unstructured awareness of others is powerfully influenced by architectural form, and that this must now be a major factor in design.” (Hillier & Hanson 1984, 24-25).
However, it needs to be emphasised that to assume that space has an inherent social logic does not imply that this would be equivalent to spatial determinism:

“[Space syntax] tries to identify ‘credible mechanisms’ through which space becomes a factor in social processes, without invoking anything like ‘spatial determinism’ in a ‘cause and effect’ sense.” (Hillier 2013, 75).

There is an attempt in this thesis to move in a direction that examines the city as a designed and planned artefact: how the physical environment and urban form affect social practices through studying peoples’ possibilities of gaining access to different kinds of urban resources, for example, to other people and to other parts of the city. The potential to exchange information, knowledge or simply learn and form the unwritten rules of society appear to partly be influenced by co-presence in the public space. Besides studying possible influences from population density and land use, how the spatial network is configured will also be analysed; how urban spaces as a system are interrelated and connected and how the street network integrates different neighbourhoods to form a whole. By examining the potential and the deficiencies related to the spatial configuration of urban layouts, in this respect it would be possible to establish whether space has an integrating or a segregating effect and hence, urban segregation may adequately be addressed and approached from an urban design perspective.

To capture the effects of urban transformation
Our cities are constantly changing and developing. It is this urban artefact that architects, urban designers and planners are dealing with in their daily practice. By reshaping and reconfiguring the urban cityscape in different ways, the relationships are also changed. This calls for descriptions that can support our understanding of the consequences of urban design interventions on the spatial system as a whole. Applying a spatial approach to the urban segregation issue implies that urban form and spatial relations within the city are not perceived as fixed but dynamic; that is, cities are continually changing even though the changes often take place at a gradual pace. For example, new buildings are added into the urban fabric as a result of a densification process, new uses are found for old buildings, entrances are moved, streets are redesigned and paths are relocated. The city is also expanding (or shrinking) and what once was peripheral may later become more central or vice versa. These are all changes that in one way or another influence the spatial relations
within the city and relationships between the parts and the whole. Thus, most likely, this also influences the relations between the people who use and live in the city to some extent.

If it is possible to disclose and adequately describe different urban layouts’ implications on various social processes, it will also be possible to increase understanding how social aspects are influenced by urban interventions. Moreover, an increased understanding may be achieved of such urban inequalities that are dependent, influenced or somehow related to urban form. Such knowledge is argued to be of guidance in the process of establishing the extent to which architecture and urban design may be used as a tool in anti-segregation initiatives in future.
1.3 Scope of the thesis

In this thesis, it is argued that there is a lack of research that contributes to the understanding of how urban segregation relates to urban design. The overarching aim with this research is to link certain aspects of urban segregation to the city and more precisely to spatial form and the configuration of space. To meet this aim, it is argued that segregation needs to be studied beyond its residential implications and instead acknowledge and focus upon patterns of segregation as they are expressed and as the city is used through our everyday practices.

To capture patterns of segregation as a result of everyday practices, I have chosen to study co-presence in public space in the southern part of Stockholm. Public space in this context refers on the one hand to urban public space that is materially defined by the built environment through architecture; a material space in which people live and move, for example streets, squares, neighbourhood centres, parks etc. On the other hand, public space in this context refers to such institutions such as schools, work places and libraries. These public spaces constitute arenas that provide material preconditions for patterns of co-presence which, according to Hillier, are the material realisation of social relations (Hillier & Hanson 1984). The variations found in the intensity and constitution of this co-presence are then linked to the configurational properties of space in order to elucidate socio-spatial relations. It will be illustrated that those variations in intensity and constitution of co-presence in turn are important in the kind of urban social networks or solidarities that may potentially emerge. By establishing these relationships between society and space, it describes on the one hand how urban design may be used to desegregate the city and on the other hand, it illustrates that urban design has an impact on what kind of society may potentially be formed.

Co-presence: fundamental for social processes

This research work is concerned with exploring how the design of urban layouts can make a contribution to social sustainability in cities. Co-presence, as a result of the routines of day-to-day life, is argued to be fundamental to even the most elaborate forms of societal organisation (Giddens 1984, 64). How the city is used in everyday activities (not necessarily bound to where people live) and becomes co-present is here seen as
an important prerequisite for the development of different social solidari-
ties (Giddens 1984; Collins 2004), for the development of weak or strong-
ties (Granovetter 1973, 1983), for the potential to create spatial as well
as transpatial solidarities (Hanson & Hillier 1987) or different types of
bridging or bonding processes (Putnam 2000). This identifies co-presence
as a key for studying the relationship between society and space and this
thesis in particular examines the relationship between spatial form and
co-presence in public space.

Co-presence may be seen as the least demanding form of social in-
teraction and since it has been argued that the built environment has
an impact on how patterns of co-presence emerge and that it has an im-
 pact on the intensity of co-presence, it appears that one promising way
to study the socio-spatial dimension of urban segregation is through
‘co-presence’. Even if co-presence is seen as only prior to social interac-
tion, it is likely that it has significant influence on how different types
of solidarities may emerge, develop and be reproduced. By exploring the
social performance of urban space, it becomes possible to identify what
potential different places, streets and squares in the city have for supporting
different types of solidarities since the emergence of different types
of solidarity is dependent on levels of intensity as well as different levels
of inflow of ‘others’.

What makes it especially relevant to study co-presence in architectural
research is that patterns of movement and co-presence are suggested to
a large extent as resulting from built form and the city’s configurational
properties (Hillier & Hanson, 1984; Hillier & Penn 1996) and that built
form is what architects and urban designers work with in their daily prac-
tice. What I am looking for is not a broad understanding of the urban
segregation phenomena but to investigate the very specific relationship
between urban form and segregation, since urban form constitutes the
central tool for architects to influence urban processes. It is therefore
essential for architecture and urban design even though it would prove
marginal to the broader understanding of social segregation in cities.
However, I hope to prove here that it plays a substantial part in the
constitution and reproduction of this social phenomenon. Moreover,
increasing the understanding of how the built artefact interplays with
social phenomena is decisive in the process of understanding urban com-
plexity. The relevance for the architectural field is also linked to the fact
that urban layouts, the structure and spatial relations created through
design, stand out as long-lasting features in our cities that have a large
impact on our cities and on the social life of the city. Buildings, sub-
division of properties and land use also have a long-term impact even
though the structure and the configuration of urban layouts are more persistent. How this is designed will thus have an impact on society for many years to come which architects and urban designers arguably need to consider with great respect and meet with well-founded knowledge. This thesis explores the way in which the physical city may support or inhibit the emergence/development of different social solidarities in public space and more specifically, the aim of the spatial analysis is to disclose the social performance of urban space in this particular respect. In the study, the city is seen as being a designed and complex artefact, developed through continuous additions and expansions over time. What is made available in terms of people, resources or amenities in the city is, at a very basic level, related to how different parts of the city are linked through open public space; through streets, paths, squares, parks, etc. The configuration of these urban spaces is decisive and could be described as being spatially integrated or segregated or having different degrees of continuity or discontinuity, permeable structures or enclosures. This is partly the result of properties from the different urban design models or principles that have governed the development of cities.

From a theoretical point of view, the aim is to improve the understanding of the social potential of space by linking the patterns of co-presence to an analysis of properties intrinsic in urban form. To have knowledge about the social implications of urban space is of the utmost importance in order to understand the role of the built environment for different kinds of social processes and urban segregation and through this, be able to generate a more socially sustainable urban design. If spatial properties are better linked to social outcomes, this is a way of decoding how socially sustainable different structures and neighbourhoods are. In turn, this means that urban design may be used to counteract urban segregation to a larger extent and to higher level of precision.

Comprehensive configurational analysis aims to make the continuity and discontinuity of the urban structure both evident and intelligible. If space syntax theory and methods can reveal how urban configuration influences patterns of movement and patterns of co-presence when studying the southern part of Stockholm, this illustrates how theories within urban morphology and theories within sociology could be complementary (see chapter 2 and 3). Holding knowledge about the social implications of urban space is of utmost importance in order to understand the role of the built environment for different kinds of social processes and thus for urban segregation. Hillier even argues that, without a strong awareness of the social implications of urban form, we might end up building cities but not societies (Hillier 2009a).
Aim and research questions
The aim of this research study is to increase the understanding of the role of the built environment within urban segregation and, more specifically, to contribute with knowledge about the social implications of spatial configuration in urban form. The study explores how urban segregation may be re-conceptualised, defined, analysed and not least measured in a way that generates valuable and relevant knowledge from an architecture and urban design perspective. Social consequences and configurative properties need to be established and then related so that correspondences may be revealed. Co-presence in public space that is the result of peoples’ everyday practices is the main focus in the social analysis. There are two aspects regarding co-presence in particular that appear to be crucial and will be studied here: first, the intensity of co-presence, i.e. variations in the amount of people and second, the constitution of co-presence, i.e. variations in the mix of people. In this way, urban segregation may be addressed from a perspective that highlights, on the one hand, everyday practices in public space and on the other hand, those credible mechanisms by which spatial factors could have come to play a role for social processes (alongside social factors). This spatial approach – a configurational morphological approach – is argued to open up both deeper understandings of these phenomena in themselves due to their inherent socio-spatial character (Franzén 2003b) and is argued to lead to an increased understanding of public urban spaces as arenas for co-presence as a fundamental precondition in many critical social processes in cities. In this way, it contributes to an increased understanding of segregation as a social phenomenon. As a consequence, it also opens up possibilities to more efficiently make use of urban design in the implementation of anti-segregation policy. It is argued that exploring how social processes are related to and influenced by spatial configuration is a way forward for producing knowledge that can be of support and guidance in the design process in the aim to create less segregated cities. Therefore, this doctoral thesis starts by looking at the following main concerns:

• How can urban segregation be re-conceptualised and investigated in order to increase the knowledge and understanding of the role played by spatial form and the built environment in segregation?

• How can an approach where social theory and spatial theory are applied together contribute to an increased understanding about how co-presence influences and affects various social processes?

• What does an increased knowledge about the social implications of spatial form imply for anti-segregation interventions and initiatives? And how can such knowledge contribute to and stimulate the discussion about the social dimension within urban design?
The Södertälje study and the Stockholm study
In the first phase of this research project, the city of Södertälje was the object of an empirical analysis (presented in a licentiate thesis 2010). During the second phase, there has been a stronger focus upon co-presence in public space and, as a consequence, the southern part of Stockholm city has been the object of an empirical analysis since this part of the city is found to have a large variety in terms of urban layouts. In total, eighteen places have been selected for in-depth studies in Stockholm. The two main studies include first, a spatial analysis of the urban system and second, a social analysis of co-presence in neighbourhood squares and centres. The three complementary studies look more specifically at other arenas in the public realm that are important for the development of social processes, namely those related to work, schools and culture exemplified by libraries.

Outline of the thesis
Chapter 1: frames the scope of this thesis; a general background is given of segregation and various anti-segregation initiatives in Sweden. The approach of the thesis is discussed and relevant questions for the thesis are formulated.

Chapter 2: the segregation concept is re-conceptualised and the change of focus from residential segregation to segregation, as expressed in public space as a result of everyday practices, is developed. The concept of co-presence is explored in relation to both urban segregation and urban social processes and networks. It is argued for that co-presence is important for social processes and for social rituals and social solidarities and that it therefore has great significance for society at large. Co-presence is also discussed in relation to different social solidarities, to urban social networks, to weak and strong ties and in relation to social capital etc.

Chapter 3: deals with the extent to which urban form and more specifically spatial configuration is important to co-presence. Spatial theories are reflected upon as well as aspects of walking and being/staying in the public space. Moreover, it includes a discussion of how resources and opportunities are distributed in the city as a consequence of urban form in urban layouts. There is a strong focus on the social dimension of urban design and how inequalities between neighbourhoods that are related to configurational and spatial properties may be captured.

Chapter 4: includes a presentation of the method applied for this thesis. The methods, including various measurements and spatial analysis methods applied in the empirical analysis, are outlined. In addition, an overview of the material and data used is presented.
Chapter 5: starts with a short description of the study area, including the eighteen places in Stockholm’s south. The empirical study includes two main studies: the spatial study including configurative analysis and density (attraction) analysis and the study of co-presence in public space. Three complementary studies are carried out: access to work places, a study of the constitution of co-presence between locals and non-locals at comprehensive schools and a study of co-presence at public neighbourhood libraries. The complementary studies capture other types of public spaces than the square/centre and their potential for being arenas for urban social processes is explored.

Chapter 6: From the perspective of seven themes, the main findings are discussed and conclusions are drawn.
2. Co-presence matters for society

Introduction

The fact that life in the modern city is special kind has been a central theme in the writings of many urban thinkers. Compared with village life, urban life turned out to be very different, as has been discussed in classic texts by Ferdinand Tönnies, Emile Durkheim, George Simmel and Louis Wirth among others. Here a very brief overview is given of a selection of ideas and theories about societies and cities and focus will be upon how these contribute to the scope of this thesis, especially how the ideas apply to the concept of co-presence and to social processes and social solidarities. Another reason for highlighting these theories and ideas is that they – in different ways – have strongly influenced the development of urban design models as well as urban design and planning practice that will be elaborated in more detail in chapter 3.

There is a special emphasis upon daily life and our everyday practices in this thesis. These practices are suggested to create an important link between social networks and spatial networks. One could say that, as a result of social networks and spatial networks coming together, the ‘weave of existence’ is created, to borrow an expression from Torsten Hägerstrand (2009). The concept pairs of Gemeinschaft and Gesellschaft (Tönnies) as well as the notion of ‘mechanic’ and ‘organic’ society (Durkheim) are seen as concepts that primarily help us understand and explain a transformation in society at a macro level. However, to understand more of how social processes come about in the city – in streets, squares, parks etc. – we could turn to micro-sociological theories. What is often emphasised in such theories is the importance of co-presence, the concrete meetings and the sharing of space for social processes. In relation to this, Anthony Giddens’ ideas about the durée of daily life and Erwin Goffman’s theory of interaction rituals will be analysed. Furthermore, Randall Collins’ (2004) substantial theory of Interaction Ritual is argued to contribute to the understanding of how social processes come about, a theory which:
“[…] emerges from a unique blending of Durkheim’s and Goffman’s ritual analysis with Weberian conflict theory and Meadian symbolic interactionism.” (Erickson 2005).

What makes Collins’ theory especially relevant to this research project is that it contributes to the understanding of how macro structures and societal solidarities are partly locally produced – and reproduced – at a micro level through interactions in local, face-to-face situations or as precipitates chains of situations (Collins 2004, 6). The theory suggests that co-presence is a necessary, yet not sufficient, ingredient for micro processes and therefore has great influence on society at large. Moreover it is argued that the conviction of the critical role of co-presence links sociology to urban morphology and architecture and more specifically to the theory of space syntax that shares this conviction but approaches it from a different perspective. Such a link is for example acknowledged and highlighted by Lasse Suonperä Liebst (2011, 2012a).

Other ideas of what kind of ties or relations are important for society and are believed to have relevance to problems related to urban segregation and exclusion will be outlined. For example, the strength of weak ties suggested by Mark Granovetter who argues that weak ties have significant importance for how information and knowledge is distributed among individuals in a city. Briefly, the ideas of social capital will be outlined and the concepts of bridging and bonding used by Robert Putnam will be discussed.
2.1 Living with strangers

Modern society and urban life

Tönnies’ *Gemeinschaft und Gesellschaft* was basically a critique of some of the changes that the industrialisation of society brought about (Tönnies 2005 [1887]; Asplund 1991). According to Asplund, the contrast between *Gemeinschaft* and *Gesellschaft* crystallised in the form of the pre-modern society transformed into a modern epoch (Asplund 1991, 48). The two types of human associations or solidarities that Tönnies identified – seen as ideal types – were *Gemeinschaft* and *Gesellschaft*, paradigms that may not fully conform to social reality, but are useful for the purposes of analytical comparison (Lin & Mele 2005, 16). *Gemeinschaft*, on the one hand, may be found in societies that are often described as traditional or at least characterised by a morally homogeneous population and *Gesellschaft*, on the other hand, may be found in societies characterised by a heterogeneous population held together by interdependency, laws and contracts. Lin & Mele suggest that *Gemeinschaft* corresponds with Durkheim’s notion of mechanical solidarity and that *Gesellschaft* corresponds with organic society (Lin & Mele 2005, 16-17). It is, however, important to emphasise the authors’ different views on the concepts: in Durkheim’s terms, mechanic and organic solidarity, according to Asplund (1991, 25) there is a strong implicit critique towards Tönnies who was a keen advocate of *Gemeinschaft*.

The *Gesellschaft* society is largely founded on secondary relations rather than on primary, e.g. familial or community ties, partly as a consequence of higher densities and higher (movement) flows of people (Tönnies 2005; Franzén 1993). Such an increase in density and in movement flows can be related to how cities are designed and planned. Moreover, since urban design also influences diversity (see for example Marcus 2010), this reasoning suggests that urban design, in a very direct way, influences social processes; either supporting or inhibiting the emergence of one or the other type of social relations. Tönnies’ two types of solidarities were seen as opposite ends of a continuum (Tönnies 2005, 16-19) and the transformation went from a *Gemeinschaft* society to a *Gesellschaft* society. According to Asplund, many texts about the modern city and urban life following sociologists deal with this conceptual pair in some way or another even
though few specifically refer to Tönnies, for example Durkheim, Simmel and Wirth (Asplund 1991, 32).

In George Simmel’s now classical essay from 1903, *The Metropolis and Mental Life* (*Die Grosstadt und das Geistesleben*), life in Berlin is described at the turn of the last century. The metropolitan life constitutes a vast sum of people who gradually adopt an attitude of reserve towards one another, a blasé attitude, which according to Simmel was the result of the increased density of population. Here again, density is highlighted as an important prerequisite/condition for metropolitan life. The fact that people, to a much larger extent, had to ‘live among strangers’ or with people to whom they did not have strong bonds, was argued to have a significant effect on both the individual but also on society and social life at large (Simmel 1903; Franzén 1992, 35). It was argued that the density created a situation where people had to share public urban space with people, many of whom they did not know; this was believed to have consequences for what kind of society emerged. Even though Simmel’s illustration of the city in many aspects is negative and rather unflattering, it is important to emphasise that the essay is far from being unambiguous in terms of consequences: the metropolitan life liberated urbanities from the prejudices and provincialities of rural life (Simmel 2005, 32). As Asplund highlights, Simmel described two sides of the coin; on the one hand, to live in the city had its compensations, its freedoms and advantages, but on the other hand, urban life also brought privation and frustrations, as well as misery (Asplund 1991, 31). Although Simmel’s observations were not formulated as aspects of urban space (of the built environment as such), Franzén argues that Simmel in general is the one classical sociologist who is closest in doing so (Franzén 1992, 35). The starting point in this thesis is that the situation described in the metropolitan city, with denser and more crowded streets – i.e. a new co-present situation – implied that metropolitan people had to adopt their social relations to one other (i.e. predominantly mingling with strangers) and in the long run, this probably had consequences for society at large.

**Urbanism**

Simmel’s work influenced Robert E. Park who, together with other American sociologists, became known as the *Chicago School* where Louis Wirth was a prominent figure. Wirth developed a theory of the city as a cultural form where urban life is defined as a specific life form (Wirth 2005 [1938]). Wirth defines the city as follows:
“For sociological purposes a city may be defined as a relatively large, dense and permanent settlement of socially heterogeneous individuals.” (Wirth 2005, 34).

The typical characteristics of great cities are a certain size and a certain density of the population (in line with Simmel) as well as heterogeneity. The urban-industrial society was described as the opposite of the rural-folk society and according to Wirth, it was partly the built urban environment that made way for profound changes in virtually every phase of social life (Wirth 1938, 2). Wirth argued that an increase of inhabitants in a community resulted in weaker social relations within neighbourhoods, within groups as well as within families and there was no personal mutual acquaintance between the inhabitants who ordinarily live and work in a neighbourhood (Wirth 1938, 11).

“Characteristically, urbanities meet one another in highly segmental roles. They are, to be sure, dependent upon more people for the satisfactions of their life-needs than are rural people and thus are associated with a great number of organized groups, but they are less dependent upon particular persons. [...] This is essentially what is meant by saying that the city is characterized by secondary rather than primary contacts.” (Wirth 2005, 35).

Wirth saw even fewer beneficial outcomes from the urban life than Simmel: increased social distances between people were believed to be the result of increased urban density and specialisation. Such a social system would resemble Tönnies’ Gesellschaft, a way of life that Wirth most probably considered to be undesirable. Social solidarities in urban societies were described by Wirth to be dramatically different from those found in village society and few advantages were seen to come from the division of labour or the specialisation of occupations. The increased mobility – the physical ‘footlooseness’ of the population – as Wirth called it, was argued to be related to a rapid social mobility (Wirth 2005, 37). Such a “transitory habitat” made it difficult for people to generate binding traditions and sentiments according to Wirth:

“Personal disorganization, mental breakdown, suicide, delinquency, crime, corruption, and disorder might be expected under these circumstances to be more prevalent in the urban than in the rural community.” (Wirth 2005, 40).

Hence, life in the city was in Wirth’s view characterised by social disorganisation and the close living and working together of individuals, who had no sentimental and emotional ties, fostered a spirit of competi-
tion and mutual exploitation (Wirth 1938, 15). From this reasoning two things are indicated; first, that Wirth understands social solidarities as dependent on a close proximity to other people and second, that social relations based on secondary relations are not as desirable as those based on primary relations.

Typical for many of these descriptions of the life in large cities was that people were believed to be negatively affected by the living conditions that emerged in the city. It is argued that this kind of understanding of social relations in cities has strongly influenced many urban design models and planning principles. From a Swedish perspective, it is surprising that these ideas made such a strong imprint since cities in Sweden at this time were neither particularly dense nor large in comparison to the cities that occurred and were referred to in many of these texts. However, there was an intense urbanisation going on in Stockholm at the beginning of the 20th century resulting in a housing shortage and an overcrowded situation that called for comprehensive initiatives in order to expand the city, including land incorporations and interventions to stimulate building construction (Sidenbladh 1981). But how is then the spatial dimension more precisely dealt with in these texts? Both Simmel’s and Wirth’s observations were made in large cities at a given historical time: Berlin at the turn of the century and Chicago in the interwar period. Franzén describes these periods as coming after the industrial and capitalistic breakthrough but before the breakthrough of the welfare state (Franzén 1992, 36). Both cities were built with a grid structure, containing mostly perimeter blocks, characterised by a mix of uses and clearly, these spatial conditions had certain effects in that historical time (Franzén 1992, 36). These two cities were the evident basis for the descriptions of metropolitan life. A perhaps hasty and rather unfounded conclusion drawn from this was that urban life was threatening – bad for humanity – and was directly related and a consequence of the built environment and of the urban layouts. Consequently, new urban models that developed in reaction to this clearly distinguished from the environments described; such models were coloured with social intentions and believed to counteract the bad influence cities were believed to have on people.

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1 In 1900, Stockholm had a population of about 300 000 inhabitants, and in 1930 about 500 000 inhabitants.
Suburbanism

However, Simmel and Wirth among others were not left unchallenged. Herbert Gans reacts to Wirth’s conception of urban life as only one kind of urban life. Through a re-evaluation of the definition, the concept suburbanism was suggested to be just as legitimate as urbanism (Gans 2005 [1968]). According to Gans, Wirth’s description was not primarily a description of the city, but a description of the urban-industrial society (Gans 2005, 44). Gans departed from the idea that suburbs were places of conformity, alienation or monotony. He argued that both in inner city areas and in suburban areas, an urban life was found that was based on community-like networks, hence, not necessarily so-called secondary relations. Gans found that the way of life in the outer city areas bore little resemblance to Wirth’s urbanism and suggested that the common element in the ways of life of these neighbourhoods was best described as quasi-primary; the interaction is more intimate than a secondary contact but more guarded than a primary one (Gans 2005, 47). Moreover, he argued that solidarities based on secondary relationships were unusual in the suburb as a result of the neighbourhood’s geographical separation from economic institutions and workplaces and there was suggested to be little anonymity, little impersonality, and – which is interestingly pointed out – little privacy (Gans 2005, 47).

This links to what Jürgen Habermas observed and described: that the concealed undermining of the intimate sphere of the family was architecturally expressed in how buildings and cities were designed, for example in the suburbs (Habermas 1984). Earlier, the design enabled both private sphere activities and public sphere activities to take place at the same time, while the modern design and modern housing and living were characterised by the loss of the private sphere and with that, the loss of secured accessibility to the public (Habermas 1984, 153 [1962]). Such lack of a public sphere was also highlighted by the architecture researcher Julienne Hanson in her detailed studies of changes in social life as different urban layouts were compared (Hanson 2000). Hanson argued that the lack of opportunity to participate in an urban life was a result of the urban layout. She argued that some layouts were designed to minimise social contact (Hanson 2000, 116). It appears as if such urban layouts thus neither encouraged primary nor secondary relations.

Gans on the other hand could not clearly connect the ways of life to any settlement type:

“But if ways of life do not coincide with settlement types, and if these ways are functions of class and life-cycle stage rather than of the ecologi-
cal attributes of the settlement, a sociological definition of the city cannot be formulated. Concepts such as “city” and “suburb” allow us to distinguish settlement types from each other physically and demographically, but the ecological processes and conditions which they synthesize have no direct or invariate consequences for ways of life.” (Gans 2005, 50).

Such an ambiguous or double-edged outcome was encountered also by Hanson and the explanation she suggested implied that different social categories were not affected in the same way by the physical environment and this was the reason for variations in the consequences of this (Hanson 2000, 116). Different groups she studied did not form identical experiences of the old and the new morphologies and this due to the fact that the layouts did not fit into their preferred modes of interaction and socialisation in precisely the same way (Hanson 2000, 116).

**Urbanity: to live with and among strangers**

Drawing on many of these urban thinkers, it is illustrated that what the development of large cities brought about was not only new types of social relations, but more importantly, a new society. Even if the descriptions of the character of this new social life (or the lack of it) vary considerably, what unites them is that they try to describe a significant change in society. Growing cities with an increase in population density (dynamic density if referring to Durkheim) dramatically changed the rules of the game, so to speak. Relations were often discussed as if they were in opposition; for example *Gesellschaft* and *Gemeinschaft* (Tönnies 1887/2005; Asplund 1991), mechanic and organic solidarity (Durkheim 1893/1972) or as Simmel described it, as relations going from ‘emotional relationships’ to ‘intellectual relationships’ (Simmel 1950/2005). However, one solidarity does not necessarily exclude the other as pointed out by Lin & Mele (2005); rather, the more modern and urban a society became in terms of developed institutions and a stronger division of labour, the more important secondary relations became (e.g. *Gesellschaft*, intellectual relations or organic solidarity).

Jacobs pointed out the characteristics of the urban as she highlighted aspects raised by these urban thinkers; that the metropolis is nothing but an accumulation or concentration of ‘strangers’ as well as a concentration of ‘diversity’ and that one needs to learn how to live with and among strangers (Jacobs 1961, 143-222). Beside our primary relations, Jacobs argued that one needs to live with and among people to whom one has
only secondary (or no) relations. She seems to suggest that this in fact is what defines urbanity even though Jacobs never used this term herself. In a comment on Jacobs’ text, Asplund argues that the core of her theory about the metropolis is the two theories that (1) “…the city is (or at least should be) a concentration of strangers” and that (2) “…the city maximises (or should maximise) variation and diversity” (Asplund 1991, 53). A city populated by ‘strangers’ is thus not enough and diversity is also essential according to Jacobs. What makes this discussion especially relevant for this thesis is that even if ‘urbanism’ or ‘urbanity’ means living among and with strangers, it does not mean that there are only solidarities based on primary relations found in the city. Quite the contrary, Jacobs emphasises that there is a situation with many different types of social networks that exist simultaneously and even overlap; for example relations to shop keepers, neighbours that she is acquainted with and even though they are not part of her personal life, these people have become what may be described as ‘familiar strangers’ (that could be described as secondary relations) and beside this she has close friends and family who not necessarily live ‘next door’ (could be described as primary relations).

Ash Amin however questions the validity of the view that the free and unfettered mingling of humans (strangers) in open and well-managed public space encourages forbearance towards others, respect for shared commons, pleasure in the urban experience etc. and suggests that there is overconfidence in the potential of a vibrant and inclusive public space that will improve democracy (Amin 2008, 2012). Amin is not denying public space has a role in shaping public behaviour or indeed even a sense of the commonplace. Yet, the workings of urban public space are suggested to be full of collective promise that is located in:

“[…] the entanglement between people and the material and visual culture of public space, rather then solely in the quality of social interaction between strangers.” (Amin 2008, 2).

‘Strangers in the city’ is a theme that Amin has elaborated in detail (2012) and he emphasises that co-presence and collaboration are two very different things, yet he holds that negotiations of co-occupancy are also significant in regulating proximities and distances between strangers – or between majorities and minorities – beside those of collaboration (Amin 2012, 59). Moreover, Amin stresses that feelings formed in many other relational spaces invade the encounter: the physical encounter is no longer the sole or privileged space of relational contact (Amin 2012, 81). Even though urban public spaces, according to Amin, may be seen as secondary sites of civic and political formation, they still stand out as important
spaces to focus upon, especially from the viewpoint of architecture and urban design. This however does not mean that the plurality and the complexity in modern society highlighted by Amin (2012, 59-82) needs to be neglected.

So how can these social theories contribute to an understanding of how the physical city is related to the social city? A possible underlying assumption which can be discerned is that urban societies are dependent on social relations and social networks that, in turn, are dependent on urban space; a certain density or concentration in combination with a certain level of diversity is needed. This pronounced interrelationship is argued to be of a kind where one quantity is not given by the other; rather, society and space are seen as interdependent, i.e. intimately related and mutually dependent. To be able to access the outcomes that are likely to emerge as a result of specialisation or a division in labour, one has to live with and among ‘strangers’ and this presupposes a dominance of so-called ‘secondary relations’ prior to ‘primary relations’ which does not mean that primary relations do not exist. Starting from this, it is not a big step to discuss the affordance of the physical city in this respect, since the physical city appears to be an important ‘arena’ where an interplay between strangers may take place – as well as supporting other solidarities based on primary relations – as everyday practices are carried out and as people become co-present.
2.2 The weave of existence

Use and patterns of co-presence

Since everyday practices are far from restricted to where we live, there is a risk that an interpretation of urban segregation as equivalent to residential segregation overlooks the potential of urban form to generate contacts both at a local level and at a city level.

To scrutinise the concept of urban segregation includes challenging normative assumptions and unfortunate simplifications, for example that residential mix or dispersal is a panacea for desegregating cities (Vaughan & Arbaci, 2011). A higher internal social mix will undoubtedly result in other segregation indexes as long as one measures, for example income or employment etc. but will it reveal anything about the complexity of individual patterns of social interactions and memberships of various social groups or social solidarities? One could gain an inkling that such an assumption to a large extent rests upon territorial theories at present, implying that social interaction is dependent on residential proximity only (Hanson & Hillier 1987) while it overlooks other kinds of solidarities that may develop at places where people do not necessarily live or where at least non-residents could mix with local residents. To some extent, it also overlooks the fact that most people often belong to a multiple set of solidarities; besides relations to neighbours or local communities, it could be related to family/kinship, to work, to a special interest or to sport etc. and living in a city most likely means that these relations are rather distributed in space across the city and not necessarily bound only to where people live. This puts the focus on how urban form influences segregation as people use the city, which is different from describing segregation patterns according to where people live.

The ‘weave of existence’ refers to an expression used by Hägerstrand; this is what emerges as all the trajectories of everyday activities come together. It needs to be highlighted that this thesis has a pronounced interest in the ‘ordinary’ rather than the ‘particular’; even if the city is the place for festivals, happenings and other events, the interest lies first and foremost in studying co-presence in the public space as it emerges as a result of everyday activities. There follows a discussion of everyday activities and what characterises them and this is suggested to have relevance
for the built environment that is the place or the ‘arena’ for many of those activities.

In *The Constitution of Society*, Giddens argued that the routines of day-to-day life are fundamental to even the most elaborate forms of societal organisation (Giddens 1984, 64). As a result of every day practices, individuals encounter each other in situated contexts of interaction, interactions with those who are physically co-present. The social characteristics of co-presence are seen as being anchored in the spatiality of the body, in orientation to others and to the experiencing self. The bodily experience is thus highlighted by Giddens (as by Hägerstrand and Goffman). It is an emphasis on the *situation* that the body is part of rather than that the body ‘occupies’ a certain time-space position in the sense that material objects do (Giddens 1984, 65-67, drawing from Merleau-Ponty). Furthermore, Giddens argues that the routinised character of the paths along which individuals move in the reversible time of their daily life is ‘made’ to happen by the modes of reflexive monitoring of actions which individuals undergo in circumstances of co-presence, thus it is not just something that ‘happens’. Giddens is reasoning around what he calls the *durée* of daily life and the evanescence of encounters expresses the temporality of the *durée* of daily life.

Some activities are practised more or less on a daily basis, for example the morning walk to the subway or to the bus, taking children to daycare or schools or other frequently occurring activities for example ‘walking the dog’. Other routines could be practised on a weekly basis such as week-ends visiting friends, visiting museums, sport facilities or recreation in nature etc. All these daily practices are in some way bound to space; both the walk to the subway as well as ‘walking the dog’, they start at some point and – most often – in the end, people return to their homes. This transforms these routines into spatio-temporal practices and depending on how these trajectories are inscribed in urban space and at what time they come about, we may get what Giddens calls the bands or strips of time-space within which gatherings takes place (1984, 71). The importance of the context that influences how these bands or strips come about is especially emphasised by Giddens and this is strongly related to Hägerstrand’s ideas emerging from time geography as well as to Goffman’s writings about gatherings and co-presence. The link to Hägerstrand’s time-geography has, for example, to do with the fact that these gatherings are seen more precisely to come about in dynamic time-space constellations.
Trajectories of everyday activities

Hägerstrand sees all the trajectories of everyday activities as components that together constitute what he calls the ‘the weave of existence’ (Hägerstrand 2009, 101). All people are part of this weaving as we navigate through space in order to reach certain positions. It is often difficult to identify the single components because they are often seen as pieces in a course of events and it is such repeated combinations that are identified and labelled. As in Hägerstrand’s example: ‘walking to the bus’ includes several of small routinised single practices put together in a longer sequence that we identify as ‘walking to the bus’; i.e. leaving home, locking the door, crossing the street, walking on the sidewalk, waiting at the bus stop and entering the bus. According to Hägerstrand, it is difficult from a micro perspective to imagine how such a trajectory adds on to a multitude of other trajectories and finally emerges into something that is visible at a more comprehensive level, a pattern called ‘the weave of existence’ (Hägerstrand 209, 101-102). However, these grandeurs are not as obvious as the shorter episodes in themselves. Even if each one of us may grasp our own existence in this, it is not as easy to grasp the trajectories of others since we normally only have the ability to observe limited fragments of these (Hägerstrand 2009, 102). The complexity within such a procedure and the involvement of all agents means that to change the pattern of this weave from a single position appears to be rather difficult (Hägerstrand 2009, 101). Thus, two things in this discussion deserve to be highlighted; on the one hand, the relation between the micro level and the macro level and on the other hand, to more closely look at the built environment and its spatial system where this ‘weave of existence’ emerges. How does the configuration of urban space or different attractors (e.g. land use) influence the trajectories both in respect of time and space? It is rather likely that urban form and its configuration has a great impact on the plausibility of where these trajectories will overlap (become co-present and share public space), how many different trajectories will overlap (increase of density) and how often (the repetitiveness). For the sake of argument, one could return to the example of the bus: depending on spatial form, it is possible to imagine two different scenarios of how people deploy themselves in public space; affecting the density that may occur and the time they share space.
Unintended encounters

In order to describe how the trajectory weave comes into existence, Hägerstrand uses a diagram with time on the y-axis and space on the x-axis (Hägerstrand 2009, 105). It is obvious how important parts of this weave of existence emerge as everyday practices are carried out in public urban space as we share space. Thus, a relevant question for architects and planners to address and to understand is: what kind of arena (or in Swedish: ‘allrum’ as Hägerstrand discusses) will be created as a result of how the built environment is architecturally arranged and designed? Will it be easy or difficult to ‘rub shoulders’ with others? Since the everyday life routines are suggested to be largely routines and habits, it is argued that the potential a specific space may hold most likely is possible to predict. Hägerstrand especially makes a point about the fact that many of our practices are far from ‘spontaneous’ in character. He argues that movement in general is not an end in itself, rather it is the result of and is determined by all that needs to happen in a certain place (even though he acknowledges some exceptions, for example inventory of a new environment, as practised by people exploring the surroundings). It follows that most human beings (as well as animals) move/transport themselves in order to carry out or accomplish different errands (Hägerstrand 204-205). What happens thereafter along the way is, to some extent, an open question but people who are encountered as these practices are carried out are defined by Hägerstrand as ‘unintended encounters’ (in Swedish: ‘icke sökta påträffanden’). However, bow and where such ‘unintended en-
counters’ come about in a city appears to have decisive importance for what today is discussed as urban life or urbanity. A perhaps rather non-glamorous understanding of urbanity (or of urban life) may be described as: the unintended by-product of a number of frequent and rather anonymous encounters in connection to everyday life activities.

Jacobs (1961) observed that many modern housing estates did not provide an arena for such unintended encounters to take place; there was lack of urban life that it was possible to find in older urban environments. Jacobs argued that this loss of vibrant urban life had to do with architecture and planning and more specifically, how neighbourhoods were spatially organised. The features that Jacobs found to be important for urban life were related to density, movement patterns, diversity (e.g. according to land use and age of buildings) but also how entrances were placed in relation to the street. The street was namely seen as one of the most important places for urban life to emerge. The mix between residents and non-residents was seen as beneficial and implied that the local activities and the activities that belonged to the whole city were superimposed (Jacobs 1961). This indicates that there is an overlapping of urban activities that are facilitated in the same public space simultaneously.

In this context, an important aspect of how overlapping is interpreted and referred to in this thesis needs to be highlighted; overlapping should not be understood down to the last letter, that is, it is not an overlapping in an absolute sense, because then it would not be an overlapping of differences. Instead, what is referred to here is that trajectories only partly overlap in certain segments or sequences of different trajectories.

Similar ideas of how urban activities (partly) overlap in the street were also recognised by Henri Lefebvre (1996). In Seen from the Window (1996), Lefebvre described the rhythm of the city as composed of a multitude of everyday life activities that became readable through co-present people. As the activities – or sequences of activities – were superimposed, they animated the street and the neighbourhood. In such an analysis, different rhythms were identified: the linear or the routine which is the perpetual chance of encounters and the cyclical which is social organisation manifesting itself (Lefebvre 1996, 220-223).

Turning to the Swedish urban landscape, one can question to what extent this kind of overlapping of everyday practices is facilitated. According to Franzén, the urban landscape is to a large degree the result of a late urbanisation materialised in the building of suburbs according to neighbourhood unit planning ideas and he argues that the Swedish city is more of an infrastructure construction than it is a space for a diverse and lively urban life (Franzén 2003a, 33). A realisation of such urban
design ideas implied that everyday life was rationalised; the intention was that daily errands should be carried out more efficiently. One undesired and unpredicted consequence of this so-called rationalised everyday life was, according to Franzén, that all occasional, accidental and unintended practices were lost and as a result, the public urban life – that earlier was taken more or less for granted – was in some neighbourhoods lost (Franzén 2003a, 40). This raises a lot of questions about efficiency and rationality on the one hand and unintended encounters on the other hand. How are possible ‘unintended encounters’ affected by an urban landscape that is designed to rationalise our daily routines? If less time is spent on these trajectories and less time is spent in public urban space, does it also means that different types of trajectories are less likely to be superimposed? It appears that one has to consider the pros and cons here; efficiency against ‘unintended encounters’ with all that this may potentially may bring. To what extent does the composition of practices vary from neighbourhood to neighbourhood, e.g. according to people’s length of visit in a public space or aim of the visit? Drawing from other research, it has been found that ‘walking to the subway’ in one neighbourhood could be very different from ‘walking to the subway’ in another neighbourhood: in one area, there are very few (or no) options to do other things along the way while in other areas, there is a multitude of such options that are likely to have an impact on the trajectory (Choi 2011; 2012).

In the empirical study, I will return to this question and study different co-presence situations and try to relate them to configurational properties of the urban layouts. It is likely that an urban design that encourages a more rationalised use implies that everyday practices are separated in time and in space, meaning that those unintended encounters are not likely to be realised. In the same way, a territorial thinking or a zoning principle means that ‘residents’ are given their own space clearly separated from the space of the ‘non-residents’ with the result that public spaces where a mix between residents and non-residents may meet is less common. One of the intentions of the neighbourhood planning concept was to separate ‘movement’ from ‘rest’ and to separate ‘strangers’ from ‘residents’ (Sidenbladh 1948), which in light of the discussion above appears to be especially unfortunate; the plausibility that public urban space would provide an arena for ‘unintended encounters’ seem to be limited. Whether urban layouts in Stockholm’s outer city perform in this manner will be investigated in the empirical part of this thesis.
2.3 Co-presence

In Jane Jacobs’ book *The Death and Life of Great American Cities*, she starts with the following statement:

“This book is an attack on current city planning and rebuilding. It is also, and mostly, an attempt to introduce new principles of city planning and rebuilding, different and even opposite from those now taught in everything from schools of architecture and planning to the Sunday supplements and women’s magazines.” (Jacobs 1961, 3).

Among the principles that Jacobs proposes, the following is found:

“These [functions] must insure the presence of people who go outdoors on different schedules and are in the place for different purposes, but who are able to use many facilities in common.” (Jacobs 1961, 150).

Thus, Jacobs points out co-presence – or the possibility to share urban public space for various different reasons – as a key factor for ‘the life of the city’. A certain intensity or concentration is favourable as well as it is indicated that the different schedules and purposes that share space are favourable and that this is something that has been neglected in modern urban design. It is not farfetched to link this to the macro level discussion on increased size and density of the population (e.g. dynamic density) even if Jacobs’ description most obviously refers to the micro level reality.

As a consequence of the focus of this thesis, i.e. on segregation as it is played out through our everyday practices in public space, there is reason to scrutinize ‘co-presence’ more closely as a concept and as a phenomenon. In *The Culture of Cities*, Zukin argues that public spaces are important sites for negotiating public culture (Zukin 1995). Public culture in Zukin’s interpretation stands for certain ideals and norms on how society is to be ordered and what behaviours may be integrated into society at large or accepted more generally (Zukin 1995, 3-11).

“Public spaces are the primary site of public culture; they are a window into the city’s soul. As sight, moreover, public spaces are an important means of framing a vision of social life in the city, a vision both for those who live there, and interact in urban public spaces every day, and for the tourists, commuters and wealthy folks who are free to flee the city’s needy embrace.” (Zukin 1995, 259)
Thus, who will be able to share space and in this way participate in negotiations therefore becomes highly relevant to understanding.

“I also see public culture as socially constructed on the micro-level. It is produced by the many social encounters that make up daily life in the streets, shops, and parks – the spaces in which we experience public life in cities. The right to be in these spaces, to use them in certain ways, to invest them with a sense of ourselves and our communities - to claim them as ours and to be claimed in turn by them – make up a constantly changing public culture.” (Zukin 1995, 11).

The significance of such co-presence gatherings for society may, of course, be open to objections in light of the increased access to internet, social media, television etc. where many different types of communities and solidarities are created. Still, co-presence in public space is not dependent on invitations or intended gatherings, which it is argued, make them relevant to study, especially from an architectural or urban design perspective.

How may the concept of ‘co-presence’ then be understood? In sociology, co-presence is seen as a precondition for social interaction (Giddens 1984). As Giddens sees it, the routines of day-to-day life are fundamental to even the most elaborate forms of societal organisation.

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“In the course of their daily activities individuals encounter each other in situated contexts of interaction – interaction with other who are physically co-present.” (Giddens 1984, 64).

Giddens uses a set of concepts to develop concepts that partly are derived from Goffman’s concepts around the issues of social reproduction and the reproduction of institutions. Giddens defines social integration as ‘systemness’ in circumstances of co-presence and emphasises that encounters are formed and reformed in the durée of daily existence (1984, 72). The fact that encounters typically occur as routines is emphasised by Giddens and he argues:

“[…] what from the angle of the fleeting moment might appear brief and trivial interchanges take on much more substance when seen as inherent in the iterative nature of social life. The routinization of encounters is of major significance in binding the fleeting encounter to social reproduction and thus to the seeming ‘fixity’ of institutions.” (Giddens 1984, 72).

This means of relating social reproduction very strongly to the routines of daily life has been used as an important starting point for the empirical study and has influenced the design of the study in various ways that will be described in the method chapter.
Gatherings refer to assemblages of people comprising two or more persons in contexts of co-presence. This indicates that very low intensity situations are also of interest in this context. Gatherings may have a ‘loose and transitory form’, but as the gatherings occur in more formalised contexts and include a plurality of individuals, Giddens calls them ‘social occasions’ (Giddens 1984, 71). Here it is relevant to point out that Giddens acknowledges that a sector of physical space may simultaneously be the site or locale for several social occasions and involve multiple gatherings. This links to Jacobs’ discussion of ‘overlapping activities’ above and I will return to this in the empirical study, investigating to what extent public space (in different urban layouts) may provide potential for such multiple gatherings. Moreover, the so-called unfocused interaction Giddens relates to those gestures and signals which can be communicated between individuals simply because of their co-presence within a specific context. Focused interaction occurs where two or more individuals co-ordinate their activities through a continued intersection of facial expression and voice (Giddens 1984, 72). It is important to point out that the focused interaction implies a certain degree of ‘exclusion’ according to Giddens or in his own words, “[…] it introduces an enclosure of those involved from others who are co-present” (Giddens 1984, 72).

The bodily experience

In *Behaviour in Public Spaces* from 1963, Goffman develops a theory of interaction rituals. According to Goffman, rituals play a role in shaping both individual character and stratified group boundaries. According to Goffman, co-presence is anchored in the perceptual and communicative modalities of the body. People (or agents) become co-present as they:

“[…] sense that they are close enough to be perceived in whatever they are doing including their experiencing of others, and close enough to be perceived in this sensing of being perceived.” (Goffman 1963, 17).
It is obvious that a central theme here is the bodily experience, even though Goffman acknowledges the difference between embodied and disembodied exchange of information (or communication); the first refers to a direct exchange (as a result of currently bodily activity), while the latter refers to an indirect exchange, for example receiving a letter or what the hunter receives from the tracks of a distant animal (if using Goffman’s own examples). The focus on the bodily experience and embodied activities is a consequence of Goffman’s interests in everyday life activities and the necessary prerequisites for interaction (Goffman 1963, 16).

There is a consistent emphasis in Goffman’s work on the ‘here and now’ and on the micro level of immediate interaction as noted also by Collins (Collins 2004, 16). A comparison may be made with Hägerstrand’s terms for co-presence: the Swedish terms ‘samtidigvarande’ (1991) and ‘samrumslighet’ (2009), where the micro perspective is a kind of starting point for understanding social processes that also has an impact at the macro level. Goffman establishes that, when persons are present with one another, they can function not merely as physical instruments but also as communicative ones; people are seen as both receivers and givers. This is found to have significance for this thesis in dealing with urban segregation and exclusion, trying to relate physical space with social consequences. To what extent people can share urban space and become co-present is then related to processes of receiving and giving: Who will have the possibility of having an exchange with whom? What spatial affordances do different

Figure 2.3. A bodily experience: sharing space in everyday activities.
neighbourhoods provide their inhabitants or users with in this respect? To see people as both receivers and givers at the same also ties in with Jacobs’ ideas about the ‘the dance of the sidewalk’ (1961), to Zukin’s ideas about creating a public culture (1995) or to Richard Sennett’s ideas of learning and forming the unwritten rules of society (1990). A precondition for some of these processes to come about relates to Goffman’s emphasis of the fact that we share the same space in bodily terms.

Unfocused and focused interaction

It is possible to argue that Goffman expresses a kind of conditional relation between co-presence and social interaction and that this interaction may be described as either unfocused interaction or focused interaction (Goffman 1963, 33-124). The unfocused interaction is described as a kind of communication that occurs when one gleans information about another person present by glancing at them, as they pass into and then out of one’s view. Hence, this is somewhat like “[…] sheer and mere copresence” according to Goffman (1963, 24). Focused interaction, on the other hand, is the kind of interaction that occurs when people gather close together and openly cooperate to sustain a single focus of attention, for example by taking turns at talking. He also suggests the term unfocused gathering (where no focused interaction occurs).

As people become co-present, according to Goffman’s definition, it is termed a gathering and this refers to any set of two or more individuals whose members include all and only those who are in one another’s immediate presence at that moment (1963, 18). He also uses the term ‘situation at large’ or only ‘situation’ to describe the full spatial environment anywhere within which an entering person becomes a member of the gathering that is present and these people form a ‘social occasion’. There are different types of social occasions, from the very structured and strongly programmed (a funeral for example) to more diffuse ones, like ‘Tuesday afternoon downtown’. However, even the diffuse occasions may develop a structure and a direction as they go along. Some social occasions Goffman labels as unsersious or recreational, while others he labels serious or regular which, for example, following a daily or weekly cycle. Similar differences in character have also been observed and described by Lefebvre in his Rhythm Analysis writings. What needs to be highlighted in this context is that practices of different characters often overlap in the city and create a variation in the urban life that is possible to link to what may be defined as urbanity. It is possible to say that all these trajectories
of different kinds overlap and emerge into a pattern that is difficult to understand or even see from an individual or even a street level perspective. To make this point, Lefebvre places himself as an ‘observer’ in the window of a building to gain a kind of ‘bird’s eye view’ of patterns in public space (in *Seen from the Window*, Lefebvre 1996). This obvious but often hidden relationship between the microsociology and the macrosociology perspective is essential and Goffman certainly contributes some important pieces to understanding how the mechanisms of social and system integration interlace even though he (according to Giddens) has adopted a guarded stance towards problems of long-term institutional process or development (Giddens 1984, 69).

If looking more specifically at what Goffman says about public space and urban streets and the like, it is interesting to find that he admits the possibility that the same physical space may be caught within the domain of different social occasions and that the social situation may then be the scene of potential or actual conflict between those sets of regulations that ought to govern. This is relevant and should be kept in mind during the discussion about the extent to which different activities in the urban space are, on the one hand, incompatible or exclusive or on the other hand, compatible. When talking about urbanism or urban life in public space, it is important to reflect on how compatible different practices are with each other. A very simple example could be that using a square or a park for contemplation and rest is difficult when combined with using it for noisy activities such as a concert or an intensive sport activity – these two activities or uses may be seen as difficult to combine. One could also use Zukin’s examples where many public spaces in fact have been transformed into less public after being ‘pacified by cappuccino’ (Zukin 1995, 28); implying that large groups of ‘undesirables’ are outmanoeuvred as the parks are made more ‘attractive’. One result of such a strategy according to Zukin is that diversity is not only being controlled but also limited (Zukin 1995, 30-31). Massey also discusses possible threats to public space as a result of increased privatisation (Massey 2005). At the same time, Massey argues that urban public spaces are products of heterogeneous and sometimes conflicting social identities and relations. According to Massey, there can be no assumption of pre-given coherence or of community or collective identity; she argues that ‘thrown-togetherness’ demands negotiation, the unavoidable challenge of negotiating a here-and-now (Massey 2005, 140-141).

Goffman states that the region of space in which mutual presence can be said to prevail cannot be clearly focused on public space or other similarly unobstructed places (Goffman 1963, 17-18). This is because people
who are present at different points along the street may be able to observe and be observed by a slightly different set of ‘others’. This means that those who are potentially co-present in public space are partly dependent on the size as well as the shape of the public space. As such, a situation with a certain number of people distributed evenly in public space (e.g. moving within/through an area) may be experienced very differently depending on how public space is designed and what other spaces/streets one can see from each point. This means that, depending on the urban layout, people are made visible to different degrees depending on how the spaces are configured and depending on the size and shape of the spaces. For example, urban layouts with very small spaces and short-sighted views reduce the possibility of seeing people at a greater distance (since they ‘turn around a corner’ as they move), but in a similar way, an overly long distance between people (e.g. on a very long straight street) decreases the likability of perceiving those far away as being co-present. Applying this reasoning to an urban environment (e.g. Stockholm), it becomes relevant to establish whether neighbourhoods (i.e. their urban layouts) distinguish in this respect.

Relevant findings for this context are presented in *Walkability as an urban design problem* by Eunyoung Choi (2012) who, based on observations in different neighbourhoods in Stockholm, has found that factors such as building density, connectivity and land use diversity significantly affect walking. This not only results in an increase in walking, but perhaps more interestingly an increase in the diversity of walking activities too. In addition to this, also other urban design factors (e.g. related to aesthetics or convenience) influence both the amount of walking, walking activities as well as the quality (Choi 2012, 159). The three dominating types of walking activities identified by Choi are: ‘utilitarian walking’, ‘pleasure/social walking’ and ‘walking the dog’ (Choi 2012, 160). By studying these different types of walking in different neighbourhoods, i.e. in different types of urban layouts, it was found that urban design had a significant influence on not only the quantity of walking but also on the diversity of walking activities. Utilitarian walking was found to be the dominant type in the neighbourhood of the outer city. Moreover, the utilitarian walking in the outer city was found to be different compared with utilitarian walking in the inner city (i.e. representing another type of urban morphology), indicating that the behaviour and the very situation (if referring to Goffman) will be affected in a very direct way by the physical environment.
Collins’ theory of interaction rituals

In Collins’ neo-Durkheimian theory of interaction rituals, co-presence is seen as a necessary but not sufficient component for processes leading to different ritual outcomes, for example group solidarity (Collins 2004, 48). Collins explains that at the centre of an interaction ritual is the process in which participants develop a mutual focus of attention and become engaged in each other’s bodily micro-rhythms and emotions (Collins 2004, 47). He argues that rituals are constructed from a combination of ingredients that grow to differing levels of intensity and result in the ritual outcomes of solidarity, symbolism and individual emotional energy. This suggests that rituals in general emerge from various micro level processes of which some may eventually result in rituals also at a macro level, an understanding that is closely related to what has been highlighted by Hägerstrand, Giddens and Goffman. Or, as Collins puts it: variations in interaction rituals generate the myriad varieties of human social life (Collins 2004, 47). Moreover, Collins holds that:

“Interaction ritual is a mechanism of change. [...] Ritual can be repetitive and conservatizing, but it also provides the occasions on which changes break through.” (Collins 2004, 43).

An important starting point for change/reproduction is the situation and how the situation shapes individuals. Individuals are described as being sent from one situation to another as everyday life is carried out, i.e. interaction ritual chains. Collins’ model of interaction rituals makes a distinction between four ritual ingredients that are: bodily co-presence, a barrier to outsiders, a mutual focus of attention and a shared mood. These ingredients feed back to each other. In this model, the four main ritual outcomes are: 1) group solidarity understood as a feeling of membership, 2) emotional energy in the individual (a feeling of confidence, elation, strength, enthusiasm and initiative in taking action; 3) symbols that represent the group; 4) moral feelings, experiences as a sense of justice attached to the group (Collins 2004, 47-101).

![Figure 2:4 Interaction ritual by Collins (2004, 48).](image-url)
Since the model is intended to be applicable to everyday situations, it is argued that the model also applies to situations with both a low intensity of co-presence such as public waiting places to more intense situations like the busy street (Collins 2004, 82). This is found to be highly relevant to the focus of this study, an everyday practice focus as well as an interest in quiet places (e.g. in the outer city). In contrast to those who, for example, understand co-presence as being ‘prior’ to something else or a “precondition for social interaction” as described by Giddens (1984), Collins instead stresses the ingredient of physical co-presence as the micro-morphological necessity for any interaction ritual and states that a ritual is essentially a bodily process (Collins 2004, 53; Liebst 2011).

This implies that Collins’ theory of interaction ritual responds to the question of why co-presence is important for social processes. However, as Liebst argues, it is also of interest to understand where co-presence may be created. To this end, Liebst suggests combining Collins’ social theory with the spatial theory of space syntax developed by Hiller and Hanson (1984) since this theory is believed to explain where co-presence may be created.

“Thus, while Collins, on the one hand, gives a brilliant answer to the question why – which the space syntax left unanswered – Collins, on the other hand, only managed to give us a rather superficial answer on the question which the space syntax approach has a brilliant analytical grip on, that is: where the spatial configuration shapes such market attractions.” (Liebst 2011, 30).

According to Collins, the theory of interaction ritual is a theory of situations themselves with their own local structures and dynamics and it puts emphasis on the situation as a process. In addition, Collins argues that ritual creates cultural symbols and the theory provides an empirical mechanism for how and when symbols are created (Collins 2004, 32). Not only does Collins’ theory explain why co-presence is important, Collins adds a decisively spatial dimension to his primarily social theory along with the concept of co-presence.

Social morphology

Turning back to the concept of ‘co-presence’, it is clear that this often appears in sociological theory and maybe perhaps most prominently in the theories of Goffman and Giddens outlined above. If we look back at what they found their ideas upon, we find Durkheim, Halbwach and
Mauss among others and some of these ideas will here be briefly outlined as a background.

Émile Durkheim is credited with the first formulations of ‘social morphology’ as a sub-field of sociology beside ‘social physiology’ (1978 [1909]/[1897-1898]; 1982 [1899]). In this division of sociology, social morphology included according to Durkheim:

“The study of the geographic base of various peoples in terms of its relationships with their social organization […] The study of population: its volume, its density, and its disposition on the earth.” (Durkheim 1978, 83).

‘Social physiology’ on the other hand included sociology of religion, morality and law as well as economic, linguistic and aesthetic sociology. The context within which people live and act is argued by Durkheim to be of utmost importance:

“Social life rests upon a substratum which is determinate both in its extent and in its form. It is composed of the mass of individuals who comprise the society, the manner in which they are disposed upon the earth, and the nature and configuration of objects of all sorts which affect collective relations.”

Continuing with the following:

“Depending on whether the population is more or less sizable, more or less dense; depending on whether it is concentrated in cities or dispersed in the countryside; depending on the way in which the cities and the houses are constructed; depending on whether the space occupied by the society is more or less extensive; depending on the borders which define its limits, the avenues of communication which traverse it, and so forth, this social substratum will differ.” (Durkheim 1978, 88 originally published in "L’Année sociologique" 2, 1897-1898: 520-521).

It is indicated that Durkheim saw the separateness of different research disciplines, such as history, geography and demography as highly problematic and that social morphology could unite varied research approaches which deal with the material substratum of society. In Division of Labor [1893], Durkheim already dealt with the extension of social contact in the evolution of social differentiation and population growth. Durkheim argued that ‘effective participation’ or ‘dynamic density’ varies with the number of inhabitants per unit area but also with the facilities for communication and transportation and the pattern of population concentration (Durkheim 1972, 150-154; Halbwachs 1960, 8). An increase in dynamic density was accompanied by a fusion of social segments, the
progressive increase of interdependence among elements of a society and hence a growth in the degree of organisation.

In The Rules of Sociological Method, Durkheim suggests the term ‘morphological’ for those social facts which concern the ‘social substratum’ (in the sense of surroundings, context etc.) and Durkheim proposes calling the part of sociology which focuses on the constitution and classification of social types ‘social morphology’ (Durkheim, 1950, 81). The relationship between the social substratum and the material (physical) world was predicated on the supposition that “social life can be affected only by the number of those who participate effectively in it” (Durkheim, 1950, 114) and that ‘effective participation’ or ‘dynamic density’ varies in relation to conditions of the built environment (Halbwachs 1960 [1938]). ‘Social type’ has to do with the classification of societies according to the degree of organisation they present (Durkheim 1950).

Liebst (2011, 2012a, 2012b) has highlighted and re-acknowledged the link between sociology on the one hand and urban morphology and architecture on the other hand. Liebst argues that the theory of space syntax developed by Hillier and Hanson (1984) makes important contributions to the theory of social morphology. Liebst claims that a vital condition for the emergence of urban atmospheres is the morphology of urban space rather than the physiognomy/character. One key aspect to this context is primarily the concept of ‘co-presence’ which is a concept illustrated here as dealt with in both sociology by Durkheim (e.g. in The Division of Labour), by Goffman (e.g. in Behaviour in Public Spaces) and by Giddens (e.g. The Constitution of Society) as well as in the theory of space syntax developed by Hillier and Hanson (e.g. The Social Logic of Space) which will be further elaborated in the next chapter. ‘Social morphology’ and ‘social physiology’ are the two main sub-fields that together constitute the general sociology that Durkheim formulated, yet ‘social morphology’ as a sub-division never proved to be developed in the same way as ‘social physiology’. Liebst argues that the reason for this is that a methodology and adjoining analytical techniques never emerged where this substratum, including socio-spatial phenomena such as ‘co-presence, could be studied (Liebst 2011; 2012a). Sociology discussed in this manner links very directly to architectural and urban studies since the impact of the built environment is given an evident role under these conditions.
2.4 Urban social networks

If we assume that urban space, the built environment or the physical environment do not have any influence on phenomena such as ‘urban segregation’ or ‘exclusion’, we could just leave it there. If we assume that it does not matter how such ‘excluded’ districts are structurally organised internally or how they are located or positioned in relation to the rest of the city, that it does not matter who lives there and what happens in surrounding areas or how the area is located in relation to job opportunities or to the communication network or to education opportunities, then urban design and planning could be left out of this discussion. But if we look at the urban segregation phenomenon, based on the hypothesis that the built environment influences and plays a role in everyday life, in patterns of movement and patterns of co-presence and that the urban physical structure and building density has a direct relationship with concentrations of the population, then urban morphology stands out as a highly relevant factor that needs to be explored, creating potential for different types of urban social networks to develop.

Depending on how the city is designed, urban space will acquire various intrinsic properties that possibly could influence the concentration of people who share that space, for example ‘dynamic density’. As referred to in the previous paragraph, such different levels of density are also related to different kinds of social processes and social networks. Beside the aspect of density, there is also an aspect of mobility across the city which could influence who may share space with whom. Typically, this appears to be highly relevant for residentially segregated cities since it then affects the possibilities for exchange with others beside one’s ‘neighbours’.

In this paragraph, attention will be paid to social networks and relationships that are linked to flows of resources such as information, knowledge, opportunities, social capital, etc. – an exploration of urban social networks argued to have relevance for urban segregation from an urban design perspective as well as for ideas and theories that claim cities are mechanisms for generating contact. Urban social networks will be discussed in the light of the possibility that aspects of density and constitution of co-presence appear to have great importance for which social relations may potentially emerge in public space. The fact that public space is the primary focus in this review is a delimitation that needs
to be emphasised; this means, for example, that social networks primarily developing as a result of internet relations or other virtual networks (social media etc.) will not be referred to here.

For the urban segregation issue, including problems related to exclusion, the aspect of access to information, knowledge and to different kinds of opportunities (i.e. job opportunities) is key and this will be discussed with Mark Granovetter’s theory about the strength of weak ties (1973; 1983) as a starting point. Closely related to notions of weak and strong ties are Robert Putnam’s (1993; 1996) concepts of ‘bonding’ and ‘bridging’ which are important to his idea of understanding relationships as social capital. In Pierre Bourdieu’s work (1986 [1979]), access to differences – the distinction – is highlighted. It is emphasised that even if the properties and skills people are equipped with are important, the ‘end station’ can never be completely predicted since too many other factors, such as which (different) networks or solidarities one becomes a part of, influence the course of events over time. Ideas about various types of relations will be compared with an example from architecture theory about spatial and transpatial solidarities as proposed by Julienne Hanson and Bill Hillier (1984; 1987). But first, Jane Jacobs’s take on social capital, illustrated with an example of how urban social networks are of decisive importance to neighbourhoods.

Self-government and Mrs Roosevelt

Jacobs’ chapter ‘The Uses of City Neighbourhoods’ (1961) is a story about successful and unsuccessful neighbourhoods and about self-government in its broadest sense and at the same time, it is a story about how information, knowledge and social capital are distributed across the city. Jacobs describes situations where people in some neighbourhoods have the ability to mobilise and react (as a group) to drawbacks, threats or similar, while in other neighbourhoods people (as a group) lack such capacity, i.e. the capacity for collective action may be poor or lost. Jacobs argues that this partly has to do with how social networks are produced and are being reproduced. To reach out to those directly influenced or concerned is not enough; instead, the challenge is to reach beyond that group, to people who have either the ability to start a public opinion or to people who have connections with where power is found. Jacobs argues that the emergence of self-government functions and successful street-neighbourhood networks is better facilitated where neighbourhoods have diffuse boundaries, having no beginnings and ends and since people have different views of what is defined as a ‘neighbourhood’.
“The size even differs for different people from the same spot, because some people range farther or hang around more or extend their street acquaintance farther than others.” (Jacobs 1961, 120).

Another key factor for networks is what Jacobs calls the ‘hop-skip links’ (1961, 135) as exemplified by Mrs Roosevelt. According to Jacobs, this friend of hers had a special quality: “She knew the most unlikely people” (1961, 135) and people who know unlikely people, like Mrs Roosevelt, can initiate networks and can eliminate the need for long chains of communication (that are very unlikely to ever be realised).

“Once a network gets going, the net can enlarge relatively swiftly and weave all kinds of resilient new patterns.” (Jacobs 1961, 136).

However, two other requisites are identified by Jacobs, namely a physical area and time (Jacobs 1961, 136). Jacobs suggests:

“A city’s collection of opportunities of all kinds, and the fluidity with which these opportunities and choices can be used, is an asset – not a detriment – for encouraging city-neighbourhood stability. [...] These networks are a city’s irreplaceable social capital. Wherever the capital is lost, from whatever cause, the income from it disappears, never to return until and unless new capital is slowly and chancily accumulated”. (Jacobs 1961, 138).

It needs to be pointed out that Jacobs’ proposals on this issue are not based upon any thorough empirical verification and thus it is difficult to use them to support a theoretical reasoning. Nevertheless, they are based on keen observations and experience from living and engaging in cities which deserves attention and as such, light may be shed over how urban social networks are understood by other scholars.

Figure 2.6. To what extent can the built environment support ‘hop-skip links’?
The strength of weak ties

The strength of weak ties refers to ideas presented by Mark Granovetter in an article by the same name in 1973. Granovetter proposes that a weak tie may be seen as a trivial acquaintance tie but a weak tie also has the ability to become a crucial bridge or link between two densely knit groups (e.g. family, kinship, close friends etc.) that, without this weak tie, would not be connected at all (Granovetter 1983, 202). Accordingly:

“[…] individuals with few weak ties will be deprived of information from distant parts of the social system and will be confined to the provincial news and views of their close friends.” (Granovetter 1983, 202).

The consequences of this may be that they gain a disadvantageous position on the labour market or that they are unlikely to organise into political movement of any kind. Hence, to have friends is not enough; people also need to have accountancies and ‘friends of friends’ since these weak ties are argued to provide access to knowledge and information that is different from what you and your closest sphere has and beyond this clique (compare with the potential networks of Mrs Roosevelt and her ‘unlikely contacts’). For example, it could be information about job opportunities, vacant housing etc. (Granovetter, 1973; 1983). This implies that such weak ties contribute to a circulation of information between different (sub) communities that may influence the life chances afforded in different neighbourhoods. Granovetter departs from Wirth’s view that weak ties create alienation; quite the reverse, weak ties are argued to be vital to an individual’s integration into modern society (Granovetter 1983, 203). Moreover, those weak ties that function as bridges are more likely to connect individuals who are significantly different from one another.

Job-seeking has been an important part of Granovetter’s empirical studies (which are also highly relevant to the matter of urban segregation and exclusion) and the results illustrate that weak ties are used to a large extent to gain information about a new job or actually secure a new job. Especially high-status individuals used weak ties to find new jobs (Granovetter 1983, 205-207). Emphasising the strength of weak ties does not, however, imply that strong ties are unimportant:

“Weak ties provide people with access to information and resources beyond those available in their own social circle; but strong ties have greater motivation to be of assistance and are typically more easily available. I believe that these two facts do much to explain when strong ties play their unique role.” (Granovetter 1983, 209).

Another finding Granovetter presents is that poor and insecure groups use strong ties as a response to economic pressures (believing that there
are no alternatives). The heavy concentration of social energy in strong ties fragments communities of the poor into encapsulated networks and may lose some of the advantages associated with the outreach of weak ties (Granovetter 1983, 213). This, together with what is presented above, has relevance for various anti-segregation initiatives; it is indicated that interventions that aim to strengthen the local community do not necessarily support the development of weak ties.

Social capital

The concept of social capital and the study of the phenomenon may be seen as a rehearsal of long-standing themes in community studies by urban researchers from many different disciplines. The overview in this thesis is very brief and highlights aspects that are found to have relevance for the focus of this thesis. Even though it is difficult to find one unambiguous definition of ‘social capital’, a central premise is that social networks have value. Social capital is mostly understood to create value for the people who are connected and sometimes also for those around them.

The book Making Democracy Work by the political scientist Robert D Putnam et al. (1993) stands out as a breakthrough in describing social capital as a societal asset/value that the society as a whole is favoured by. Putnam explains the differences in institutional performance partly by examining the link between performance and the character of civic life or ‘the civic community’ (Putnam et al. 1993, 15). A conclusion from the empirical work was that:

“[S]ome regions of Italy, we discover, are blessed with vibrant networks and norms of civic engagement, while others are cursed with vertically structured politics, a social life of fragmentation and isolation, and a culture of distrust. These differences in civic life turn out to play a key role in explaining institutional success.” (Putnam et al. 1993, 15).

Putnam claims that a society or a group with poor social capital will be less capable of securing common resources and the lack of trust means a lack of ability to make use of opportunities and to improve the collective situation by cooperating. More precisely Putnam defines social capital as:

“Social capital here refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions” (Putnam et al. 1993, 167).

Putnam emphasises the reciprocity of social relations and their importance for a cohesive and well-functioning democratic society. In Bowling Alone, Putman argued that declining electoral turnout, falling levels
of inter-personal trust and not least, falling organisational membership are related to a collapse in social capital (Putnam 2000). Factors that are shown to contribute to this decline are, for example, changes in family structure, suburban life, television and computers (Putnam 2000).

Putnam discusses two types of social capital: ‘bridging’ relations that are bridging groups or individuals who are not necessarily of the same age, religion etc. and ‘bonding’ relations that are strengthening relations within a group and are inward looking and tend to reinforce exclusive identities and homogeneous groups. Bonding creates strong in-group loyalty but may also create strong out-group antagonism (Putnam 2000, 23). The two forms of relations, according to Putnam, strengthen each other, however bridging has been found to be especially important for society and democracy and for ‘getting ahead’ (Putnam 2000).

“Bonding social capital is good for undergirding specific reciprocity and mobilizing solidarity […] Bridging networks by contrast, are better for linage to external assets and for information diffusion.” (Putnam 2000, 22).

‘Bridging’, as Putnam defines it, may thus be compared with Granovetter’s concept of ‘weak ties’. This method of reasoning may be seen as supporting the suggestions made by Jacobs outlined above that the ability to form networks reaching beyond the immediate sphere is more powerful than the narrower ones. Moreover, Putnam’s findings are highly relevant to the urban segregation discussion, for example in relation to what Olsson Hort points out that segregation may lead to a resistance to change etc. A parallel may also be drawn to Granovetter’s concern with poor and insecure groups lacking weak ties and having to rely on strong ties only.

In The Distinction (1979), Pierre Bourdieu argues the importance of social networks and social capital for the individual and he acknowledges the social context and how unequal distribution of social capital contributes to maintaining power structures that have importance for society (Bourdieu 1986 [1979]). According to Bourdieu, social capital is partly related to class and the distinction between classes but it is possible to increase social capital and transform it into conventional economical profit and thus specific social relations (rich in social capital) open for opportunities. In fact, the existence of the class system he analyses depends on unequal distribution of tastes and it is suggested that one class can never be independent from the others. Bourdieu argues that the individual position or an individual’s career should not be seen as independent; according to Bourdieu, all ending points are not equally plausible from all different starting points (Bourdieu 1986, 258). As Bourdieu understands it, capital may change and with that, there might be changes in position but
still, ‘history’ will always have a significant impact and the class system is more or less constructed as a result of the struggle between people and classes (Bourdieu 1986, 264-279). Moreover, it is highly relevant to the focus of this study that Bourdieu argues that not only is the economical, the cultural and the social capital that a group may mobilise important, opportunities are also influenced by how limited resources are distributed in the geographical space (Bourdieu 1986, 276).

Ronald S. Burt discusses weak ties and structural holes in The social structure of competition (1992). According to Burt, a weak tie may at the same time be a bridge. Burt argues that a person can benefit from one’s network if a) contacts are established in places where useful bits of information are likely to air and b) a reliable flow of information to and from those places is provided (Burt 1992, 15). Burt also discusses size and diversity and in line with Bourdieu, emphasises that size in itself or alone is not necessarily beneficial:

“But increasing network size without considering diversity can cripple a network in significant ways. What matters is the number of non-redundant contacts.” (Burt 1992, 17).

This has great significance for the urban segregation study and Burt’s understanding contributes to the empirical study in the sense that the ‘diversity’ of co-present people appears to be of importance and needs to be analysed and not just the ‘intensity’ or ‘size’ of co-present gatherings.

Spatial and transpatial solidarities

Questions about where in the city urban networks may emerge and how this may be influenced by urban form bring us closer to the architectural aspect of the matter and here a discussion will be introduced on the relationship between space and society, based on the conceptions found within space syntax described in The Social Logic of Space. Hanson & Hillier suggest that, even though there is no clear correspondence between social and spatial groups, space cannot be dismissed as unimportant. Furthermore, localities that have been designed according to territorial principles perform the task of social integration which the territorial paradigm predicts. In addition, built form and spatial organisation can be instruments for social divisiveness and alienation: the relationship of architecture and community can be shown to be a negative one more convincingly than a positive one (Hanson & Hillier 1987, 262).

Hillier and Hanson argue that people participate in numerous networks that are predominantly of two kinds, namely spatial and transpatial networks and it is argued that all human social formations appear to exhibit a duality
of spatial and transpatial local group and category (Hiller & Hanson 1984, 42). Spatial networks are those dependent on proximity in space and physical co-presence. Transpatial networks are defined by who we are rather than where we are (Hanson & Hillier 1987). Based on empirical examples, they suggest that space has both a distinct role to play in integrating people locally (as neighbours) and that space also has a distinct role to play in creating a wider system of spatial relations. Urban societies hence need to operate two mechanisms in order to develop and prosper: mechanisms for overcoming space that has the potential to create transpatial solidarities (non-local groupings) and mechanisms that create spatial solidarities (controlling local space) (Hanson & Hillier 1987, Hillier 2009a). This implies a view of social urban networks where spatial and transpatial solidarities are overlapping systems, providing potential to both reproduce but also develop urban networks over time. There is no definition as to whether these relationships are implied to be strong or weak; in a way they work different compared to the notion of strong and weak ties (or bonding and bridging). Spatial solidarities may be both weak and strong and the same goes for transpatial solidarities. For example, a relationship between members of a family will constitute transpatial solidarity (building on a non-correspondence with space), i.e. the relationship is not dependent on space and it might be either strong or weak. The same goes for a relationship with one’s neighbour that is defined as spatial; this may also be weak or strong but is dependent on proximity (built on a correspondence with space).

To sum up this paragraph: it is indicated that the strong ties (bonding) are efficient in building community within a group but it is the weak ties (bridging) that are efficient in integrating groups within a city or a region. Hence, it is not about choosing one type of tie. For building social capital and encouraging integration, they apparently need to be combined. A conclusion from this is that all community (or social capital) is not necessarily favourable for society as a whole. Individuals as well as smaller groups that are strongly held together may result in a kind of solidarity that very efficiently excludes others. According to Collins’s theory of interaction of ritual chains (Collins 2004), ‘exclusion’ is a necessity for creating solidarity at all in the sense that a group needs to be able to categorise itself as being in some aspect different from others but, from an urban segregation perspective, it appears that the degree to which this exclusiveness works is sensitive to how segregated these groups may be. It is likely that a situation with many ‘exclusive’ and in-turned groups will result in segregation in one way or another. Giddens also argues that strong, isolated/in-turned communities that lack inter-connections risk increasing the border between ‘us’ and ‘the others’ (Giddens 1984).
This overview leads to the question of *where* in the city various kinds of relationships and social networks may be encouraged or facilitated? Where in the city can we share a ‘space-time’ occasion with others who are (at least slightly) different from ourselves? Bourdieu emphasises distinction, Burt diversity and Jacobs talked about ‘unlikely relations’. The crux of the matter is to understand *where* such situations may emerge and where they may not occur and how this is related to urban form. Hägerstrand discusses the likelihood of people to share space at the same time (in Swedish: ‘påplatnsärvaro’ and ‘samrumslihet’ 2009) and co-presence (‘samtidigvarande’ 1991). Jacobs more specifically referred to the street but not just any street, rather a street that is lively and located within the urban network and not ‘on the side’ of the city as a whole.

Blockland and Nordhoff argue that it is not the *place* but rather agents taking independent positions under conditions of structural dependency who are of key importance to understanding the nature of social ties (Blockland & Savage 2008, 6). They refer to a study of long-term poor residents in disadvantaged neighbourhoods in Rotterdam and Amsterdam (Blockland & Noordhoff 2006). Such a statement is difficult to simply reject but with a pronounced architectural perspective on this, it could be fruitful to unfold such reasoning. ‘Agents’ have a most central role if drawing on all these theories outlined above. Nevertheless, this does not imply that space would be unimportant. These agents need to be *somewhere* in the city when transmitting their contacts, information knowledge or opportunities to others. And, moreover, encounters need to be repeated at some frequency (see for example Burt 1992). A relevant question from an urban design perspective would be: How likely is it that people from other groups or geographical (distant) places will encounter a certain group, for example ‘long term poor residents’. What if space inhibits properties that can either facilitate or inhibit such movements?

One central question is how an exchange between people or between social groups could be realised in urban public space and if access to information, knowledge, social capital etc. is distributed unequally across the city. It would be of great concern if there is generally poorer access to urban assets in neighbourhoods where people with fewer resources live. In cities that are described as being residentially segregated, for example
Stockholm, it is likely that what exchange does take place within the neighbourhood is not of primary interest, rather it appears to be of greater concern if there is a lack of exchange between neighbourhoods. Drawing on Giddens (1984), it is argued that routines of everyday life are fundamental to some of the most elaborate forms of societal organisation and that such routines are partly made visible as co-presence in public space. Goffman also (1963) argues that the very basic prerequisite of any kind of communication (unfocused or fully focused interaction) is that people become co-present and that physical space plays a role in this context.

In connection to this, Thomas A Markus’ suggestion that the spatial system both allows for control and freedom may be brought into the discussion. Markus argues that space may be organised in such a way that results in free and frequent communication and dense encounters between classes, groups and individuals, but space can also be organised in a way that controls movement and separates groups and individuals (Markus 1993, 25). The degree of such control varies with spatial form.

“In space, relations of power are ever-present. Depth, asymmetries and tree-like or ringy forms control interfaces between people, and between them and objects such as museum exhibits. Haussmann’s intervention in Paris involved primarily the transformation of its traditional space.” (Markus 1993, 23).

For example, in hierarchical systems creating deep structures, the relations between parts are strictly laid out, meaning that a person who moves has few alternatives to choose from and it is strongly controlled who moves where and who will encounter whom (empirically illustrated in Koch 2004 for example). In spatial systems where there is an emphasis on freedom of movement and where spaces have more than one route to and from them, a more loose set of relations is described and the degree of spatial control is low; configuration is non-hierarchical and distributed (Koch 2007, 301-302). The former example would, in line with Markus’ reasoning, encourage relations of hierarchy and power to a higher degree and the latter would encourage dense encounters that are the basis for ‘community, friendship and solidarity’ (Markus 1993, 21-25; Koch 2007, 301-302). This may also be linked to the fact that some activities in urban space are (by necessity) conflicting or non-compatible as Koch defines it (2007). Koch exemplifies this through the example of how the space for children’s books is singled out and separated from other visitors; this not only gives them a section of their own, it also implies that they should not come to the other sections (Koch 2007, 281). This is a principle that may be also applied on an urban level – what kind of spaces/people/activities are ‘singled out’ and deliberately separated from other spaces/
people/activities? It means that through spatial distribution, it is possible to control who is likely to encounter whom, playing with the distribution in and of space (this will be further elaborated in the next chapter and refers to Koch 2004, 2007).

From an architectural research perspective, it is relevant to analyse how the built environment – generated by urban design and architecture – influences aspects of the density and diversity of co-presence among citizens. One question to reflect upon is: What spatial conditions encourage an inflow of non-residents to certain streets, neighbourhoods and districts? If such conditions may be identified, this could contribute to an increased understanding of the potential people have to share public space and the extent to which the conditions differ as neighbourhoods/places are compared. As we have learnt, sharing space is not unequivocally positive; it could lead to conflicts and confrontations but by and large, it very much indicates that the beneficial outcomes outweigh the disadvantages. For the empirical analysis, this raises more specific questions about the residentially segregated Swedish urban landscape of today: Is there a limited exchange across the city? To what extent are public spaces characterised by co-absence rather than co-presence which could be problematic for the emergence of some kinds of relationships and networks? These questions will be returned to in the empirical part.

To link co-presence to built form

Now let us return to a central focus of this thesis: can spatial form influence variations of co-presence in public space and if so, can it influence variations in intensity (the amount of people co-present) and variations in constitutions (its diversity)? Hillier and Vaughan emphasise in *The city as one thing* (2007) that spatial form is a contributing factor in forming the patterns of integration and segregation in cities. They argue that the reflective disciplines that support and nourish the physical and the social city – on the one hand the morphological disciplines and on the other hand the social sciences – take an asymmetric view, placing one city in the foreground and the other in the background. The result of this is the emergence of many partial theories about the city but no theory of the city relating to both of the things that it seems to be, namely both the physical and the social city:

“The social city is either side of the physical city: it brings it into existence, and then acts within the constraints it imposes.” (Hillier & Vaughan 2007, 206).
It is necessary to understand how the layouts in the city embody social ideas and that the spatial configuration has consequences for how collections of buildings come to life as living cities (or fail to thrive). If this reasoning is driven to its extremes, it means that if we cannot understand the social city coming together with the physical city and if we lack a strong awareness of the social implications of urban form, it is a risk that the cities we build fail in supporting society.

To be able to understand the role of urban form and spatial configuration for segregation, we also need to study urban form somehow and somewhere during the process in a way that is relevant to the problem at hand. When studying urban segregation from the starting point of architectural research, dealing with architecture as built artefacts (with the aim of decoding the role of the built environment in this matter) it is argued that it is absolutely necessary to keep track of both definitions and of the object of study so to speak; segregation from a residential point of view needs to emanate from the residents and specific criteria for classification, while segregation from a spatial point of view needs to proceed from urban space, making legible the continuities and discontinuities in the system of urban spaces that constitutes the city. The first looks at how entities (i.e. categories of people) are distributed in space, while the latter looks at the distribution of space in itself (Koch 2004). Even though these are closely linked, I argue that the only way to increase our understanding of the role of urban form in this respect is to distinguish the spatial from the social in analytical terms; the city as a designed physical artefact also needs to be studied as the physical artefact it constitutes, shaped and formed by design and architecture. But to be able to decode the social performance of space, it is also necessary to link spatial properties to social practices and hence through this synthesise the two. Obviously, space has on the one hand the ability to separate people, things, resources, opportunities, activities, etc. and increase distances. On the other hand, space in the same way has the ability to decrease distance, increase density and create closeness or propinquity between people, things, opportunities, activities, etc. This has bearing on what Hillier says about cities, that they are ‘mechanisms of generating contact’ (1996, 174). One following question is: how efficient are cities in doing this?

It is argued that such a relationship cannot be understood in causal terms nor can it be described as having deterministic causality, since the social outcome is not given either by the social composition or by the spatial composition. If one tries to figure out how to synthesise the social with the spatial in a way that has relevance for architectural research and respond to the statement that cities are mechanisms for generating
contact, a third path to follow regarding choice of focal points is suggested here: to study the spatial relationships urban form creates and what social performance such spatial relations may potentially generate. One possibility for this is to study how people, things, resources, opportunities, activities etc. are distributed and are made accessible through space (Koch 2005, Legeby 2010b). This is argued to have relevance both for urban segregation and urban design and planning since it brings the social and the spatial together.

The idea that all places have a certain ‘capacity’ or ‘affordance’ to enable different everyday trajectories to overlap – or to partly be superimposed in some of their sequences – is something that I argue is highly relevant to architectural research and a key aspect when discussing what urban design has to do with urban segregation. If variations of such capacity can be identified and described, this implies that variations in the affordances of neighbourhoods may be established. By linking what kind of ‘opportunities and constraints’ are inherent in urban layouts as a result of the spatial configuration of specific places, this opens up a wider discussion on how urban segregation and urban design are interrelated.

As referred to above, what stands out as being critical for the development of social capital is both the occurrence of opportunities to interact on the one hand and the quality of such interaction on the other hand. Moreover, it is suggested that places that have the criteria to facilitate this are crucial. Examples of physical places where such interaction has the potential to take place are work places, associations, clubs, schools and cultural institutions as well as public streets (virtual spaces e.g. social media will not be elaborated on here). It is, however, rather unlikely that these places are equally good at ‘generating contact’ and a challenge for architectural research is to gain a deeper understanding of what is required for these places to work as efficient mechanisms for generating contact. The affordance of spaces may be defined as inherently social in that different places afford access to encountering other people. Spaces to study in this respect are described according to how they differ in the sense of how inclusive/exclusive they are and how accessible they are as ‘arenas’.

Open public space is the most easily accessible and perhaps the least demanding space to enter. In terms of cost and knowledge, streets, squares, parks, centres etc. there are low thresholds for people to (actively or passively) participate in activities at these places.

Public institutions such as public libraries, public sport facilities, the public transportation system, etc. are another important arena for citizens. Both commercial and cultural places are places that most citizens largely
have access to, even though there may be certain conditions that need to be fulfilled or some rules of conformity to follow in order to enter and/or participate.

The realm of virtual communities, for example communities on the internet, is the space least bound to geographical space in the city. Depending on the type of community, the degree of exclusiveness/openness differs considerably. It is, however, plausibly that contacts established through social media may result in a face-to-face contact in the physical space.

Events and happenings and other so-called non-permanent occasions also provide an opportunity for interaction/encounter and can be characterised by high access for wide groups of citizens but could also relate to more exclusive or invited groups.

Clubs, political associations and the like facilitate opportunities for encounter and/or interaction but primarily address members and it is often presupposed that people who enter share certain values, interests, religion etc. There might be a fee for admission etc. which makes them exclusive in a sense and there is a certain threshold to be passed.

Work places and educational institutions are arenas where interaction/encounter is facilitated for those with a job, employment or those who go to the school, university etc. These are examples of places that have great significance since (many) people spend a lot of time in such establishments but they are limited to ‘members’ in a way.

In the empirical study, a selection of different spaces will be studied with regard to what kind of ‘arena of encounter’ they constitute and to what extent segregation may become blurred in these places in line with the reasoning of Franzén 2009. More specifically, the selection includes public space (square/centre), work places (or access to work places/working population), public libraries (as a cultural institution) as well as schools (as an educational institution).

Summing up

In summing up the knowledge and insight deriving from what has been outlined in this chapter, the most important thing to emphasise in this thesis is that first, co-presence has been proved to have importance for social processes and for interaction rituals second, co-presence has been proved to have importance for the emergence of urban social networks that, in turn, have great influence on how society develops and third, co-presence stands out as a key factor in trying to capture aspects of...
segregation as they develop in public space. It is moreover suggested that several types of relationships and ties are important in supporting modern urbanised societies. The fact that strong ties are important for society has rarely been contested, but what has been highlighted and emphasised in this chapter based on a selection of examples is the strength of weak ties, especially those with a bridging effect. It has been highlighted that they have significant importance for the production and reproduction of various urban social networks that influence how resources and power are distributed across the city. Hence, those weaker ties are found to be decisive in order to make use of what is said to be specifically 'urban' and the distribution of a city’s assets depends on urban social networks, to a large extent, that are partly built on such weak ties or secondary relations.

What makes co-presence such a relevant aspect from an urban design perspective is that co-presence is shown to be influenced by how space is configured; urban form is suggested to have a decisive influence on both patterns of movement and on patterns of co-presence and this will be explored thoroughly in the next chapters. Increasing understanding of the social effects of urban layouts is crucial when addressing urban segregation from an urban design perspective. Shaping and designing the spatial system that constitutes our cities falls within the domain of the architect, urban designer or planner and therefore it is of utmost importance to understand the consequences of the ongoing changes that the city is subjected to, since this may affect who will be part of different 'situations’ or ‘co-present gatherings’ at different places across the city. Moreover, from an urban design perspective, the physical city cannot be understood as a fixed entity because (most) cities constantly develop over time and are being expanded in one part or changed in another and all these changes are said to have an effect on the spatial system as a whole, shifting balance and shifting the position of areas in relation to the whole city. Even though neighbourhoods locally may look unchanged, they will not be left unaffected by development, construction and urban exploitation in the surroundings. Therefore, understanding the effects of urban changes and, above all, the social consequences is crucial if urban segregation is to be addressed from this perspective. This implies that those inequalities influenced by physical space in the segregated city may be identified and thus addressed.

The spatiality of urban social networks and relations (or the spatiality of social capital) has been explored and the concepts ‘weak and strong ties’, ‘bridging and bonding’, together with ‘spatial and transpatial solidarities’ will be used also in the next chapter when analysing social ideals inherent in different urban design models. It will be illustrated that
theories describing different types of solidarities as exemplified in this chapter are also highly relevant to architectural research, since many urban models – one way or another – respond to theories of how urban social networks (or society) are believed to work.

Finally, spatial theories within architecture, e.g. space syntax and theories within micro-sociology, e.g. by Hägerstrand, Giddens, Goffman and Collins are suggested to be complementary: Collins’ theory of interaction ritual (2004) may on the one hand explain why co-presence is important for society, while on the other hand the spatial theory of space syntax developed by Hillier and Hanson (1984) may increase the understanding of where patterns of co-presence may appear in an urban spatial network.

Figure 2:7. Selection of illustrations by Jan Lööf in ‘Viktor bygger en bro’/‘Viktor builds a bridge’ (Lööf 1972). Changes in the surroundings have an impact on the local situation.
3. Urban form matters for co-presence

Introduction

Hillier et al. (1987) ask the rhetoric question: can architecture create life or does architecture determine anything? The question of determinism within architecture has often interfered in the discussion of the society-space relation. It is clear that architecture and urban design to some extent have a deterministic effect that is difficult to deny; if there is only one door, only one entrance to a building or only one street that connects two neighbourhoods, it is difficult to imagine anyone using any other alternatives than the existing ones. Nevertheless, according to Hillier and Hanson, building interiors are more deterministic than the space outside the buildings; more people have access to this space, there are fewer to controls on it and therefore it is richer in potential. They suggest that such space is more probabilistic in relation to encounters (Hillier & Hanson 1984, 19-20). Similarly, Goffman suggested that public streets are to be described as relatively unobstructed places where it is difficult to define the region of space where co-present people might potentially form a ‘social occasion’ since people who are present at different points along the street may be able to observe and be observed by a slightly different set of others (Goffman 1963).

Figure 3:1. People may be able to observe and be observed by a slightly different set of others; the dark figure can see 11 other people, while the others see fewer.
When thinking of the social intentions that might form part of architectural or urban design proposals, e.g. intentions of creating urban life within well used spaces that promote encounter and interaction among people, then the question of determinism is, according to Hiller et al. (1987, 234), better replaced by the following two questions: does spatial design have consequences for the pattern of ‘spatial life’ that takes place? And does spatial life have consequences for social pathology? The first question they argue is primarily an architectural one while the second is more sociological. A sociological view has been highlighted in this thesis in the previous chapter with the attempt to demonstrate the sociological relevance of co-presence and the architectural view will be the primary focus in this theory chapter. However, from an architectural research point of view and with the current focus upon urban segregation, it is important to link these two perspectives which is argued to be a challenge. One way of trying to unfold the spatial mechanisms involved in the society-space relationship is to look more closely at theories of how the design of space influences the emergence of co-presence patterns.

How cities and, more specifically, how the configuration of urban form influences social processes related to urban segregation is a focal issue of this thesis. The interest lies at the level of urban design and spatial planning. While studying literature in this matter, it is striking how great an impact certain social beliefs have had on design paradigms and on different urban design models of the twentieth century. However, looking in retrospect, it is also striking that much of the outcome very weakly corresponds to the initial social aims. It may, in fact, be argued that design and planning decisions have had unexpected effects on problems such as social isolation and urban segregation and this indicates a troubling discrepancy between the intention and actual consequence.

According to Hillier and Hanson, the ordering of space is about the ordering of relationships between people and in order to understand function and social meaning in architecture, it is essential to acknowledge not only the level of individual space but also the level of the system of spatial relations that constitute a building or a settlement (Hillier & Hanson 1984, 1-5). Building interiors are argued to have a rather well-defined relationship to social categories and roles, while the space outside buildings usually has far fewer categoric differences mapped into spaces (Hillier & Hanson 1984, 18-19). Exterior space creates a more fluid system of encounters and avoidances which is constantly re-negotiated through use. Hillier and Hanson suggest that exterior space is defined as that in which society is produced and the interior space may be defined as that in which it is reproduced (Hillier & Hanson 1984, 20). Public space is seen...
as an interface between the dwelling and the world outside and of special interest is how the relations among inhabitants – and what is perhaps even more important in the current context – how the relations between inhabitants and strangers vary as settlement types are compared (Hillier & Hanson 1984, 17).

In the previous theory chapter, co-presence has been demonstrated to be important for social processes as well as for society at large. In this theory chapter, theories of how co-presence and encounter in public space are influenced by the configuration of space will be developed as it is suggested that this links urban design very closely with the matter of urban segregation. From a theoretical perspective, it will be argued that urban form matters for co-presence and therefore this forms the basis for what will be further tested and elaborated in the empirical part of this thesis.

This chapter includes the following discussions: first it will be illustrated and exemplified that different urban design models are closely related to certain social ideas and ideas about how societies are believed to work and be held together. This section also highlights urban design ideas and urban models that have been especially influential for the urban development in Stockholm during the 20th century and onwards. Second, theories of how the configuration of space influences co-presence and encounter will be developed which, according to Liebst (2012a), is the micro methodological response of Hillier and Hanson to the macro level ‘dynamic density’ explained by Durkheim. Third, special emphasis will be placed upon the notion that cities were constructed to be interfaces between scales of movement, creating an interface between inhabitants and strangers or between locals and non-locals (Hillier & Hanson 1984; Hillier 1996; Peponis et al. 1997) that is argued to be highly relevant from an urban segregation perspective.

As such, the chapter will illustrate that space syntax, as a design level method, may be joined with the micro-sociology theory of interaction, drawing on for example Giddens, Goffman and Collins, to create a micro-morphological synthesis as proposed by Liebst (2012a). The contribution from Collins’ theory of interaction rituals (2004) to this matter (elaborated in the previous chapter) is that it explains why co-presence is important for interaction (NB both of low and high intensity). Furthermore, it explains why the dense and intense interaction rituals are attractive:

“Unfocused crowds generate more tacit interaction than very sparse assemblies, and thus gives a sense of social atmosphere. [...] Being in a crowd gives some sense of being ”where the action is”, even if you personally are not part of any well-defined action; the lure of the
”bright lights of the city” is not so much the visual illumination but the minimal excitement of being within a mass of human bodies.” (Collins 2004, 82).

This is argued to be very close to Zukin’s ideas of ‘being in the city’ as a way of ‘being in society’. The space syntax approach, on the other hand, provides the insight into where the spatial configuration shapes so-called market attractions (Liebst 2012a, 23-).

“Encountering, congregating, avoiding, interacting, dwelling, conferring are not attributes of individuals, but patterns, or configurations, formed by groups or collections of people. They depend on an engineered pattern of co-presence, and indeed co-absence. [...] We should therefore in principle expect that the relation between people and space, if there is one, will be found at the level of the configuration of space rather than the individual space.” (Hillier 1996, 29-31).

What Hillier claims is that urban social life is dependent on bodily co-presence and that the social life of a specific street, a square or even a neighbourhood is highly influenced by the spatial relationship with its immediate surroundings as well as by the spatial relationship to the city as a whole. Which streets, squares etc. may acquire a concentration of co-present people is thus far from dependent only on the local preconditions, such as population density or attraction density; rather, it is argued that configuration of space is what more powerfully influences how people are deployed in space as a result of everyday life activities within urban space in the city.

Co-presence within space syntax is seen as being highly important for societal properties and this finds support in Collins’ theory of interaction ritual as well as in theories developed by, for example, Goffman, Giddens as well as Hägerstrand. Consequently, unintended encounters and awareness of others may be a vital driving force in social systems and Hillier and Hanson strongly argue that such unstructured awareness of others is powerfully influenced by architectural form (Hillier & Hanson 1984, 18-25).
3.1 Social ideas and urban models

Urban models

The building of cities is partly about making urbanisation possible, thus it is also about building the society itself. Studying urban design theories and models, it is possible to see a strong connection between the idea of the physical form and the idea of the society itself and that these ideas have varied over time. In the discussion and the debate on urban segregation, these differences in the conceptions of societies are crucial. In some models, the idea of segregation or separateness is advocated as a way of creating community and social cohesion locally in line with the saying ‘birds of a feather flock together’. These urban models are often aimed at controlling both the population and the density. Other models apply opposite strategies where the connected and continuous city is advocated and where new development is added in relation to the existing structure. With urban segregation as the starting point for reviewing some prominent urban theories and models, the focus will mainly be upon aspects of spatial continuity and discontinuity, on spatial integration and segregation. It is important to remember that the urban design models are mostly created in order to respond to what is regarded and seen as being problematic in society at various times.

The sociologist Durkheim emphasised the relationship between the physical place (the geographical place) and the social organisation. The density and the size of a city or a settlement, according to Durkheim, have a very direct impact on what traditions, rituals and functions may exist and emerge and may be studied within the field of social morphology (Durkheim 1978; Halbwachs 1960). From an urban design perspective, such a statement is highly relevant since both density and distribution are dealt with as part of all urban development and urban design and planning. According to Durkheim, an increase in the dynamic density was accompanied by a fusion of ‘social segments’, the progressive increase of interdependence among elements of a society and hence a growth in the ‘degree of organization’ (Halbwachs 1960, 8). In light of this reasoning, it is interesting to study urban models and theories focusing upon these aspects more thoroughly. On the one hand, it is possible to find urban theories and models that proclaim a separation between groups of people
and/or of functions and on the other hand, some models advocate a larger spatial integration of the physical city resulting in a closer connection between the citizens and between different functions. This has strong relevance for the debate of urban segregation since it is often argued that a segregated city is polarised, divided or that some neighbourhoods and its citizens are confined to the local area and thus excluded from the city as a whole (Socialstyrelsen 2001; Integrationsverket 2007; Swedish Government 2008; Boverket 2010). Therefore, a legitimate question is to what extent the urban fabric in itself is divided, segregated or discontinuous? As the aim of this chapter is to elaborate the impact of urban form for co-presence which is argued to have importance for various kinds of social processes, the spatial features and properties of urban models and urban layouts that possibly may influence this will be discussed.

This section about urban models mainly draws on the writings of Françoise Choay (1969, 1997 [1980]). The focus will be upon urban models and paradigms that have had a substantial influence on urban design practice in Sweden and for the expansion of Stockholm. A discussion is included about movement and co-presence and how this is influenced by urban form that is closely related to questions like: Is the intention of the urban design concept to bring people together or to keep people (or certain groups of people) apart? To what extent do the models allow and encourage an exchange between the different parts of the city? Moreover, some of the methods and approaches within urban morphology will be discussed in terms of their ability to disclose how different neighbourhoods and cities perform in this respect.

Ideas and strategies of how to organise, build and structure our cities have been launched in many different formats; on the one hand, there are written ones as treatises, utopias or models etc. and on the other hand, there is a long tradition of unwritten formats, for example found in the Arab culture that never possessed a single specialised text for the structuring of its urban spaces, which today are perceived as being highly complex (Choay [1980] 1997).

The strategies for making urbanisation possible have varied radically depending on the historical and cultural context and on political currents, among many other things. The motives and intentions of the strategies for organising and structuring settlements have been more or less articulated, more or less conscious and the accomplishment of projects has, to various degrees, taken place in accordance with such ideas. Nevertheless, the theories and models of ‘urbanism’ have been very influential on how cities have developed, especially since industrialisation. Most commonly, models arise as a reaction to situations that have been perceived as prob-
lematic over time, e.g. as a reaction towards an overcrowded and unhealthy city or as a reaction towards a city’s inability to expand and grow or the lack of ability to deliver street life. In turn, the models are imbued with certain intentions and ideas as to how its citizens are expected to live and designed to fulfil different ends, for example advocating a healthy city, cultural tradition or advocating certain aesthetics (Choay 1997). It is possible to see how urban models, as well as utopian models, have often been generated in the name of healthiness, a sound approach or even goodness, but quite often also made other (often ideological) notions less conspicuous, for example, urban space became from time to time ‘medicalised’ and disciplinarity began to be manifested in both practice and in terminology.

According to Choay, the very term ‘urbanism’ (or ‘urbanización’ in Spanish) was not coined until 1867 by Ildefonso Cerdá in his Teoría which forms the foundation and justification for the patterns of land-use the Spanish engineer adopted in a plan for the expansion of Barcelona in 1859. From the nineteenth century onwards, the foundational discourse on space proclaims its scientific status and specifies its field with this term. However, Choay derives the development of urbanism theory from the Italian Renaissance as the Italian treatises on architecture established a relationship with material/built space, mentioning the work by Leon Battista Alberti from 1452. Choay argues that this work generated an original discursive genre (the architectural treatise) which spread across Europe and that this generated its own field of theory and practice and assigned the architect a new professional role beyond that of the master builder (Choay 1997, 3-4).

![Figure 3:1. Plan of Barcelona by Cerdá (Choay 1969, 61).](image-url)
Beside the treatises, the utopian texts and ideas have had great impact on urban development as they propose a critical reflection on society by developing the imaginary of a counter-society. And as Choay points out, utopian texts, like other writings in urbanism, first offer a critical approach to a present reality and second, the modelling in space of a future reality, namely the model (Choay 1997, 7-8). Along with increasing urbanisation as a result of the Industrial Revolution, a radical transformation was brought about accompanied by a spontaneous and unprecedented urbanisation which not only resulted in completely new settlements and developments, but revolutionised not only the spatial organisation of existing towns: “…but also the mentality of the city dweller and the initiative of the planner” (Choay 1969, 8). The new urban order was unfamiliar to the city dweller; those who experienced the urban phenomenon came to consider it as something alien, resulting in a new (unfamiliar) relationship with respect to the urban complex. More and more, the description of cities was coloured by the lack of understanding of its order and structure and the transformation was even described as chaotic and characterised by disorder. According to Choay, this called for a new type of planning on the part of the planner and the planning that emerges from this critical approach she terms critical planning (Choay 1969, 10) and the three forms it takes during the nineteenth century are defined as regularisation, pre-urbanism and urbanism. It is obvious that different kinds of conceptions of cities, illustrated through models, diagrams and images, have been an important carrier of different ideas and different aesthetics which have been highly influential throughout urban design history. In the following two different models, Haussmann’s plan for the transformation of Paris will be discussed first and second, Howard’s ‘Garden city’ that, in turn, is related to the Neighbourhood Unit concept.

Intentions about circulation

Paris underwent perhaps the most well-known ‘extreme makeover’ seen from an architectural city planning perspective, partly through the so-called regularisation directed by Baron Georges Haussmann which started in the 1850s. What makes this especially interesting from an urban segregation perspective is that this transformation of Paris was not only a ‘makeover’ of the physical city but affected the society and societal life at its very foundations. According to Choay, historians among others have misunderstood the intentions of the regularisation by frequently stress-
ing the destruction that was inflicted on the city and that the medieval structure of the Parisian streets was destroyed and replaced by broad arteries which the police more easily could control (Choay 1969, 15). But the regularisation plan was much more than just a project for increasing the Emperor’s control and improving sanitation. Choay suggests that Haussmann’s initial objective with the plan was to bring unity to the Parisian agglomerate and to transform it into an operative whole of consumption and production. The immense urbanisation had placed new demands on the city that Paris could not meet in the mid-19th century; Paris was by then not one city but still, as Choay states:

“[…] a collection of juxtaposed parts whose particular characteristics were no longer meaningfully related to the viewpoint or behaviour of an increasingly mobile and shifting population that was actuated by the capitalistic drive for accumulation of wealth.” (Choay 1969, 16).

The idea of Paris as ‘one coherent city’ was perhaps a novel thought at the time within city planning circles: there was simply no such notion as the idea of the ‘big city’ as a unified entity.

![Figure 3.2. The plan for Paris 1867 (Choay 1969, 52).](image-url)
Comparing Haussmann’s plan with previous planning (e.g. the Artists’ Plan from 1793), two diametrically opposed conceptions of the city are found. By using a literary comparison, Choay couples The Artists’ Plan with Balzac’s Paris with its various societies enclosed within their separate quarters and Haussmann’s Plan with Zola’s Paris, a metropolis unified by the fever of capitalism. What is interesting to point out here is how the physical city, its structure and order can be so clearly related to a certain societal life. Apparently, the way the agglomerations of Paris worked in relation to each other was seen as a limitation; the built form and the structure prevented the city’s ability to function ‘as a whole’, which most likely disfavoured industrialisation and consumption.

According to Choay, Haussmann’s strategy included a thorough analysis of the existing situation: first a detailed and accurate plan of the whole city was drawn up (perhaps the first of its kind) and the map was placed in his office (a frame on wheels) and constantly studied; second, he would have acquired experience from the city by covering the whole city ‘on foot’ (Choay 1969, 17). If this is correct (which must be highly difficult to prove), it is likely that Haussmann supposedly had both a general view of the city as a whole on the overall scale and was able to combine this with his experience of how the city worked at a local level. According to Choay, Haussmann acknowledged the constant changes that take place in a city and he identified specific key zones and inert zones as well as those constants - the axes and poles - around which development occurs (Choay 1969, 17). Such an analysis gave evidence for an impaired connectivity in the system and a circulatory system was proposed that cut through the existing development and thus formed new lines of communications. The proposal of both through-streets and local streets that connected different districts as well as more specific links between old or new key points (e.g. railway stations or market places) indicates that one aim of the strategy was to connect the city in a more efficient way. In addition to this, voids and green open spaces for sanitation purposes were introduced (Choay 1969, 17).

To conclude, the regularisation of Paris may be seen as an adoption and a response to the needs of the new consumption and production situation, resulting in a continuous and well-connected circulatory system in the city and introducing new streets, diagonals etc. It is possible that the (assumed) insights Haussmann had of the relationships between the local and the global scale may have influenced this regularisation; making use of knowledge of where important development happened and managed to make use of the identified ‘axes and poles’ by introducing strategic inter-connections. A regularisation of this kind resulted in something
that might be called a ‘continuous city’ that did not exist before (i.e. at least not in Paris). A continuous city in the sense that it makes it easier for the citizens to move around in the city and not be restricted to living their daily lives within the local district to the same extent. Thus, instead of being dependent on the locally available resources only (human and material), other resources also became accessible. Conversely, different parts of the city were made accessible to a larger population which had consequences for trade, exchange and life on the street.

The Garden City

In 1898, the socialist Ebenezer Howard wrote the Garden City of To-Morrow. This urban model was not the first of its kind but this utopian model has undoubtedly been one of the most influential and it presents a completely different idea of society with a completely different physical solution compared to the regularisation model. Howard’s concern was the overcrowded and unhealthy city and he used the metaphor of a magnet; the city performed as a magnet that attracted people (like needles) and he believed it was possible to create new “[…] magnets of yet greater power than our cities possess”, and that this effectively would redistribute the population in a “spontaneous and healthy manner” (Howard 1965, 45). Howard was convinced that it was possible to combine the advantages of the countryside: “the beauty and delight of the country” with the advantages of “most energetic and active town life”. In his words:

“[…] town and country must be married, and out of this joyous union will spring a new hope, a new life, a new civilization.” (Howard 1965, 45-46).

![Figure 3:3. The Garden City by Ebenezer Howard (Howard 1965, 52-53).](image-url)
Raymond Unwin, one of Howard’s followers, showed in *Nothing Gained by Overcrowding* (1912) that the Garden City concept also was justified from an economic standpoint which had a powerful influence on contemporary urban design and planning. The Garden City is a hierarchically structured development, built like a satellite and where both the population (30,000 people) as well as the size of the satellite town are predetermined. This city is sub-divided into six identical parts which are embedded in agricultural land and connected to other satellites and the main centre via a railway line. The separateness of the settlements from other settlements is very deliberate. The Garden City is autonomous and designed to incorporate all types of labour. Thus, the dependency on other satellites is low. An exchange with other developments, cities or satellites is thus not encouraged; there is a lack of continuity in the global street-network and there is a lack of continuous building development. It is not intended that new parts should be aggregated into the circular ward. Moreover, from the very simple diagram it is possible to see that it is not just fruit farms or cow pastures that are found outside of the ward and centre of the Garden City. Also excluded from the ‘houses and gardens’ are the ‘asylums for the blind and deaf’, ‘convalescent homes’ and the ‘farm for epileptics’. This separateness of what is seen as being different at the time bears witness to the idea of a society where ‘unwanted elements’ need to be controlled and may be separated through spatial distance, illustrating how urban design strategies may be used as a means of excluding certain people or groups of people, creating a kind of deliberate segregation. The tendency of gaining control of certain groups (or individuals) by excluding them is discussed by Michel Foucault (1977 [1975]). Foucault acknowledges architecture to play an important role in the development of different administrative and legal hierarchies for social control and he discusses the growth of a disciplinary society as a whole. The spatial partitioning was a consequence of the efforts to control the spread of the plague and other diseases: it included the surveillance and registration of people, a registration that constantly centralised in a hierarchical manner. Foucault argues that prisons, schools, factories, hospitals etc. in fact to a large extent share a common organisation that makes it possible to control the use of people’s time as well as the use of people’s space. It is stated that there are two different measures at work: rituals of exclusion and disciplinary projects. Moreover, Foucault suggests that these projects are not incompatible ones (Foucault 1977, 197) and that these projects are matters of power, in the first example a control through separation and in the second example, a control by segmentation, a segmentation that is analysed and distributed. He refers to the pure community on the one hand and on the other hand, the disciplined society that illustrates:
“[T]wo ways of exercising power over men, of controlling their relations, of separating out their dangerous mixtures.” (Foucault 1977, 198).

The power relations may thus be expressed as space and surveillance coming together through a process of partitioning and spatial segregation (compare with Thomas Markus as referred to in chapter 2). It is possible to see that the themes of control and surveillance are prominent in many urban models; e.g. controlling population density as well as controlling and limiting the mix of locals and non-locals within a neighbourhood and that this bears similarities to an institutionalised way of thinking and expressing power.

Interestingly enough, the Garden City model consists of diagrams and their explanation rather than seductive or convincing reality-like images. Moreover, the model is truly a utopian model since there is no specific city in mind for a change, rather it is a true model society – and a model city – that is to be built from scratch. Inherent in The Garden City model (or in similar utopian models) is an idea that society is predictable and that it is possible to control. As in most utopian models, time (history-present-future) does not really exist and there is no readiness for change. What would happen if the population increases or decreases? How and who should such a surplus or shortage be dealt with, who would (be forced to) move? In light of the idea of regulation plans with a push towards a spatially integrated city, the Garden City appears to be an antithesis of this, proclaiming to be an enclosed entity with limited connections and directed links only to a few other destinations (to other units or satellites, primarily by highways and railways). Nevertheless, this conception of the city, as a controllable entity, has had great influence on many urban theories and models and is arguably still in force in many urban practitioner and theorist circles. These ideas were further developed at the beginning of the twentieth century in various directions, for example Clarence Arthur Perry’s *Neighbourhood Unit* (1929), the Radburn Garden City by Stein and Wright (1929), Lewis Mumford’s *The Culture of Cities* (1938), the County of London Plan (1943) and the Greater London Plan 1944 by Abercrombie (discussed for example in Svedberg 1988, 116-122). A materialistic view of the intentions of the urban models implies that both the regularisation idea and the Garden City concept to some extent are responding to the needs of the productive apparatus; providing the industry with a labour supply.
Neighbourhood unit planning

Especially important for Swedish urban development from the 1940s onwards is the Neighbourhood Unit model, first presented by the sociologist Clarence A. Perry in 1924 and 1929 in *The Neighbourhood Unit: a Scheme of Arrangement for the Family-life Community*. Already the title imposes an ideological idea about urban life-styles. There is no doubt that the author believed that urban form influences the conditions for different life-styles and that these persist in that the urban form suggested in the concept of the Neighbourhood Unit would facilitate the emergence of a (local) community. This urban model includes a rather normative postulate of how a neighbourhood should be designed and according to Franzén and Sandstedt, this has a strong connection with the ideas developed at the Chicago School. In a way, the Neighbourhood Unit concept may be seen as a refined version of the Garden City concept as a self-contained neighbourhood unit. It is possible to identify six basic design elements of Perry’s neighbourhood unit model: the size (based on number of school children), the delimitation (based on motorways, landscape elements, etc.), open spaces, institutions (schools, churches, etc.), local shopping facilities and the principles of traffic separation (e.g. local traffic separated from through traffic or pedestrian paths separated from car streets/roads) (Perry 2005, 56; Franzén & Sandstedt 1993, 148). In the examples, the units are proposed to have about 10 000 inhabitants of whom about 1 600 would probably be of elementary school age: “a number which could be nicely accommodated in a modern elementary school” (Perry 2005, 61). According to Franzén and Sandstedt (1981, 54), the Neighbourhood Unit idea is, however, neither based on theoretical or empirical considerations; rather there are technical justifications for its construction and organisation. This means that the point of departure is social and political and it is the contemporary norms that decide the size of the unit, not a theory of optimal population size for a good social life or the like. Franzén and Sandstedt set out a strong critique of Perry’s argumentation and motives.

These kinds of urban models as ‘models’ and the idea about society being an integral part of the concept have certainly had great influence on urban design practice. In an analysis of urban transformations in the UK, Julienne Hanson argues that contemporary ideologies have also had a great impact on architects, planners, academics and researchers even though the content or the significance of these ideologies was perhaps not that obvious (Hanson 2000, 117). Hanson primarily identifies two powerful ideologies that have a great impact on urban design but that have also served to obscure the relationship between society and its spatial mani-
festations. The first is the nineteenth century debate that can be traced back to the ideas originating from the design of the first institutional buildings. In the second, Hanson specifically points out the idea of the ‘Neighbourhood Unit’ that emerged in the USA during the 1920s (Perry, Stein, Radburn and others). The influence of institutional architecture was about importing many of the spatial features from institutional buildings like prisons, mental asylums and hospitals into housing design. Hanson’s reasoning is recognisable from and in line with Foucault’s examples (even though Hanson does not specifically refer to Foucault in this article). According to Hanson, the first modern housing estates imported many of the spatial features found in institutions. For example, an inward-facing morphology with buildings facing onto the courtyards forming a clear outer boundary was used to minimise ‘cross-contamination’ including a classification and segregation of different types of inmates. Hanson (2000, 117-118) argues that these shared concepts indicate that “their intellectual and spatial pedigree” may be traced back to the design of the prison cell.

![The Neighbourhood Unit model by Perry 1929 (Lang 2005).](image)

The influence of the neighbourhood unit planning was not only about segregating functions, such as land uses, traffic modes etc. but also about segregating life worlds. Hanson in particular highlights a gender perspective to this and argues that the urban landscape became divided in one spatial realm of women (home, private, housewife) and one spatial realm of men (work, public, breadwinner) (Hanson 2000, 118). This view may
be confirmed by how Göran Sidenbladh, one of the most prominent advocates of the Neighbourhood Unit in Sweden, wrote about this specific aspect. According to Sidenbladh, those facilities that aim to serve the families/households should be located within a distance that mirrors the ‘world of the housewives and children’ and such a distance was even defined to be within 300 metres (Sidenbladh 1948, 115).

However, before moving on to the Swedish interpretation/version of the Neighbourhood Unit, it needs to be pointed out that Perry’s diagram or schematic model actually does not present the neighbourhood unit as an isolated ‘enclave’ with limited connections to the surrounding urban context. Quite conversely, the ‘unit’ is found to be an integrated part of an urban tissue, connected and interlinked to neighbouring ‘units’ as well as to the comprehensive urban structure. Yet the model is not intended to encourage traffic through the area, including flows of non-locals (Perry 2005, 56). Perry describes how certain functions, for example shopping districts or churches and uses that attract larger areas (i.e. more than one unit) should be localised on the main streets, on the so-called arterial streets between these neighbourhood units. For example it is said that shopping ‘districts’ should be localised in ‘the periphery’ at traffic junctions and preferably ‘bunched in form’. What is clear in Perry’s model is that the community centre was seen as an exclusively local concern and located in the very centre of a unit, clearly separated in space from commercial space. When scrutinising the rhetoric, there is no doubt that the families at which these neighbourhood units were expected to live a larger part of their daily lives within these units. Elements that could facilitate this were brought together within the neighbourhood unit. This is important to point out since it relates to the discussion of urban transformation (Hanson 2000) where the street-based ‘all neighbour’ layout was replaced by the estate or the ‘no-neighbour’ layout as described by Hanson (2000). It means that the neighbourhood unit design does not encourage having ‘strangers by the door’ or a mix of non-locals and locals within the unit: such a ‘mix’ is directed at the interface created between the units only. The aspect of self-containment clearly relates to the Swedish urban segregation debate and rhetoric where such a focus upon the neighbourhood (or district) level, rather than the city level, is still prominent.

Neighbourhood Unit planning in Sweden

The neighbourhood unit planning paradigm had a considerable impact on the comprehensive urban expansion that took place in metropolitan
areas in Sweden after the Second World War. A reason for this impact, according to Franzén and Sandstedt, was that it was consistent with Swedish functionalism; the typology could be incorporated into the comprehensive functionalistic planning structure with a separation of functions (land use, e.g. separating residential use from production or from work). Furthermore, the size of the unit could be adapted to the contemporary economic and political climate and in addition to that, the inherent social assumption that such an urban layout would foster and support the development of a local sense of community fitted well with the ideological ideas about society at that time. Franzén and Sandstedt argue, however, that the theoretical relationship between social conditions and physical design is vaguely formulated and is more of an assumption (also in the Swedish version of the Neighbourhood Unit concept). As the design of the neighbourhood unit is governed socially, while the dimensioning is practical in accordance with certain norms, the emotional side of the neighbourhood unit is brought together with the rational side of the functionalism. Moreover, the neighbourhood unit in Sweden was launched as something that had the ability to meet the needs of families with children combined with a vehicle-dependent life-style. Two important differences between the Swedish version of the Neighbourhood Unit and Perry’s original version have been identified by Franzén and Sandstedt (1981, 162-163). First, in Sweden there was a social democratic profile of the neighbourhood unit which turned out to be difficult to harmonise with a classical liberal standpoint. Second, commercial services in the Swedish version were localised at the local centre at the perceived or symbolic core of the neighbourhood unit and not, as in Perry’s version, located adjacent to the main roads in the interface between units.

As Bertel Granfelt (1968) reflected about the building of neighbourhood centres during the 1940s-1960s in Sweden, he acknowledged the dilemma of this kind of hierarchical way of thinking. Granfelt argued that local markets need continuity and that the catchment area of various business/services in reality rarely follows the delimitation set up by the neighbourhood unit and that is why neighbourhood centres – in non-integrated locations – are not likely to work in a successful way. According to Granfelt, this resulted in an uncertainty among planners and the idea of the neighbourhood unit as a concept was questioned (Granfelt 1968, 9).

The guidelines for the General Plan of Stockholm by Sven Markelius, *Det framtida Stockholm* (in English: *The Future Stockholm*) from 1946, is highly influenced by the neighbourhood unit thinking (Markelius 1946). Work on the General Plan was initiated in 1944 with the aim of solving the problems related to strong urbanisation and a shortage of housing in
the region. In the guidelines, it is stated that a “natural grouping of population” (1946, 117) in new residential communities should be restricted to between 10 000-15 000 people; this is in order to strengthen a “group-consciousness” that was assumed to be the result of contact between people living in the same districts. In concordance with Perry’s ideas, these areas were also suggested to be self-contained to a large degree and including:

“[…] a school, many day nurseries, communal laundries, a post office, a library, cinemas, assembly halls and churches, as well as a sufficient number of shops.” (Markelius 1946, 117).

It is likely that this was a reaction to the problems seen in the older parts of Stockholm that were believed not even to be suitable for their present use: the apartments were too small, the buildings were placed too close together and there were insufficient parks and open spaces. The density in the old parts was criticised and according the recommendations, the aim was to reduce the density by 40% in the older parts of Stockholm (Markelius 1946).

In the General Plan for Stockholm from 1952, it is stated that the new way of organising dwellings into units corresponding to social groupings worth aiming at forms an essential part of the attempt to socially reorganise large cities (General Plan 1952, 118). In the plan, it is stated that the aim is to support the development of new social groups where people have a feeling of a common ‘us’, believed to develop as a result of the spatial proximity and the limitation of the number of people included in each unit. Such social groupings or such a ‘real sense of community’ was not believed to emerge in the large city due to an overly high density and people being among too many ‘strangers’ (General Plan 1952, 118). The preconditions for a ‘true’ community to develop were, according to the General Plan, a limited population and a limited population density: a community seen as being dependent on spatial proximity.

In a way, the idea of society permeated within the Neighbourhood Unit urban model may be said to be pro-segregation since neither a mix of residents and non-residents nor a mix of different classes was the aim. Cohesion or a sense of community was believed to emerge locally and moreover, such a community was favoured by keeping non-residents out: non-locals were not encouraged to circulate or visit the neighbourhood; on the contrary, there was a definite scepticism associated with mixing people from different social classes (General Plan 1952, 125) and the neighbourhoods were consciously designed in order to satisfy people’s need for rest and not to satisfy the need of movement or flow as Sidenbladh states (1948, 116). He argued that:
“The primitive and sometimes banal town planning tradition that has been transmitted through heredity from the baroque era via the second French empire aims specially to fulfil the latter requirement (i.e. movement) and this tradition has readily been accessed by all those who see traffic schemes in an urban plan.” (Sidenbladh 1948, 116).

According to Sidenbladh, traffic should either be located outside or underneath the neighbourhood unit with respect to ‘mental health’ (Sidenbladh 1948, 116) and this was believed to result in a society far from ‘societies anonymes’. However, there is very poor evidence as to whether the spatial segregation that is advocated in the Neighbourhood Unit concept was favourable for the local community or not. It is suggested here that there is an implicit assumption in this urban (or societal) model that the local community is better developed if ‘outsiders’/‘non-locals’/‘strangers’ are physically excluded from the urban public space within each unit. As such, this urban model may be categorised as one deriving from ethnology or socio-biology (Hanson & Hillier 1987) which consequently has resulted in a design where space is organised in a way that corresponds to and reflects the various levels (or hierarchies) of human groupings.

Figure 3.5. Illustrations from the Stockholm General Plan 1952 (1952, 123, 180).
Examples of urban models implemented in Stockholm

Studying the urban development in Stockholm, it is possible to identify several important regulations and changes that have had a significant impact on the city. Two phases or processes that are suggested as strongly influential for the city of today may be highlighted. These regulations or strategies also reflect and represent two diametrically different conceptions of the city; one possible of creating the idea of the continuous city and the other possible of creating the idea of the discontinuous or sub-divided city. As these two conceptions have been implemented and imbued in planning and urban design, this has resulted in extreme changes in Stockholm; how the city looks and functions today is very much influenced by these two urban strategies. It is still possible to see that these ideas influence contemporary planning and urban design today; every aggregation needs to relate to this existing development and the ideas have long been woven into our regulations, policies and plans in different ways.

Examples of important urban initiatives that have structured an expansion of the city are the regulations of the Lindhagen Plan (1866) as well as the General Plan of 1952. The Lindhagen Plan from 1866 is most likely to have been highly influenced by the transformation in Paris and the plan proposes a strict grid street network with square blocks where esplanades and boulevards are laid out (e.g. Valhallavägen, Strandvägen, Odengatan and Ringvägen). The implementation of the Lindhagen Plan from 1866 was, however, delayed by two decades after a number of adjustments. For a long time, the old structure co-existed with the new. The construction of streets and boulevards often involved the demolition of existing buildings and in some cases, the interconnections were more or less carved into the existing settlement. Elsewhere, in the outskirts of Stockholm, the streets were laid out on undeveloped land.

Other heavily influential urban design models had quite contradictory intentions. The distrust in the ability of the big city to build and support both healthiness and cohesion resulted in a celebration of qualities associated with the countryside which opened up concepts like the Garden City and later the Neighbourhood Unit. This conceptualisation of a city as a well-demarcated unit with a predefined population became a model for the expansion of Stockholm after the Second World War. At this time, many cities in Sweden suffered from a severe housing shortage and General Plans were developed in order to meet the need for an extensive housing construction. Stockholm was no exception; rather the plan became a precursor for other cities. The programme: Det framtida Stockholm (Markelius
1946) advocated a kind of satellite town; suburbs - often in connection with a new subway system - designed in accordance with the Neighbourhood Unit planning ideas. Examples planned according to these ideas in Stockholm are Årsta in 1943, Björkhagen in 1945, Gubbängen in 1944, Hökarängen in 1945 and Västertorp in 1947, Kärrtorp in 1947, Vällingby in 1950, Högdalen in 1953 and Farsta in 1953 (Söderström 2003).

The Neighbourhood Unit model borrowed notions found in Howard’s Garden City and from other so-called culturalist models (see Choay 1969) and may be seen as a critique of the living conditions found in big cities. According to Sidenbladh, proof of this was the fact that the population did not reproduce; the city dwellers had so few children that the population decreased and the crime rate was higher in big cities compared to elsewhere (Sidenbladh 1948, 113). Sidenbladh stressed that a sense of community developed more easily if the population was constituted of a homogeneous social category (quotations from Sidenbladh 1948, 112-116):

“[…] today one needs to take into account that the formation of social groups more easily develops in units that are homogeneous from a social point of view.” And that: “With a moderate population density […] people will be able to know or at least recognize each other. A mix of different social classes within such unit should not be aimed at.”

And furthermore, in the neighbourhood unit, the dwellings should be grouped according to Sidenbladh so that they correspond to the world of the:

“[…] children, the elderly, and the house wives”, meaning that there within 300 metres: “[…] should be a playground, local stores, a day-care centre, maybe a wash house, and a small assembly room.”

According to Sidenbladh, the design was not to facilitate through traffic or traverse movement passing the neighbourhood – this in line with what Perry suggested – rather, it should be directed towards the arterial roads around the neighbourhood unit:

“Our city plans should be designed with respect to the need of rest rather than to satisfy the need of movement.”

Accordingly, the intention was that residents within one residential enclave should not mix with non-residents and urban form was used as a mean to achieve such separation or segregation.
Identifying urban characteristics

How can these properties be captured and described? Which approaches, theories and methods may be supportive in the process of trying to identify different urban types and may increase the understanding of the performance of different urban layouts? Choay associated the death of the city with the disappearance of the last great urban figures: for example Haussmann in Paris, Wagner in Vienna and Cerdá in Barcelona (Choay 1997). Likewise, Jacobs’ acknowledgement of the death of urban life in modern cities as described in the well-known *The Death and Life of Great American Cities* (1961). The assumption of a strong relationship between urban life and urban form is a reason to look more closely at how urban layouts may be described, analysed and understood within the different strands of urban morphology.

Urban morphology is defined as a research field that describes concepts, physical structures and processes related to the study of urban form (Abarkan 2003, 23). Urban morphology developed within geography but expanded beyond its original confines and emerged into an interdisciplinary field. Three schools, the English, the Italian and the French, form the foundation of urban morphology where M.R.G. Conzen, who studied Alnwich in the 1960s and Saverio Muratori who studied Venice and Rome, are seen as the instigators of the field. The French school, with Panerai and Castex as leading names, emerged in the late 1960s which, like the Italian, arose from a reaction against modernist architecture and its rejection of history (Moudon 1997). In the French tradition, the social aspect is especially emphasised (inspired by Lefebvre among others); in the typological process, the ongoing frictions (conflicts or negotiations) between different social groups are emphasised, frictions that are about appropriation of urban space and inflict their own urban models. Examples often referred to are the social conflicts between the bourgeoisie and the aristocracy in the 18th century Paris, two social groups that had very different needs and relationships with the urban space (Abarkan 2003). From the perspective of urban segregation, it is relevant to question what such friction leads to; is it reinforcing segregation or does it neutralise segregation? In the work by Panerai et al., it is argued that it is through conflicts that a change in urban space may take place. Three different morphological levels are identified; the street network, the plots and the buildings. An emphasis on the dialectical relationship between building morphology and the morphology of the city may be found called *typo-morphology* which clearly acknowledges the relationship between architecture and the city (Abarkan 2003).
Despite these different schools, Moudon claims that consensus exists regarding the following; that the city can be read and analysed via the medium of its physical form and furthermore, that the morphological analysis is based on three principles. First, that urban form is defined by the building elements (and their open spaces), plots or lots and streets. Second, that urban form can be understood at different levels of resolution (building/lot, the street/block, the city and the region). Third, urban form can only be understood historically. Thus, form, resolution and time constitute the three fundamental components according to Moudon (1997). Within the theory building of urban morphology, descriptive and explanatory purposes are found (theory of city building) along with prescriptive purposes (theory of city design) and a design criticism (Moudon 1997).

Levy (1999) argues that there has been insufficient exploration of the modern urban tissue within urban morphology. He acknowledges the radical changes that the modern city has undergone: a shift from a closed fabric in which the links between different elements formed a system to an open and fragmented peri-urban fabric (as Levy calls it). This transformation, according to Levy, has led to the dense, compact and continuous cities becoming diffuse, disrupted, loose and discontinuous. The autonomous, automated elements that have developed do not relate to each other and their scale has changed greatly. What Levy indicates is that there is a ruptured relationship or interface between these elements which will be further explored in relation to space syntax theory. Levy argues that the research field of urban morphology needs to pay more attention to contemporary urban fabrics in addition to the historical urban fabrics, which calls for new tools of analysis (Levy 1999). What is indicated to be the challenging part here is to avoid a routine-like categorisation of the old or traditional city on the one hand and the modern or the contemporary peri-urban city on the other hand. There are many reasons to carefully look for nuances here since, in reality, we rarely find refined examples of different types. Instead blocks, neighbourhoods and districts have, to some extent, been affected by its context, current trends etc. Furthermore, some areas seem to have a more or less hidden order, sometimes contradicive to their architectural aesthetic style or representative type. In other words, one needs to be aware of examples of ‘wolves in sheep’s clothing’ as the saying goes.

Turning to more specific studies of urban structures and patterns, the term ‘plan unit’ (derived from Conzen) or the ‘tissue’ (derived from Canaggia) are relevant to the prevailing focus of (urban) segregation or continuity. According to Caniggia, this is an identifiable urban fabric or an
urban pattern, forming a cohesive whole of buildings (Caniggia & Maffei 1979, referred to in Abarkan 2003). The groups of buildings, streets, plots and open spaces are either held together because they were built at the same time or because they underwent a common process of transformation. However, in light of the present focus of urban segregation and the object of the study, which may have a character of discontinuity and an open peri-urban fabric, it is argued that the level of resolution that is indicated to be essential concerns the relationships between such agglomerations. The urban fabrics need to be studied in order to establish the degree of continuities of space, whether they lack the ability to be joined-up and to what extent future developments are allowed to be aggregated with existing ones. This calls for methods and theories that intersect the scales; methods that have the ability to keep track of the surrounding context and acknowledge urban space as a system.

Space syntax is an approach that emphasises the spatial relations within the city, between its parts and between the parts and the whole. Moreover, space syntax establishes a descriptive theory of how spatial pattern can and does contain social information and content (Hillier & Hanson 1984). The theory of space syntax belongs to an architectural research field rather than to the urban morphology field and it is (urban or building) space in itself as a system that forms the main object of the spatial analysis. The space syntax theory and method provides tools and techniques for analysing the configuration of space, for example measuring spatial integration and connectivity (Hillier & Hanson 1984). The city is seen as a system and considered as a local-to-global phenomenon. It has the ability to construct a global pattern from the inter-relations of basic units at the local level. In the introduction to The Social Logic of Space, it is said that the system of space:

“[architecture] provides the material preconditions for the patterns of movement, encounter and avoidance which are the material realisation – as well as sometimes the generator – of social relations. In this sense, architecture pervades our everyday experience far more than a preoccupation with its visual properties would suggest.” (Hillier & Hanson 1984, ix).

Thus, architecture is suggested as structuring the system of space in which we live and move and thus, it has a direct relationship to social life and it is indicated that a way to study this is through patterns of movement and patterns of co-presence. The space syntax theory and method will be further explored in the next section.
Reflections

The urban models discussed here are illustrations of different conceptions of cities and societies. The main focus has been to point out the importance of how urban models may perform in a larger context rather than which type (or style) they represent. It has been highlighted that, in urban analysis, often the global impact has been poorly studied (i.e. the impact by the surrounding context). Urban models and theories with the aim of solving the problems of the overcrowded and unhealthy city through encouraging suburbanisation and deurbanisation (including, for example, a reduction in building density and a limitation of through movement) introduced completely new urban conceptions that had a tremendous impact on urban transformations, resulting in ‘extreme makeovers’. Arguably, these urban models still have a strong influence on urban design and planning due to the fact that they have been well established for a long time and have influenced not only the existing urban development (a prerequisite for future development) but also building regulations, policies, ruling plans etc.

One of the intentions with the transformation of Paris was, according to Choay’s interpretation of the regularisation, to unite the citizens. New connections – boulevards, esplanades and streets – were sometimes carved out into the existing city through (a rather neglectful) demolition process, alternatively laid out in undeveloped areas to favour circulation at different levels. The model of regularisation emphasises circulation as a means of bringing people together and it builds on the conception that a city needs to be continuous, well-connected and integrated in order to perform as a coherent entity. Movement between districts, as well as within the city as a whole, was facilitated and a strong idea was to provide a physical environment that allowed access for the citizens to the city as a whole. A strategy also recognised from Stockholm and the Lindhagen Plan.

Quite the reverse intentions are found in the Garden City and its followers (e.g. the Neighbourhood Unit); this was a city where the size of the city and of the population was predetermined and was not intended to change over time. The societal life and the sense of community were assumed to be favoured by the fact that the group was limited by its size and that residents were not mixed with non-residents; the excluding of ‘others’ or of ‘strangers’ was thus crucial to this idea. To live together (with no interference from ‘others’) would favour the formation of social groups (Sidenbladh, 1948, 114). Connections to other satellites/new towns/neighbourhoods were provided (e.g. highways or by rail) but still a
unit should be more or less self-sufficient. The city/new town/neighbourhood would function as an autonomous unit where one could live ‘from cradle to grave’. And, most important from the perspective of urban segregation: these districts/neighbourhoods were not designed to enable future development to aggregate.

So what impact do these urban models, diagrams and concepts have today? In reality, the influence of these different conceptions of the city varies over time and also the awareness and the insight of which model is prevailing varies among practitioners. It is easy to find examples where there is a discrepancy between what the ideas and models stand for and how they turn out in reality. Similarly, there is often a discrepancy between the rhetoric and the reality. Even though few people involved in building cities, politicians, urban designers, architects, etc., would fully agree with these texts, still the models/diagrams/illustrations in themselves have proved to be long lasting. An educated guess is that, even if they had only seen the diagrams, they are likely to have been applied and thus, consciously or unconsciously, used either in practice or to think ‘with’. Furthermore, existing buildings and structures designed in accordance with these ideas have, in themselves, a considerable impact on developments to come; they are part of the prerequisites an architect or an urban designer needs to relate to. In current Swedish urban development, there is an urban trend celebrating the ‘traditional city’ and the aim appears to be to achieve ‘urbanity’. The character should be ‘city like’ and often the aesthetics borrow from what today are perceived as urban environments. Even the names of these new developments reveal this urban longing; Hammarby Sjöstad, Hagastaden and Norra Djurgårdstaden, to mention some recent projects in Stockholm (‘Stad[en]’ in Swedish means ‘[the] city’). But to what extent will these areas support ‘urbanity’? Is it more than just the appearance of these areas that is ‘urban’ or do they also succeed in designing continuities of space and hence perform in an ‘urban’ way and, as such, acquire urban qualities?

To increase insight into the effects of a segregated versus an integrated urban spatial system, a genuine understanding of how the city performs at different levels is essential according to Marcus, who argues that it is important to acknowledge that architecture and urban form have, on the one hand, a representative or symbolic dimension and on the other hand, a performative or functional dimension (Marcus 2000; 2012). An important part of this is to understand to what extent both old and new developments connect to the existing fabric and how the design is prepared for the next wave of development. The identification of such areas should therefore not be based solely on a typological description; it needs
to be based on methods and theories that have the ability to disclose critical properties in the spatial urban system and as a result, distinguish the representative from the performative, revealing a ‘wolf in a sheep’s clothing’. The knowledge to understand how parts relate to the whole and how local changes and processes may have an impact on both the local and global level is hence crucial.

To conclude, from the perspective of urban segregation, it is important to be able to disclose the performance of urban patterns and developments and disclose how spaces and people are kept apart – or brought together – as a result of urban form and configuration. If urban design should contribute to a less segregated city, it is crucial to make use of methods and approaches that allow us to reveal and understand to what extent both existing and future developments perform as a part of a larger system. The existing urban pattern of Stockholm has properties that will influence our everyday practices and henceforth, every aggregation to the existing city or the combinations of developments, no matter how small or local, may at some point have an effect on the city as a whole, with global effects. Let us recall one of the basic principles within urban morphology, the one about time, that the elements of the city undergo continuous transformation and replacement. Cities change constantly and thus, the city needs to be able to reuse, adopt and partially be reconstructed in order to develop and meet new needs. This means that urban design practice and planning can never be absolutely final.
3.2 Configurative analysis and co-presentation

Recalling what was demonstrated in the previous chapter: ‘co-presence’ was found to have significant importance for social processes, for interaction rituals and for how society may develop. Co-presence stands out as a key factor when trying to capture aspects of segregation as they come about in public space. In addition, it is suggested that several types of relationships and ties are important to supporting modern urbanised societies. Furthermore, beside strong ties, the weak ties have been argued to have importance for society, especially those assumed to have a bridging effect. It has been highlighted that weak ties have significant importance for the production and reproduction of various urban social networks that, for example, influence how resources and power are distributed across the city. Hence, those weaker ties are found to be decisive in order to make use of what is said to be specifically ‘urban’ and that the distribution of a city’s amenities partly depends on urban social networks, networks that are partly built on such weak ties or so-called secondary relations. So how can one apply configurative analysis from this reasoning with the aim of synthesising the social with the spatial? The challenge here is to identify those configurative analyses that can produce valuable and useful information in this respect. Hence, what is needed is to reveal how configuration relates to variations in co-presence.

Segregation can be said to be about separating people and activities and therefore it is relevant to focus upon how different places may create potential for probabilistic co-presence and encounter. In a way, this is about studying how social differences and spatial differences come together. Who is likely to share public space? How can different places in the city be described according to their likelihood of holding a different intensity and mix of co-presence situations? And what spatial differences are represented across the city? These questions are argued to have relevance for the segregation issue since it, to some extent, has an impact on who may take part (or at least have potential to take part) in societal processes and negotiations. Zukin suggests that life in public space in cities expresses the public culture, both to the citizens and to others visiting the city, e.g. tourists, commuters etc. (Zukin 1995, 259). It is emphasised that it is exactly here, in public space, that we may actually experience public life in cities (Zukin 1995, 11). Public spaces are suggested as representa-
tions, producers and sites of negotiation, for society as well as for public culture. Thus, those who in one way or the other participate in such constantly ongoing negotiation may be said to be part of society and societal processes. Therefore, according to Zukin (1995), it is highly relevant to question who has access to public space and in this context, one could refine the question and ask: who has the potential to share public space? What possible ‘situations’ are likely to occur in public space if borrowing the term from Goffman? From such a line of reasoning, the question of what intensity and constitution of co-presence are likely to appear in different places is highly relevant and from an architectural perspective, what is even more interesting is to try to relate such an outcome to urban configuration that, to a large extent, is the result of urban design practice.

Moreover, it is argued that the segregation angle suggests that variations in the intensity of such co-presence are relevant since they influence probabilistic low or high intensity rituals (Collins 2004) and more obviously, the extent to which social differences are likely to come together is relevant, i.e. dependent on variations in the constitution of co-presence, for example the mix of residents or non-residents, the mix of people of different ages or the mix of employed or unemployed. Thus, one can start to pay attention to what specific spatial configurations can be related to certain situations of co-presence. This means that configurational characteristics need to be linked to a probabilistic co-present situation.

Dwelling upon these two aspects of co-presence, namely its intensity and its constitution, it is possible to question what the possible outcomes would be of a certain intensity or a certain mix. One can easily gain the impression that co-presence of high intensity by law is ‘better’ than low intensity or that a larger mix would be more beneficial than more homogeneous situations or gatherings. However, this does not need to be the case. Overly crowded places with very high levels of movement flows are, for example, rather unlikely to be beneficial for the emergence of different kinds of interaction rituals. But what really stands out as the contemporary urban design challenge in the outer city is still to create intense situations; to create well-used spaces that encourage what may be characterised as ‘urbanity’. It is difficult to imagine urban life without co-presence of a certain kind: implicit in the concept is the fact that there is both a certain concentration of people and it is also assumed that there is diversity. Observations of urban environments in Stockholm – especially in the outer city – reveal that places acquiring low intensity co-presence or even co-absence are far more common than ‘lively’ (or overcrowded) places. Moreover, it is likely that the variation in different types of places tends to vary more within such areas where some high intensity co-pres-
ence streets and places are found. Koch suggests that a diversity of places (for example within an area/a neighbourhood) also provides a diversity of available ‘arenas’ for different things to occur (Koch 2007, 265). What may happen in places that are characterised by a high access and presence of people is likely to differ from things that may happen in places characterised by lower access and fewer people present. As Koch (2007, 265) argues: “Some things we do together and some things we don’t” and if there are areas that do not provide any crowded places or very few crowded places, it means that many things are likely never to come about, e.g. those kind of things ‘we do together’.

In light of the urban segregation problem, it is argued here that, in many neighbourhoods, there is a lack of ‘arenas’ that acquire intensity and diversity. One possible hypothesis is that, if there is a lack of spatial differences, this may be reflected in a lack of social differences coming together. If urban layouts only provide public places that are of one kind, e.g. low intensity and with a limited mix of population, this would appear to be of great concern in a city that is residentially segregated as well. What appears to be the urban design challenge is not to create spaces characterised by co-absence that we have plenty of; conversely, what there really appears to be too little of in our urban environment, primarily in the outer parts of the city, are places with a more intense character, facilitating both primary and secondary benefits (see Koch et al. 2012). Such places could potentially balance or complement the less integrated places and thus a spatial differentiation may be created. The combination of high intensity and low intensity streets or public spaces is argued to have importance for social processes: even a quiet back street in an area that lacks all kinds of high-intensity characteristics is likely to be rather different from a back street that is located close to an intense urban space. Higher intensity places may be assumed to actually benefit from places close by that can afford a completely different ‘situation at large’. Koch argues that such a diversity of spaces is beneficial for a diverse use of spaces (Koch 2007, 266). This kind of reasoning reveals similarities with the theory of the foreground and background network proposed by Hillier (2009b); a balance in the interplay between a more intense so-called foreground network on the one hand and the background network on the other hand (largely composed of residential space). According to Hillier, such interplay raises a possibility that the generic spatial form may contribute to sustainability (Hillier 2009b). In a similar way, as Koch argued it could be said that such an environment provides access to spatial differences and thus, the access to and between various kinds of social and economic activities increases.
Before exploring the configurational analysis in more detail, it also needs to be acknowledged that the idea of bringing social differences together cannot automatically be seen as beneficial. Even though it has been demonstrated that, from a sociological perspective, co-presence may be seen as beneficial in general, this is far from being a specific assertion. It is clear that urban segregation problems are far from solved only by bringing people together. It cannot be denied that such a sharing of space may also result in various conflicts or frictions. However, to some extent, some conflicts/frictions in themselves may be seen as part of an important process, e.g. in the negotiations that take place during focused as well as unfocused interactions: what is one allowed to do and what is one not allowed to do? How do we mark differences in identity and how do we signal belonging? In Sweden, the discussion about negative outcomes of urban life has often circled around safety aspects, for example the exposure to violence during evenings and night-time rather than the social aspects (Olsson 1998). Nevertheless, several reasons are provided by Olsson as to why urban life is important. First, people have a need to be seen and see others, which may be facilitated in public space (among other arenas, of course). Second, starting with the aspect of tolerance, it is suggested that similarities and differences between people are made explicit in urban space and as people are exposed to differences, there is a chance that gradually they become used to them and thus, they will no longer be unfamiliar or provocative. According to Olsson, what is often underrated is that accessible urban space becomes even more important in residentially segregated environments (Olsson 1998, 107). The third reason Olsson proposes is related to the aspect of societal cohesion while the fourth is related to politics and democracy: even if public spaces are not frequently used for political debate and political expression, they still constitute a possible location for such activities when needed (Olsson 1998, 108-109).

Other effects that sharing space might lead to may be called contextual effects. It is found that exposure to other people (other social categories) is highly influential. For example, in a study in the US by Sigelman et al. (1996, referred to in Grannis 1998, 1559), the exposure to white people during formative years was a more important factor in the number of white acquaintances and friends the black respondents had than where they lived, worked or worshipped as adults. Grannies argues that the (tertiary) street network affects not only the potential for neighbourly interaction among close neighbours but also those that are more distant as a result of face-to-face interactions on the street. Grannis suggests that changes to the street structure, connecting spatially segregated areas, are
likely to lead to neighbourly relations along such streets and that such micro level phenomena produce macro level outcomes, i.e. metropolitan segregation patterns (Grannis 1998, 1560). Strömblad also argues the importance of so-called contextual effects which in his discussion are limited to the residential population within a specific neighbourhood or city (Strömblad 2001, 155-180). Lupton also stresses that the population mix is influenced by physical characteristics and that this leads to the fact that neighbourhoods acquire certain other characteristics, for example as a result of what facilities are found, patterns of social interaction or even reputation. Lupton highlights that this may lead to:

“[…] disadvantaged individuals in an isolated area will form one set of social relations, while disadvantaged individuals in a well-connected area may form another.” (Lupton 2003, 5).

Lupton’s suggestion clearly indicates that the mix of the population found in public space can have considerable consequences. Thus, the extent to which people from different categories are mixed in public space appears to be a highly relevant phenomenon to study within urban segregation research.

It is possible, however, to find those who are more sceptical about the positive effects that conflicts may bring about. The differences may also be seen as threats and a breeding ground for serious conflicts (see for example Valentine 2008 and Amin 2008 referred to in chapter 2). In spite of various kinds of objections regarding the fact that the sharing of space is not necessarily beneficial, it is argued here that such an assertion still applies in that it has been demonstrated that the advantages outweigh the disadvantages and that some conflicts are not necessarily only seen as negative, rather they are suggested to be an important part of shaping and negotiating society. The fact that encounter between residents and, perhaps even more importantly between residents and non-residents is relevant is highlighted by Franzén who argues that what may happen in those spaces where segregation becomes blurred is an open question:

“First, when different worlds meet, they may come to terms with each other in creative and productive ways. Second, even if conflicts unfold, conflicts may eventually bind the different parts together” (Franzén 2009, 105:2).

Franzén emphasises that it is necessary to distinguish the spatial and the social in analytical terms in order to elucidate the internal variations between them (Franzén 2009). Segregation may be approached analytically from either end, either foregrounding social differences or foregrounding
spatial components but nevertheless, in the end, Franzén stresses that one needs to bring them together, synthesising them in order to understand segregation (2009). Franzén emphasises that the social cannot be reduced to the spatial or vice versa because the relationship between them varies:

“This means that the variation between the social and the spatial pole of the relationship cannot be understood in causal terms. One of them cannot be explained by the other any way round.” (Franzén 2009, I05:1).

The suggestion that the relationship should not be understood in causal terms is important to highlight and calls for cautiousness when analysing possible consequences of certain urban layouts.

**Co-presence: the link between space and society**

The social performance of different urban layouts partly becomes legible from their everyday patterns of use and everyday patterns of movement. Within space, syntax ‘movement’ is a highly central concept and it is most certainly a critical mediator in shaping ‘co-presence’. Within space syntax theory, ‘co-presence’ is seen as an important social resource and the potential to develop social networks and different social solidarities is argued to pass through the relationship of spatial configuration and co-presence (Hillier 1996). Hanson even argues that the fundamental relationship between urban space and society is not encounter but co-presence:

“We thought at first that we should be looking for and recording encounters between people, but it did not take us long to realise that the fundamental relation between urban space and society was not encounter, but ‘co-presence’. This is important, because co-presence (or its absence) is a ‘generic’ feature of societies.” (Hanson 2000, 120).

Hanson claims that co-presence is seen as a precondition for face-to-face human social interaction without in any way determining what takes place. More specifically, Hanson points out that an important social function of a city is to structure co-presence among people from different social categories. The effects of urban design are pervasive and insistent and are never absent in their nature. How these conditions are structured influences the potential for building different solidarities and the potential for building spatial and/or transpatial networks (Hanson & Hillier, 1987). This means that the spatial configuration influences what kind of ‘arena’ urban space might provide:
“[...] cities are not so much mechanisms for generating contact as mechanisms for generating a potential field of probabilistic co-presence and encounter.” (Hillier et al. 1987, 248).

A parallel to Goffman’s ‘situation at large’ (i.e. ‘before’ situations of unfocused or focused interaction) is found within the space syntax field; Hillier et al. suggest that patterns of co-present people in urban space form a so-called ‘virtual community’ (Hiller et al. 1987, 248-; Hillier 1996, 186). It is argued that even though co-present individuals may not know each other or may not even acknowledge each other, this has an intrinsic potential:

“Co-present people are not a community, but they are part of the raw material for community, which may in due course become activated, and can be activated if it becomes necessary. However, even without conversation into interaction, patterns of co-presence are a psychological resource, precisely because co-presence is the primitive form of our awareness of others. Patterns of co-presence and co-awareness are the distinctive product of spatial design, and constitute, it will be argued, the prime constituents of what will be called the ‘virtual community.’” (Hillier 1996, 187).

Similarly to how Giddens discusses co-presence, Hillier sees patterns of co-presence as a ‘psychological resource’ and this illustrates how social theories of co-presence and spatial theories of co-presence come together:

“The ‘virtual community’ in a given area is no more nor less than the pattern of natural co-presence brought about through the influence of spatial design on movement and other related aspects of space use.” (Hillier 1996, 187).

This physical distribution of people in space attains certain properties such as a certain density, a certain structure (what is called the constitution or the composition of co-present people here), meaning that people of different categories are simultaneously present or might use space for different purposes, for example locals and nonlocals, men and women, adults and children etc. This may be linked back to the question of determinism of architecture or rather, the plausibility of architecture:

“Whatsoever the long-term effects of architecture are, it will be proposed that they pass through this central fact, that architecture, through the design of space, creates a virtual community with a certain structure and a certain density. This is what architecture does and can be seen to do, and it may be all that architecture does.” (Hillier 1996, 188).
It is argued that the co-presence found in streets, squares and other easily accessible public spaces where very few people are prevented from using the spaces is what may be called a kind of generic co-presence. While the co-presence found in more programmed places such as workplaces, schools and libraries may be described as a kind of specific co-presence. The stronger the selection, the more specific the character of co-presence turns out to be.

**Space syntax**

Space syntax started with the observation that space is the common ground for physical and social cities. A detailed presentation of the theory is found in *The Social Logic of Space* by Bill Hillier and Julienne Hanson (1984). The physical city is seen as a complex pattern of spaces while all social activity and interaction happens in space (Hillier & Vaughan 2007, 207). In spatial configuration, the relations between spaces are the simultaneously existing relations among the parts that make up the whole. The spatial relations’ potential to embody or carry social ideas are first theorised and then transformed into measures by linking them to geometric representations of the system of spaces being studied (Hillier & Hanson 1984). The notions of integration and segregation are a way to formalise these terms and this suggests that there could be an approach to urban research that is both quantitative and at the same time informed by the search for social and cultural influences and meanings (Hillier & Vaughan 2007, 207). The space syntax approach shows that a spatial layout can reflect and embody social patterns and space can also shape a potential social pattern by influencing movement and creating patterns of co-presence in space (Hillier & Vaughan 2007, 212).

The elements that are used are: the *axial line*, the *convex space* and the *isovist*. It is important to highlight that space is not only about the properties of individual spaces but also about inter-relations between the many spaces that make up the spatial layout of a building or of a city. Formally this is called the configuration of space and layouts that shape shallow graphs are defined as being integrated (high accessibility between spaces) while layouts that shape deep graphs are segregated. When the whole system is analysed, *global integration* is described, measuring the mean depth from each space to every other space in the layout. *Local integration* is when the mean depth up to a few steps from each space is measured.
The difference between normative theories and analytical theories is that, while normative theories describe how cities should be, analytical theories describe how cities work (Hillier 1996; Marcus 2000, 2007b). Hillier argues that normative theories may be supportive in the process of generating urban designs but such theories do not have the ability to support the prediction of the outcome or the performance which is illustrated by the fact that many urban design models have failed to deliver on their claims (Hillier 1996). Lars Marcus (2000; 2010) argues that there is a lack of analytical theories on urbanism, a theory that develops knowledge about the relationship between urban form and urban life: hence, Marcus proposes an extension of space syntax as an analytical theory in urbanism. Apart from analysing the accessibility between spaces in a spatial system and how they vary according to changes in the configuration of urban form, the two variables of density and diversity are added (Marcus 2010, 31). Marcus argues that urban form (a result of urban design) influences urban life including co-presence and has the ability to either support or
hinder urban life as well as organise it. By establishing such properties inherent in urban form, urban form can thus be ascribed to have what Marcus calls a certain \textit{spatial capital} and this is possible to measure in different urban environments (Marcus 2007b, 2010). This may easily be related to and have an effect on the emergence of unequal living conditions as neighbourhoods are compared. According to the reasoning in this chapter, there are inequalities that may partly be explained by spatial configuration and partly be a result of distribution \textit{through} space. The very location of amenities is of course of significant importance but \textit{accessibility} to such amenities needs to be taken into consideration when discussing unequal living conditions. In the Södertälje study, it was demonstrated that resources were rather unevenly distributed within the city, resulting in different access for people living in different areas (Legeby 2010b). For example, the distribution of playgrounds was analysed; first it was described how the playgrounds were distributed \textit{in} space and second, the distribution \textit{through} space was analysed, illustrating the accessibility to these places (i.e. attraction accessibility) and hence, the distribution of space is highly influential on the outcome. This exemplifies a shift in focus from \textit{location} to \textit{relations}, i.e. distributions of space and \textit{through} space rather than distributions \textit{in} space (Koch 2004, 2007). More specifically, distribution \textit{in} space refers to what is normally found in urban analysis, identifying how different categories or types are distributed in an urban system. Thus, the focus is on location. Distribution \textit{of} space refers to how space is structured and shaped by built form based on analysis of space in itself. This captures the effects of how urban environments are designed. Distribution \textit{through} space is how the built environment and public space mediate access between people or resources: for example, how activity distributes itself in urban space as it is used in everyday practice. In analysis of distributions through space, the distribution of space is combined with certain content (e.g. land uses) found in the urban environment and it illustrates what is made accessible through physical space, for example accessibility to residents, the working population or different amenities in the urban city. It is argued to reflect a rather street level perspective since it captures peoples’ accessibility to different things \textit{through} the street network (Marcus 2007a; Koch 2004, 30-32; 2007, 82).

When analysing what characteristics different neighbourhoods acquire, it is possible to argue that if large variations are found, this as an indication of unequal living conditions. However, as showed in the Hanson (2000) example above, it is not necessarily the case that different individuals or groups of people experience similar outcomes in such different situations. In the Södertälje study, the accessibility to amenities was established and
the spatial features found to influence such accessibility were identified (Legeby 2010a). Through such an analysis, it becomes possible to discuss inequalities related to those living conditions that are highly dependent on urban form. One way of discussing these different characteristics that, to a large extent, are influenced by spatial configuration may be in terms of spatial affordance. The concept affordance was originally coined by James Gibson (Gibson 1979; also discussed in Legeby 2010b). Affordance in an urban context could be said to describe what spatial advantages a neighbourhood affords its residents or its users depending on differences in resources or preferred forms of solidarity within different groups. The concept is suggested to be useful both to describe the qualities of built environments but also increase understanding of what such properties mean for the users. For example, a spatially-segregated area could be beneficial for some categories of the population while others are strongly disfavoured by such conditions in their daily activities. Some people are highly dependent on access to various resources ‘just around the corner’ while others are not. In the empirical study, analysis of affordances or resources with access ‘just around the corner’ will be analysed in a way that enables a comparison between neighbourhoods.

Spatial and transpatial solidarities

Hanson and Hillier propose in their article Architecture of Community: some Proposals on the Social Consequences of Architectural and Planning Decisions from 1987 that urban design and planning have social consequences not only for the correspondence between spatial zones and social identities but that they also have consequences for non-corresponding solidarities. Two views are identified, argued by Hanson and Hillier to dominate perceptions about the society-space relationship. On the one hand, there are the ‘territorial theories’ that are based on the assumption that there is a correspondence between spatial zones and social identities (the authors refer to, for example, Oscar Newman and Kevin Lynch). On the other hand, there are theories that draw the conclusion that space is unimportant for how social groupings emerge and reproduce, that they exist independently of space and do not require spatial reorganisation to make them better, hence, there is a non-correspondence between social groupings and territorial demarcations (Hanson & Hillier 1987, 252). What these strands represent is that social processes are either, a) dependent on space in a deterministic way or b) independent and not bound to space at all.
This dichotomised conception has been elusive in many disciplines and ‘forced’ interpretation into one or the other direction. But what if relations are more complex than that? In this thesis, it is suggested that it is not a question of ‘one or the other’ but rather ‘both’. Even if Hanson and Hillier admit that some allowance is made for the marginal effects that proximity and spatial arrangements might have upon the social fabric in the long term, they argue that architectural preoccupations with spatial design as a means of ensuring ‘community’ are treated with amused reserve (1987, 252). A third trend is suggested by Hillier and Hanson which may be said to complement and partly act as a reformulation of the correspondence theory, namely a spatial theory of ‘heterogeneity and non-correspondence’ that is supposed to show how space plays a positive role in generating and controlling heterogeneity. The point has not been to present a typology, whereby it is possible to look at societies and label them as a ‘correspondence society’ or ‘non-correspondence society’. Rather, every society seems to have aspects of both these mechanisms: they argue that the social fabric is not made of just one pattern of ‘warp and weft’ relations, i.e. one form of spatial grouping and one form of transpatial grouping (Hanson & Hillier 1987, 270):

“[O]n the contrary, it would seem that in any society where there are differences in sub-culture, class, or even in gender or generational roles, these will be realised in different configurations of spatial and transpatial groupings. It is the different principles of social cohesion with and between these groups that mould space and give it its material form.” (Hanson & Hillier 1987, 270).

Hanson and Hiller understand urban space to present a possibility of supporting heterogeneity in cities. They state that, on the one hand, in social networks that work on correspondences, encounters tend to be specific to a certain transpatial category, implying that encounters related to such transpatial labelling will increase within the group locally but will not increase the range of encounters globally across space. This reinforces the local group but keeps it exclusive which, according to Hanson and Hillier, is the formula of homogeneity (Hanson & Hillier 1987, 270). Such a system emphasises the physical separation of spatial groups and is characterised by closed boundaries and local identification, a system described to be more deterministic both socially and spatially. On the other hand, systems that are based on non-correspondences have a much weaker categoric purity of the local system: they are locally more heterogeneous and transpatial identities will be used to cross space and work with the global coherence of the society. They argue:
“To this end, such a system will tend to strength the stability to the extent that locally emphasises openness, continuity of space, lack of local enclosure of space, and permeability of those boundaries which do exist. It works more probabilistically, using the numbers and frequencies of events which take place to reproduce a statistically stable global system, rather than relying on the formal clarity of its structure.” (Hanson & Hiller 1987, 270).

The spatial solidarity is what may emerge as a result of the fact that people share space (this may be related to what previously was described in relation to ‘virtual community’). Transpatial solidarity is the result of relationships between people as a result of a shared interest or individuals identifying with the same social category (e.g. clubs, clans, associations, peer groups or kinship), hence it means that this solidarity is not necessarily dependent on the spatial embeddedness: the transpatial solidarity is not a product of spatial encounter and co-presence with ‘urban strangers’. Transpatial solidarities unite people independently of space, without saying they are non-spatial, rather they overcome spatial separation. It is also emphasised that people are most often part of both groups (having a kind of multiple membership):

“All human social formations appear to exhibit this duality of spatial and transpatial, of local group and category.” (Hillier & Hanson 1984, 42).

In a very simple example, it is illustrated how such groups may be spatially organised (after Hanson & Hillier 1987, 264; Hillier & Hanson 1984, 41).

A A A B B B
A A A B B B
A A A B B B

Figure 3:10. A spatial arrangement with people from category A in one group and category B in the other: there is a correspondence between the local group (the spatial group) and the categories (the transpatial groups).

A A B A A A
A B A B A A
B A B A B B

Figure 3:11. The two categories are distributed between the two spatial groups.

In cities where segregation is a salient feature, it may be suggested that, besides where people live, how people are distributed when they are not at home stands out as being highly important. Is there a difference in the constitution when comparing the so-called day-population (includ-
ing visitors, working population etc.) with the night-population, i.e. those who live in an area? It is indicated that the more homogeneous the residential population, the more important an inflow of non-locals becomes and logically, this would apply to all areas, whether they are characterised by poverty/exclusion or are well off (or in any other category). In many areas, such a pattern of co-presence in public space is likely to emerge from what any segregation index reveals in conventional segregation research (Franzén 2009, 105:2). This highlights the need for an approach that takes into account the use of public space and that has the ability to discuss segregation from such perspective (Legeby 2010b). Moreover, this appears to be highly relevant to the discussion on the importance of weak ties and secondary relations in the previous chapter that relates to various opportunities or social capital etc.

So how have Hillier and Hanson related the ideas of spatial and transpatial solidarities to sociological theories of co-presence? Hillier and Hanson reassess Durkheim’s ‘organic solidarity’ as ‘spatial solidarity’ and Durkheim’s mechanic solidarity is reassessed as ‘transpatial solidarity’ but such an interpretation is, according to Liebst, rather problematic (Liebst 2012a). Liebst argues that this confuses the macro level with the micro level in a most unfortunate way:

“[…] it is crucial to notice how Hillier and Hansom attempt to interlink, on the one hand, a rigorous micro-methodological approach with, on the other hand a spatially reformulated morphology that nonetheless holds on to Durkheim’s distinctively macro-sociological understanding of social morphology, society and solidarity.” (Liebst 2012a, 15).

Liebst highlights the fact that Durkheim does not apply the micro-sociological categories of ‘co-presence’, ‘encounters’ or ‘awareness’ when he discusses the ‘organic’ and ‘mechanic’ solidarity in *The Division of Labor in Society* and while Durkheim does not simply address the solidarity potential of such everyday meetings and urban sociality, Durkheim’s theoretical argument does solely concern the organic solidarity which is the functional product of the division of labour in the macro-social market situation, according to Liebst (2012a, 17).

It is possible to argue that there is a similar confusion within the field of urban segregation which also suffers from such analytical gap when macro-level analysis and descriptions are transformed too directly into design-level solutions. When the city is described and defined as segregated, this is based at the macro level since each area is analysed through its aggregated data and is compared with the city as a whole (see also the
critique of segregation indices in Vaughan 2005). A segregation index illustrates how different the parts (not contextualised) are in relation to the city (or the region or the country) as a whole. Based on such macro level descriptions, design-level solutions are often proposed, for example a housing policy arguing for a greater mix of different house types and different forms of letting and ownership within each area (Boverket 2010). In a way, this illustrates again an unfortunate confusion between the macro level and the micro level. Moreover, such a proposal implies a number of assumptions, for example that people in a certain (social) category are assumed to live in a certain house type and that a mix of house types by default would result in a mix of categories (i.e. a mix of As and Bs). And, one can gain an inkling of the fact that the Neighbourhood Unit idea is prevalent in the sense that neighbourhoods are still treated as isolated units where ‘everything should be within the reach of the world of the housewife etc.’ but perhaps the ‘housewife’ is now changing into a more neutral ‘suburbanite’ person. It also means that such (housing policy) proposals only respond to urban segregation as a residential problem which has been argued here as a limited view on the phenomena and if trying to understand urban segregation beyond its residential implications, one also needs to analytically understand how spatial and social segregation are interrelated.

**Movement economy and interaction**

Within space syntax, it is argued that patterns of co-presence are defined through movement and that the patterns of co-awareness among individuals living in and passing through an area depend on patterns of co-presence (Hillier 1996). Hillier emphasises that, for example, encountering, avoiding and interacting are patterns formed by groups or collections of people (Hillier 1996, 29). The relationship between the structure of the urban grid and movement densities along lines is called the principle of ‘natural movement’ (Hillier 1996, 161; Hillier et al. 1993). A central proposition is: “[…] that the fundamental correlate of the spatial configuration is movement.” (Hillier 1996, 152). It is important to emphasise that it is first and foremost the distribution of movement densities that is referred to and that the configuration is likely to influence. Spatial configuration is argued in itself to be the most powerful single determinant of urban movement, both pedestrian and vehicular and it has an effect on land-use patterns, building densities, the mixing of uses in urban areas and the part-whole
structure of the city. Therefore, it is suggested that well-functioning cities can be thought of as ‘movement economies’ (Hillier 1996, 152). Hillier et al. argue that attraction and movement may influence each other; the relationship is seen as reciprocal. But it is suggested that the relationship between attraction and configuration on the one hand and movement and configuration on the other hand is asymmetric. This means that configuration may influence the location of attractors but the location of attractors cannot influence configuration. And the same is applied to the relationship between configuration and movement.

![Figure 3:12: The relationship between configuration, movement and attraction (Hillier et al. 1993, 31).](image)

The emergence and location of various attractions, according to Hillier, are not the result of a motivated agency of individuals but the result of spatial morphology, meaning that configuration generates attraction (Hillier et al. 1993, 30-31). However, Liebst finds support for what he calls the ‘least controversial’ part of the model, the relationship between movement and attraction (Liebst 2012a, 12). Liebst sees a possibility for theoretical interchange between on the one hand Collins’ so-called ‘IR market’ (i.e. interaction ritual market) and on the other hand the ‘movement economy’ and a micro-morphological synthesis is established. Drawing on Collins, it is argued that the ‘interaction ritual’ market attraction “[…] is conditioned by human bodies moving in the same place of attraction”, meaning that people seeking ‘emotional energy’ are also attracted to this interaction ritual market (Liebst 2012a, 12). Hence, it is possible to predict where space can potentially increase the density of movement patterns and physical co-presence and constitute the bodily condition for the emergence of attractive ‘interaction ritual markets’. According to Liebst, this spatio-morphological component is what Collins’ theory of interaction rituals seems to be lacking. The ritual ingredient of ‘physical co-presence’ corresponds conceptually with Liebst’s model of ‘movement’, while ‘attraction’ and ‘emotional energy in the individual’ are compared. In the context of this thesis, it is relevant to highlight that configuration (which includes urban design) is acknowledged to play an
important role for the spatial realisation of interaction ritual markets and that this is subject to a movement economic logic. The fact that configuration influences both movement/co-presence and attraction/emotional energy according to Liebst illustrates how the configuration gives the interaction ritual markets more or less attractive conditions for spatial realisation (Liebst 2012a, 13). Based on this, Liebst suggests that Collins’ theory, explaining why co-presence is important, may be combined with the space syntax theory explaining where movement is likely to occur in the spatial system that constitutes the city and how co-presence is distributed. In relation to this, Marcus’ theory of spatial capital may be brought into the discussion since Marcus argues that urban form, as a result of urban design, influences urban life and that it may support or inhibit urban life as it creates potential for variations of urbanity (Marcus 2010, 31-32). Density is argued to capture urbanity not in itself but rather Marcus emphasises the importance of the two variables of accessibility and diversity as well as density. The point in this theory, however, is that urban form generates variations in spatial accessibility and diversity, which in turn is argued to have direct effects on social accessibility and diversity (Marcus 2007b, 2010). Moreover, the empirical study is supported by the fact that Marcus proposes a set of methods and approaches of how to measure this.

To sum up, it is possible to say that combining the movement economy model with the interaction ritual model may prove to be a promising path and a valuable support when taking the urban segregation matter further into empirical analysing and testing. The theory of spatial capital contributes to this and provides possible methods of how to measure and analyse urban systems in more detail based on such an approach.

**Local to global relationship**

When spatial networks are analysed according to space syntax methods, it has been shown that, in many cases, there is a relationship between different scales of integration, indicating how parts relate to the whole of a city or a network system (Hillier 1996 170-179). Within space syntax, it is argued that if integration overlaps at the local and global radii, there is an integration interface and a compression of scales is created (Hillier et al. 1993; Hillier 1996). What is indicated by such a compression is that such spatial properties also correspond to an overlapping of “scales of movement”, which means that such spaces have the potential to encourage interaction between local and global activities, for example, between locals and
non-locals. Peponis has even suggested that cities are constructed to be interfaces between scales of movement (Hillier 1996, 174; Peponis et al. 1997). Partly this builds on what has previously been shown, namely that the distribution of movement and co-presence are a function of spatial configuration over and above the impact of land uses (Peponis et al. 1997, 341). This means that urban form has the ability to create potential for people to share public space and to share some of their everyday practices. On the other hand, it is indicated that a local-to-global mismatch discourages traverse circulation through these areas and it is difficult to develop a clear sense of the larger scale of urban organisation locally (Peponis et al. 1997, 344). It is even suggested that the breaking of the relationship between buildings and public space, the breaking of the relation between scales of movement and the breaking of the interface between inhabitant and stranger corresponds to ‘disurbanism’ and is related to impaired potential for ‘liveliness’ (Hillier 1996, 175; Hanson 2000). Hence, the social performance of an individual space – a square or a neighbourhood centre – is highly dependent on inter-relations with neighbouring areas, the surrounding context and the city as a whole.

In various studies, it has been demonstrated that spatial configuration influences the distribution of movement and even correlates to movement flows (e.g. Hillier et al. 1987; Hillier et al. 1993; Hillier 1996; Peponis et al. 1997; Hillier & Ilida 2005 and in urban environments in Sweden: Marcus 2000; Ståhle 2005; Legeby 2010b), but whether this also corresponds to a mix between locals and non-locals or between short and long journeys (referring to the notion of overlapping scales of movement) is not elaborated in detail to the same extent. How can ‘local’ and ‘global’ trips be defined? And how is it possible to define who is ‘local’ and who is ‘non-local’? And if this should have relevance for the urban segregation issues, it means that there is an implicit assumption that people from different parts of the city also represent different categories – social groups, subcultures etc. This is not too farfetched in cities characterised by residential social segregation. So even if, within space syntax, it has repeatedly been argued that an integration interface results in an interface between ‘inhabitants’ and ‘strangers’, there are few studies that have empirically demonstrated whether this in fact is the case. However, two studies will be brought up here that are said to contribute to the matter: first, a study of suburban town centres in London (Vaughan et al. 2010) and second, a study of co-present people at local neighbourhood centres in Södertälje, Sweden (Legeby & Marcus 2011).

In the London study (Vaughan et al. 2010), it was argued that centres are enlivened by activities occurring at overlapping scales.
“Such centres are enlivened by activities occurring at overlapping scales, the outcome of journeys of different lengths, which are most likely to be repeated where network accessibility is most effective.”

And:

“We conclude that the spatial signature of suburban town centres is bound up in how they have been shaped to take advantage of differing scales of movement and encounter over time.” (Vaughan et al. 2010, 77, emphasis added).

The study includes empirical evidence of variations in configurative properties that correspond to variations in non-residential activities. It is assumed that correspondence between what is said to be accessibility (measured through integration) and path overlap (measured through choice) is also a correspondence between so-called ‘to and through movement’ and in turn argued to be equivalent with an overlapping of distant and local trips (Vaughan et al. 2010, 88). However, the empirical evidence that a correspondence between accessibility and path overlap also means that there is a mix of “journeys of different lengths” is here argued to be based on indirect indications. The study includes a survey where informants have provided information of their routes but the study does not state how long the trips are (to what extent there is a mix of short and long trips) or whether these trips are carried out by ‘inhabitants’ or by ‘strangers’. Beside the questionnaire, the authors present information about commuting movements but whether this actually influences the co-present situation at these sub-centres or not appears to still be an unstudied matter. Even if it is likely that there would be a mix of long and short journeys at these centres (or a mix of ‘inhabitants’ and ‘strangers’), it must be argued that, based on the available data, this is difficult to show. In addition to this, whether the sub-centres would feature the characteristics of axial intelligibility was also explored (Vaughan et al. 2010, 88) but not analysed as in, for example, Hillier 1996, 124-132 where connectivity is correlated with integration at a global scale. In the study, intelligibility was instead suggested to be studied by comparing segment angular integration with choice on the same radius, said to be an analysis of correspondence between accessibility (segment angular integration) and path overlap (choice) and this was assumed to be equivalent to ‘to and through’ potential (Vaughan et al. 2010, 88-89). The notion of ‘to and through movement’ is previously presented in, for example, Hillier et al. 1987; Hillier 1996.

In the study conducted in Södertälje, there was a focus upon urban segregation and it was demonstrated that spatial properties played an im-
portant role for the constitution of co-presence in public space (Legeby & Marcus 2011). It was argued that the hierarchical spatial structure found in areas with a high density of newcomers influences the social life negatively because it limits accessibility to public space, limits accessibility to common resources in the city and makes public space inaccessible to non-residents (Hassanzadeh Khansari 2010; Legeby & Marcus 2011). It was however also shown that the spatial properties in the three residential areas were rather different one from another which was also reflected in the share of non-locals at the local centres. Analysing and describing accessibility to residents and working population (most often non-locals), accessibility to certain resources and amenities is argued to increase the understanding of urban segregation beyond the residential aspect (Legeby & Marcus 2011, 168).
3.3 Urban layouts and social effects

Urban models and social ideas

Julienne Hanson discussed the link between urban design paradigms and social ideas in the article *Urban Transformations* (2000), arguing that architecture and urban planning are closely related to politics since urban design ideas were always strongly influenced by social and political ideas. According to Hanson, social ideas about inequalities are incorporated into our assumptions as well as into building regulations and different planning frameworks (Hanson 2000). In studies of morphological changes in London, Hanson found that different design ideas are related to specific preconditions for sociability: the housing estates have isolated people from each other, both at the neighbour level and at the neighbourhood level and points out that it is a paradox that the conditions for urban life and interaction with neighbours turn out to be prominently poorer in those areas where social ambitions have governed the design ideas (Hanson 2000).

The critique of this way of building, for example of housing estates in the UK or large scale housing areas in Sweden (e.g. large scale housing areas from the 1960s and 1970s) has resulted in a new political agenda for urban design and Hanson argues that words like integration, permeability and constitutedness are like ‘motherhood and apple pie’, meaning that these are more or less taken for granted as positive things, that they can ‘do no wrong’ (Hanson 2000, 97). Hanson expresses a great deal of concern that, even with this improved political agenda, we might not be able to deliver so-called integrated and permeable urban design due to a weak understanding of the social logic of space:

“[…] unless designers and critics understand that all of these properties, even when applied at the neighbourhood scale, are global not local, there is a danger that, with the test of time, some of today’s radical, new designs might be judged to have ‘got it wrong’ once again […]” (Hanson 2000, 97).

If it is not clear what is meant by integration and permeability and an uncertainty of what outcomes that are expected from such properties, it means that what is easily said is definitely not easily turned into practice.
What especially appears to be a great challenge is the translation of such terms into spatial form.

**No strangers by the door**

A central theme in Hanson’s article from 2000 is the change from a ‘street’ based layout to the ‘estate’. In the ‘street layout’, the buildings have doorways close to and facing the street, i.e. they constitute the streets. Houses present their public face to the street and their private face to the interior of the urban block. It is a continuous open space structure that often allows future development to add on to existing parts. Space according to Hanson is *instrumental:* it supports a rich mix of uses that includes workshops etc. intermingled with small shops and public houses (often on the street corner) and it carries little information of either a prescriptive or proscriptive kind (Hanson 2000, 98). Most importantly:

“[…] space acts as a ‘mixing mechanism’ for both uses and people. Similar uses tend to cluster along a street frontage and to change at the turning of a corner, so that the different faces of the urban block accommodate different types of use, a phenomenon that we later called ‘marginal separation by linear integration’.” (Hanson 2000, 98, also referring to Hillier 1996, 166).

Hanson and Hillier suggest in *The Social Logic of Space* that the modern estate became ubiquitous because it seemed to offer a simple way to ensure a stable social order in the rapid urbanisation slums of the inner cities (Hiller and Hanson 1984, 266-268). The ‘estate’ layouts perform in such a way that inhibits strangers passing through the area; the areas are not ‘visitor friendly’ meaning that a mix between non-locals and locals within the area is not encouraged, represented by the maze index in Hanson’s article. A lower index equates to a shallow and what Hanson argues to be an ‘inviting layout’ while a higher index equates to a ‘labyrinthine and intimidating layout’.

What is found is that the ‘estate’ layouts not only exclude non-locals (or strangers) but the hierarchical or tree structure layouts also limit access to the neighbours within the area, to the local population. From a situation where most of the convex spaces had front doors, implying that it is difficult to avoid ‘being on the doorstep’, the situation in modern layouts is diametrically different as it is less likely that a pedestrian has a chance of walking by someone’s front door (Hanson 2000, 111). This effect of a layout inhibiting non-locals or ‘strangers’ can be recognised in the Swedish
neighbourhood planning unit where a stated intention was to separate through movement (typically by non-residents) from local trips (typically by locals or residents). The possibility of residents having a peaceful environment was the aim (Sidenbladh 1948, 116; General Plan 1952).

To conclude, Hanson argues that this urban transformation is a story of a ruptured interface between the dwelling and street and what needs to be highlighted in this context is that there are two important social implications presented in this morphological change. First, the implied effect that the urban model changed from being an ‘all-neighbour’ model to a ‘no-neighbour’ model, but even more importantly for society at large is perhaps the effect that, from having ‘strangers by the door’, the estate morphology had two consequences: first that strangers/non-locals were effectively prevented from entering the estates and hence eliminated from their interior and second, local residents became ‘strangers to one another’ because local inhabitants could no longer identify people with where their homes were (Hanson 2000, 113). It is obvious that the estate model does not acknowledge the complexity in the interplay between locals and non-locals that is constantly taking place in cities and this is an important prerequisite for efficiently distributing and circulating knowledge, ideas and social capital, to phrase it this way. Furthermore, estate layouts are designed to separate and reduce physical contact among close neighbours, meaning that the potential for sharing public space and to be co-present with one’s neighbours is considerably limited compared to street-oriented layouts. This is (perhaps) the most compromising/troublesome insight communicated through the article by Hanson: the neighbourhood unit planning principle that had a stated intention of facilitating and supporting the emergence of the local community was given an architectural urban form that turned out to perform in a quite the opposite direction. Thus, one could say there is a mismatch between ideological intentions and the lived experience. Hanson describes how space does not act as a mixing mechanism any more but rather acts as a filter since most spaces are mono-functional or labelled for specific activities; it is no longer a space of social production emerging from bottom-up processes, but instead a space for social reproduction where events and behaviours are fixed and governed by top-down processes (Hanson 2000, 100-101, 113).

Hillier goes even further when he argues that layouts characterised as enclosures or clusters are not the answer to the urban problem, but the problem itself. He objects towards the idea that it is density that is threatening urban safety:

“It is not density that undermines the sense of well-being and safety in urban spaces, but sparseness, not large spatial scale, but its insensitive
reduction, not lack of order but its superficial imposition, not the ‘unplanned chaos’ of the deformed grid, but its planned fragmentation’ (Hillier 1996, 179).

Hillier thus argues that enclosures’ indiscriminate use has been responsible for the fragmentary, unintelligible and largely under-used spaces that form a significant proportion of our urban environment today (Hillier 1988, 64).

Consequences for sociability

The urban transformation discussion is not just a discussion about how the situation changes for the residents in these different kinds of neighbourhoods. What perhaps are of greater concern are the consequences this has on a larger scale and more specifically consequences for urban life in cities at large. Not only has this been a change in the physical (residential) built environment, it has also had implications for the potential for people to share – or not share – urban public space. A stronger separation of locals from non-locals according to Jacobs is the result of a severe misunderstanding of what cities are (Jacobs 1961, 55). The sidewalk as well as the street may be seen as a pure abstraction and according to Jacobs, they mean something only in conjunction with the buildings and other uses that border them. More importantly, Jacobs’ argument about the dance on the sidewalk was not about a joyful urban life in a kind of ‘cafe latte atmosphere’ as it often has been interpreted, rather it was about pointing out how the phenomena of emergence were facilitated in cities and how local interaction, on the sidewalk, for example, can generate global order (discussed in Marcus & Legeby 2012). For example, as Jacobs argues, by being co-present in public space and watching other people, one can produce the global phenomenon of safety (Jacobs 1961). Through our daily use of public space, we gain information about trivial things but we can also make interpretations about society at large and this may in turn influence people’s views and perspectives (Marcus & Legeby 2012).

It is these kinds of intricate relationships that Hanson has so meritoriously illustrated and captured in his analysis of the transformations of urban design models. The change was not limited to a physical change only but more importantly, it brought about a change in the social performance of space: it had consequences for the way in which people deployed themselves in space, encountered one another and behaved towards one another. Thus, it was a transformation of the preconditions for sociability (Hanson 2000, 114).
“In practice, however, what seemed clear was that the modernist urban genotype with its ‘ruptured interface’ between street and dwelling and its ‘no-neighbours’ model for relating dwellings to one another, had the effect of tearing apart and remaking the everyday fabric of ordinary people’s lives, in that many routines, habits and practices that were once commonplace are now a part of history, at least so far as the residents of Somers Town are concerned.” (Hanson 2000, 114).

What specifically turns out to be of high relevance for the discussion of urban segregation is that Hanson, by referring to sociological studies, argues that not all people are affected in the same way or to the same extent. This is crucial to point out in order to meet those currents that apply a deterministic view which leads to the conception that if not all people become alienated by a certain built environment, then the cause needs to be sought elsewhere. For example, it is possible to find socially-advantaged people who choose to live in neighbourhoods and (high rise) buildings that are characterised as ‘no-neighbour’ or ‘estate’ areas and still they manage to create networks and social (sub-)groups irrespective of the morphological type of environment they live in. According to Hanson, the fact that some of the most wealthy and socially-advantaged people chose to live in high rise blocks (self-segregate) in a very unfortunate way provided a cast-iron alibi for architecture and as Hanson puts it, a highly doubtful conclusion was that:

“[…] morphology has nothing at all to contribute to the sum of human happiness nor can it be held responsible for people’s feelings of social isolation or exclusion.” (Hanson 2000, 114-115).

Hanson departs from such a conception and argues that an alternative approach would be to acknowledge people’s divergent experiences and show how space fits into people’s lives in different ways (Hanson 2000, 115). What is argued in this thesis is that architecture and urban design models actually can be held responsible for reproducing and supporting urban segregation processes and patterns without persisting in claiming that this needs to have a deterministic effect.

Configuration and people’s circumstances

The conclusion Hanson draws when comparing changes in behaviour in, on the one hand, a ‘traditional morphology’ and on the other hand, a ‘transformed morphology’ is that the four different groups studied (categorised according to social class/life-style) were very differently affected
by these two types of different environments. In short, the results will be reviewed here since it is believed to be highly relevant to the discussion of urban segregation in Sweden and the discussion of how the physical city can encourage or inhibit the development of, for example, social capital. It needs to be spelled out that this categorisation of social groups originating from the 1970s has obvious limitations if one wants to apply it to the society of today. Hanson did attempt to modernise how these groups are categorised but since then, another decade has passed and most likely it would be possible to find other categories which would be more up-to-date and adapted to Swedish circumstances. However, in the text below, the categories proposed by Hanson (2000) are referred to.

The group of ‘conformers’ (traditional working classes) in the traditional morphology had a street-orientated local solidarity based on dense, strong spatial networks but could not adopt to a new lifestyle in the transformed morphology, neither could they make the old one work as contact was – as Hanson (2000) describes it – ‘frozen out’ and they became more isolated. The ‘aspirers’ (new working classes) used distancing and avoidance to control unwanted interactions in the traditional morphology and in the transformed morphology, this group adopted a more home-centred lifestyle and joined associations based on interest groups. The ‘achievers’ (traditional middle classes) did not normally chose to live in the traditional morphology nor in the transformed morphology but rather in a suburb. However, life in the transformed areas was based on local conformity and house-to-house visiting and joining of clubs. Finally, the ‘transformers’ (new middle classes, referring to media people etc.) in the traditional areas used the potential of both local space and transpatial networks in order to broaden their social contacts. In the transformed areas, however, these people became dependent on an extensive and dense transpatial network. Because these groups had different life-styles and different preferred forms of solidarity, they also experienced and interpreted the two morphologies very differently. Accounting for peoples’ divergent experiences means that space fits into people’s lives in different ways. Therefore, two apparently contradictory reactions in behaviour to the same housing morphology are equally true and, as Hanson understands it, this is a result of the life-style of different groups and their ability to form corresponding and non-corresponding networks (Hanson 2000, 115). How often has the Swedish debate moved to such a ‘dead end’ where the argumentation is whether a so-called segregated area is ‘good’ or ‘bad’ and for whom (or which group) it is ‘good’ or ‘bad’. Such discussion can now be more rewarding when applying an approach at an earlier stage that takes into account the specific circumstances of the people or groups. Hanson’s
proof of evidence illustrates that only when people’s circumstances are taken into consideration can an increased understanding of the effects of certain morphologies be achieved. This could also explain some of the contradictions that are baffling the debate. How come, for example, some of the Swedish Million Homes Programme areas are respected and attract people with great resources while others are prone to suffering from a bad reputation and deprivation? Or how can inhabitants within the same area describe their life situation in diametrically very different ways? It seems impossible to reach a deeper understanding of the spatial affordances of morphologies without acknowledging people’s circumstances and their varying needs that Hanson has argued for in a convincing way: simple correspondences between ‘building type’ and ‘social outcome’ are therefore unlikely to be found. The lifestyle of each group is based on complex and different compositions of spatial and transpatial solidarities, realised in correspondence or non-correspondence with space (Hanson 2000, 115).

Consequences for society

The perspective presented above is, in a way, very much described from the point of view of how the spatial affordance of a neighbourhood affects possibilities and opportunities for groups or even individuals. When turning to a perspective that reflects a broader context; what are the consequences for society at large of designing neighbourhoods/districts that favour only the development of some types of solidarities? And what does it mean if our cities have a large proportion of neighbourhoods that provide conditions that only some groups in society can make use of and are able to experience from the built environment to support their social life/social preferences while it is likely that people with few resources will experience weak/poor support from the built environment for their social preferences? It is difficult to see how an urban design that only supports the more advantageous groups in society could possibly be described as socially sustainable or socially robust. Many of these areas that now are subject to a severe critique in the debate are those neighbourhoods that were designed according to equality principles and the idea of providing decent housing for all people, an ‘architecture of good intention’ one could say. Is it not then ironic that these disabling effects that many of these neighbourhoods acquired in particular affected groups with fewer resources?
“What is more, the disabling effects of the urban transformation had the greatest impact on the weakest and least powerful people socially; those who depended on their local environment the most to support them in their everyday life, like children, elders, the sick and disabled, the unemployed.” (Hanson 2000, 116-117).

The fact that space has a different social performance depending on its morphology and that different groups are affected in different ways is of the utmost importance to highlight in the discussion on urban segregation. Too often one finds simplified conclusions about how different physical environments affect their inhabitants and lines of argument often tend to stigmatise so-called segregated areas even more strongly. But with this knowledge about social performance that is presented in Hanson’s discerning work, there are at least two important lessons to be learned. First, the potential a layout has for developing the social city or supporting society is closely interwoven with its ability to structure co-presence among people of different ages and genders, between inhabitants and strangers or outsiders, among people of different occupations or social classes and within economic, civic and religious life (Hanson 2000, 120). It has been proved that urban design plays an important role in creating the exact conditions for such mix to come about, which implies that urban design and architecture have a rather important influence in shaping society. Second, housing morphologies that are impaired by these disabling properties are to be found elsewhere, but they are not yet described as problematic in the debate since the statistical description of their inhabitants does not indicate social deprivation. However, from an urban design perspective, it is obvious that these areas are part of the problem since they presuppose a certain type of people with a certain kind of resources (e.g. social capital) to inhabit them. There is also an inverse effect implying that resources found locally are only to a limited extent available for the surrounding city.

Disurbanism and social malaise

Many suburbs are criticised for being places characterised by disurbanism. As discussed above, this may partly be explained by the fact that the relations between buildings and urban public space are disrupted, different scales of movement are disrupted and often residents have been efficiently geographically separated from visitors or strangers (Klasander 2001; Hanson 2000; Hillier 1996). But can architecture cause
social malaise? This is a question that is discussed in *Space is the Machine* by Hillier (chapter 5, 1996). Even though there is a widespread belief that architecture can cause social malaise either by directly bringing about anti-social behaviour or by inducing stress and depression in individuals or by creating vulnerability to crime, little is known about these effects (Hillier 1996, 183). According to Hillier, there is a problem of method in establishing any kind of link between architecture and social outcomes and it is easy to get caught up in a discussion of architectural determinism that often comes to a dead end. Instead, Hillier argues that the question is presented in the wrong way and suggests that both the architectural and social variables should be treated at a much finer level of resolution. The environment needs to be studied so that microstructures of the urban spatial environment are also taken into account, i.e. the immediate spatial milieu in which many people live out much of their everyday lives and not at a gross level such as the estate, the block, number of stories per block, etc.

In the Swedish debate, there are often contradictory arguments as to whether the physical environment could cause social malaise. Some play down the importance of the built environment while others attach great importance to it (see Törnquist 2001, 53-59). Without exemplifying different views on the importance of the built environment, it could be of relevance to highlight one aspect that rarely pushed forward and that is how different groups manage in different areas and how dependent they are on the properties of the local environment. This reasoning could also be related to the ideas of Habermas who argued that the new architecture in one respect led to inflicting a new lifestyle on people (see chapter V, Habermas 1984). According to Hanson, for those living on a housing estate, there was not even a choice to disengage from the urban street life since the decision to minimise social contact was already built into the urban layout itself. As with Hanson’s reasoning, it is impossible to return to the street-based culture of the recent past. The argument is not that the street-oriented outward-facing and stranger-friendly housing layouts can compensate for economic and social inequalities in any sense, but that they are more empowering than many other layouts (Hanson 2000, 116). The shift from the streets to estates implied that the control over the interface between private and public life was transferred from the local residents to the space itself through the design. However, today it is possible to speak of giving local residents choice and control over their own lives, maintaining people’s independence and dignity or providing less discriminatory, more architecturally enabling environments.
Configuration and the segregation problem

Vaughan has conducted several studies of the morphological influences on poverty, deprivation and social exclusion by applying a space syntax approach (e.g. Vaughan 2005, 2007) and found that space can itself be considered as a factor in the geography of poverty (Vaughan et al. 2005, 409). When studying the relationship between physical segregation and social marginalisation in the urban environment, it is found that some urban areas are especially prone to settlement by impoverished immigrants. Vaughan suggests that the physical separation of poverty areas from the economic life of the city implies a lack of potential for the economically marginalised to integrate into society (Vaughan 2005). Studies have shown that there is a spatial mechanism involved in the creation of poverty areas and it is argued that spatial segmentation of areas has detrimental effects on the most vulnerable populations, especially those who depend on local movement and local networks to support an exchange (Vaughan 2007, 248). Moreover, Vaughan has found a relationship between social deprivation and distance of residence from sources of employment at the perimeter of the settlement area. By studying the relationship between spatial segregation and economic segregation, it was found that immigrant quarters had spatial attributes which made them more prone to poverty and that poverty persisted over time (Vaughan et al. 2005, 403). The analysis is based on two sets of historical maps of poverty (based on Charles Booth’s work) alongside with the recent census (Vaughan et al. 2005, 404) and the social data has been connected to a spatial analysis, thus social and economic data may be considered alongside measures of space as a network, geometry and other metric properties. The streets classified by Booth as ‘middle class’ streets where also the ones that were the most accessible parts of the street network according to the spatial integration analysis (Vaughan et al. 2005, 407). Even Booth was aware of this according to Vaughan et al. (2005):

“Thus […] the “poverty areas” tended to be literally walled off from the rest of the city by barrier-like boundaries that isolated their inhabitants, minimizing their normal participation in the life of the city about them.” (Quoted in Vaughan et al. 2005, 409).

According to Vaughan et al. (2005) these areas are still characterised by deprivation today and it is concluded that:

“Indeed, this study has demonstrated that analysis at the street scale, considering spatial and social/economic measures as separate variables, enables an understanding of how spatial location plays a part
in an individual’s potential to take advantage of the spatial economy of the city.” (Vaughan et al. 2005, 411).

This finding is in line with and explained in previous space syntax research where it has been shown that highly integrated streets also are those that contain the socially and economically lively activities of the city (e.g. Hillier 1996). The fact that access to economic activity and employment is important is also confirmed by recent studies in Sweden: it was found that access to jobs was of vital importance to opportunities on the labour market and earnings, for example, important to newcomers in terms of chances of securing a job (Åslund et al. 2010). Based on detailed analysis of the exact location of all residences and workplaces in Sweden, it has been demonstrated that refugees placed in locations with poor job access had a negative experience of employment opportunities (Åslund et al. 2010) and it is suggested that residential sorting leads to underestimation of the impact of job access. Since workplaces are suggested to be an important space or ‘arena’ for the development of various social networks and solidarities (and possible integration into society), this calls for an analysis of access to workplaces. In the Södertälje study (Legeby 2010b), it was found that the so-called segregated areas in the city (with a large share of immigrants) had considerably lower accessibility to workplaces than most of the other areas within the city. Whether the socially vulnerable areas in Stockholm also acquire low access to workplaces will also be analysed in the empirical study (see Chapter 4 and 5).

**Summing up**

Drawing on what has been discussed in this chapter, a neglected part of the segregation problem appears to be to study more carefully and increase the understanding of how societal processes and phenomena are influenced by urban form. In cities where residential segregation is a salient feature – as for example in Stockholm and other metropolitan areas in Sweden – it is suggested that in addition to where people live, how people are distributed when they are not at home also stands out as being highly important. This means studying variations in co-presence in public space. It is likely that the patterns of co-presence in public space develop from what any segregation index brings up (Franzén 2009, 105:2) which highlights the need for an approach that takes into account how public space is used and more importantly, how the patterns of co-presence are influenced by urban form and by different types of urban layouts. How-
ever, it is not just co-present people who constitute an urban resource, other material resources – and variations in access to them across the city – are also important to disclose in order to contribute to an increased understanding of the implications of urban form on segregation, including inequalities regarding accessibility to urban resources across the city.

Jacobs (1961) argued that the intricate interplay taking place in public space – the dance on the sidewalk – had comprehensive effects on individuals and on society at large and what more specifically was referred to was those processes that potentially emerged among those co-present on the street, on the sidewalk. The large amount of information that is processed as part of the ‘sidewalk ballet’ appears to be highly critical as to why cities work and Jacobs argued that this made cities into problems of ‘organised complexity’ (Jacobs 1961). In this thesis, it is suggested that this is why Jacobs emphasised the importance of ‘encounters and inter-play on the sidewalks’ and not primarily for the pleasures of serendipity as was often highlighted and discussed in various interpretations (discussed in Marcus & Legeby 2012).

From the perspective of architecture and urban design, it is notable to see how the arguments that Hanson, Hillier and Vaughan emphasise clearly respond to the previously referenced sociological discussion by Goffman, Giddens, Collins and Liebst, in that it distinctly identifies space as a central agent in social processes such as urban segregation. However, where the sociological discussion refers to space in its most general terms, the architectural discussion by Hanson and others distinctly delivers exact references and even measurements. Together it certainly opens up exciting potential for architectural research where it seems able to deliver essential contributions to our understanding of how cities work and more importantly for the focus of this thesis, to our understanding of the segregation problem. For the present study, this is the centre of attraction and the next step is to look into the general methodological approach and specific tool-box when it comes to the analysis of urban space, which the aforementioned discussion has proven to be essential.
4. Method and material

Introduction

The approach to urban segregation in this thesis focuses upon the role of the built environment for various social processes that may potentially take place in the public realm and upon how spatial form influences the living conditions created and available locally. In the licentiate thesis (Legeby 2010b) and doctoral thesis, it has been argued that there is a lack of methods for investigating and measuring urban segregation that takes account of aspects more specifically relevant to architecture and urban design: urban form and spatial configuration. An important challenge is to identify how cities can be designed to decrease segregation and facilitate access to various urban resources. In this thesis, this has been addressed by exploring how spatial form influences social processes and the approach draws on both social and spatial theories. Identifying how the social relates to the spatial is crucial both for increasing knowledge of what a socially sustainable urban design means and how it can be practised.

The questions forming the focus of this dissertation have been discussed and framed in the previous chapters. In Chapter 1, the structure and content of the thesis is presented. The segregation problem in Sweden has been described and difficulties highlighted regarding the translation of how descriptions found within residential segregation can be informative for urban design and architecture when it comes to countering social segregation in cities. This because there are no spatial forms on this level that respond to the social segregation problem and that even though segregation is a spatial concept and it is argued that there has been a surprisingly weak conceptualisation of its spatial dimension in Swedish policy and debate. Chapter 2 elaborates on social theories; how they can help us understand and explain why residential segregation puts a spoke in the wheel for certain social processes. Micro-sociology theories (Giddens, Goffman, Collins) contribute to this matter as it is argued that concrete
encounters in public space – the sharing of space and being co-present – have great significance for the social processes and the emergence of various social solidarities, of which some are believed to bridge social difference. In Chapter 3 spatial theories are elaborated; how they can help us understand and explain how variations in co-presence are created in the built environment. This has been seen as a way forward since, from the point of view of architecture and urban design, very little is said to be accomplished by drawing on segregation when defined as residential segregation. Spatial theory has been used in order to disclose how spatial form relates to patterns of co-presence and more specifically, a theory that responds to this is identified in space syntax (Hillier & Hanson 1984). In Chapter 4, methods are presented for how the different analysis will be carried out and how the investigation linking social outcomes with spatial properties will be performed and what material will be used. The empirical study is presented in Chapter 5. The configurational analysis is central to the empirical study and other analyses are compared and tested in relation to this. The closing chapter of the thesis, Chapter 6, includes a discussion on how conclusions relating to the results are formulated. In many ways, this thesis is a continuation of the work presented in the licentiate thesis (Legeby 2010b) and the methods used for the Södertälje case have, in parts, been refined and further developed.

The approach to urban segregation in this thesis therefore aims to broaden the current conceptualisation of social segregation by focusing upon the role of the built environment for creating variations in co-presence among people in public urban space and the role this plays at a concrete level for the development of various social processes. The approach is supported on the one hand by micro-sociology theories (Giddens 1984, Goffman 1963, Collins 2004) and on the other hand, by the spatial theory space syntax (Hillier & Hanson 1984). The reason for linking these theories is that they share the conviction of the critical role of co-presence even though they approach it from different perspectives (Koch 2007; Liebst 2012a, 2012b).

Co-presence as a way forward

Many of the prevailing approaches within the urban segregation field and primarily studies of residential segregation have proved to be insufficient in increasing understanding of the role of urban form as well as insufficient in developing knowledge that could contribute to the field of
architecture and urban design in a significant way for matters related to social dimension or segregation. One reason for this is simply that urban design has rarely been the question in hand within segregation research; instead, the architectural and planning aspects have been more or less limited to discussions on housing policy. In order to reach beyond such a discussion, a shift in focus is proposed, from residential segregation to segregation of urban public space and investigating what consequences this might have (see also Legeby 2010b). This means that instead of highlighting housing in studies of the segregation problems, public space is the starting point for such studies. The difference may be illustrated through the following example: residential segregation research is based on analysis of the constitution of people according to where they live (at a certain geographical level in the city), while this study more specifically tries to look at the constitution of people – or the potential constitution – in the public realm, i.e. among those co-present in places where various social networks and solidarities have the potential to emerge and develop and most importantly, how urban configuration influences such co-present situations.

The fact that co-presence as a result of our everyday practices is important for how various social networks can potentially emerge is based primarily upon the social theory formulated by Goffman (1963), Giddens (1984) and Collins (2004). For example, Collins suggests that co-presence is a necessary – but not sufficient – component for processes leading to different ritual outcomes, for example group solidarity (Collins 2004, 48). This means that sharing space with others also makes us available for various kinds of social processes. With this as the starting point it is argued that, to be able to respond to the challenges that the segregation problem presents for the city, theories and methods are needed that can increase understanding of how urban form and spatial configuration influence patterns of co-presence, a support that social theories do not provide us with. To this end, the architecture theory of space syntax is argued to be useful for explaining how urban form and its configuration influence patterns of co-presence and movement. The potential a space has to embody or carry social ideas is theorised within space syntax and then transformed into measures by linking them to geometric representations of the system of spaces (Hillier & Hanson 1984). To be able to relate social outcomes (for example situations of co-presence in public space) to configurational properties, a thorough configurational analysis of the urban system is needed that is based on a spatial model of the city representing the public spaces in the city. (Hillier & Vaughan 2007, 212).

An important aim with this research study is to apply the theories
outlined in chapter two and three in the empirical study. This implies that, on the one hand, the city is studied and described according to its configurational properties and on the other hand, co-present situations at certain public places are studied. Then, by synthesising the spatial data with the social data, it is possible to increase knowledge of the relationship between spatial configuration and patterns of co-presence and through this, increase understanding of how the social dimension can be taken into consideration within urban design and architecture. Analysis of the population and/or the physical environment needs to be carried out in a way that takes into account the impact of urban form and acknowledges the fact that the consequences may differ depending on the socio-economic profile of the people who live and/or use the neighbourhood. The spatial affordances a neighbourhood has may differ in importance for its population depending on the resources people have.

One result of widening the urban segregation concept and looking at other aspects of segregation beyond the residential aspect is the opening up of a broader discussion on the unequal distribution of resources that is central for the segregation debate and assumed here to partly be the result of urban configuration. Accordingly, to provide such empirical support, it is important that the characteristics of the eighteen places can be captured in a way that enables comparison and focuses upon those aspects that are important for life opportunities. For example, establishing the potential for various types of urban life and co-presence, establishing opportunities for exchange that each place acquires, analysing access to attractions etc. Thus, understanding of what neighbourhoods afford its residents can be increased and how this in turn is influenced by spatial form.

To sum up, the method applied in this thesis includes a theoretical component where segregation is discussed and partly re-conceptualised in order to better respond to aspects that are relevant to architecture and urban design. The theoretical part also explores in what way social theories and spatial theories can contribute with relevant knowledge to architecture and urban design when it comes to matters related to urban segregation. The empirical part explores the relationship between the spatial and the social aspects through a three partitioned study including: a spatial study focusing on configurative analysis, a social study focusing upon analysis of co-presence and then these two analyses are synthesised in order to identify correspondences and relationships. In the final part of the thesis, the implications of the findings are discussed and conclusions are presented.
Public spaces to study

The discussion above clearly leads to an understanding of public urban space as arenas for co-presence and as a fundamental precondition for many critical social processes in cities. Depending on the spatial properties urban space acquire, this may create variations of co-presence that will most likely influence what processes or solidarities that may emerge. So what public spaces are then adequate to study? To delimit the study, a selection of public spaces is made. The most obvious and most easy accessible public space is probably open urban space including for example streets, parks and squares. In this study, the neighbourhood square or the neighbourhood centre has been identified as an important place for co-presence, facilitating encounters of different kinds. Not only does the neighbourhood’s square/centre appear to be an important meeting place both from a symbolic and a functional perspective, most probably it is also among the most intensively used public spaces and can therefore indicate a neighbourhood’s potential for facilitating urbanity. For studies of the Stockholm outer city in particular, the square and/or the centre is a relevant object to study since it is often co-located with public transportation stations and as such is hugely significant for people’s mobility in the city of Stockholm as well as within the region. Therefore, squares/centres will be the main focus in the empirical study. Establishing the constitution and the intensity of co-presence is said to disclose the possible potential created for the emergence of or the reproduction of various social solidarities in the city.

Other places identified as being important for creating co-present situations in the public realm are those related to work, education and culture. Therefore three complementary studies are proposed: the first

Figure 4.1: Spatial and social analyses are compared and combined.
is an investigation of access to workplaces that has importance for opportunities in the labour market and is likely to affect the constitution of co-presence, most probably increasing the share of non-residents locally. The second study investigates the constitution of pupils at comprehensive schools located in the studied neighbourhoods, for example comparing the share of pupils from the local neighbourhood with the share coming from other parts of the city and how such a constitution is related to the spatial location of the school. Schools are argued to be important social arenas that may influence the development of social networks and solidarities, primarily for the pupils but also for the families of these pupils. The third study investigates co-presence at local libraries and what opportunities are facilitated for exchange between locals as well as between locals and non-locals. Local libraries are often seen as an important public institution where a lot of information about society is made available to the citizens.

The sample of squares/centres studied includes eighteen places of which two are located in the inner city and sixteen are located in the outer city in Stockholm’s south region. The complementary studies also focus on these eighteen places; however the third study only includes libraries at five of these locations.

Figure 4.2. The city provides spaces for everyday life activities.
The methodological framework

To summarise, the reasoning in the theoretical part argues, in short, that on the one hand co-presence is relevant for social processes and society and on the other hand, that urban form and spatial configuration matter for co-presence. The main challenge in the empirical study is to disclose and understand the relationships between the configurational properties and the social outcomes. In order to capture the aspects addressed in this thesis, three conditions are considered and are presented as a methodological framework for the study:

• The (physical) city needs to be described in a way that captures the spatial properties of the urban system and reveals patterns of spatial segregation and spatial integration – or degrees of centrality – that are informative and relevant to the field of architecture and urban design and take into account the urban context of neighbourhoods.

• Situations of co-presence need to be studied on-site in order to capture the social potential different areas hold as manifested as a result of everyday practice. It needs to be described in a consistent way so that neighbourhoods can be compared in this respect.

• To be able to define the socio-spatial affordance of different neighbourhoods, the social performance of different urban layouts needs to be captured which can be made by linking social data to spatial data in order to disclose how they correspond.

This methodological framework is argued to illustrate how this segregation study is distinguished from many others on a fundamental level.

Operationalisation of the research question

The methodological framework leads to a research question that is key to the empirical study and serves as a starting point:

• Can spatial form influence variations in co-presence in public urban space and if so, can spatial form influence the intensity of co-presence, i.e. variations in the amount of people co-present and the constitution of co-presence, i.e. variations in the mix of people co-present?

To bridge the theoretical part of the empirical component, this research question needs to be applied to operationalised questions in order to make it empirically testable.
<table>
<thead>
<tr>
<th><strong>Operationalised questions</strong></th>
<th><strong>Methodological implication</strong></th>
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<tr>
<td>How can the spatial analysis of public space be carried out in a way that acknowledges it as an urban system or network that makes sense for how the city is used, e.g. relevant from the perspective of how it is possible to move around in the city?</td>
<td>Use a spatial model of the whole city (also for local analysis) that reflects a pedestrian perspective</td>
</tr>
<tr>
<td>How can patterns of spatial centrality, for example spatial integration and segregation, be established?</td>
<td>Analyse configuration at the city level</td>
</tr>
<tr>
<td>How can the effect that spatial segregation and/or integration might have on different levels be acknowledged?</td>
<td>Acknowledge and include neighbouring areas</td>
</tr>
<tr>
<td>What methods may be suitable to use for establishing who is co-present and who potentially may share public space? What information is it relevant to collect about co-present people?</td>
<td>Study co-presence on-site. Consider residents as well as non-residents. Establish the home address of those co-present and some of their daily routines</td>
</tr>
<tr>
<td>How may the intensity of people be captured at public spaces? Are the public spaces characterised by co-absence or are they likely to be crowded? What may be defined as ‘crowded’ in the Stockholm context?</td>
<td>Combine methods, e.g. questionnaires and observations. Use a sample that is not too limited in order to make comparisons</td>
</tr>
<tr>
<td>How is the intensity and constitution of co-presence influenced by urban layouts by the inherent spatial and configurational properties? Which spatial measurements have a high level of significance for the intensity and the constitution of co-presence?</td>
<td>Link spatial data to social data. Explore and test different configurative measurements</td>
</tr>
<tr>
<td>How can possible unequal living conditions that are influenced by urban layouts be established? How can potential and deficiencies, i.e. the affordance of a space, be described in a comparable manner?</td>
<td>Use methods that acknowledge how resources are distributed through space from the different neighbourhoods</td>
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To sum up: three main steps are proposed as being essential in the procedure: First, the system of public spaces needs to be analysed and for that purpose, a model is needed to represent these public spaces and how they are related. Second, the constitution of co-present people needs to be captured (according to where people live) and the intensity needs to be captured in order to understand what kind of urban life may develop and establish what may be described as ‘high intensity’ and ‘low intensity’ places in the Stockholm context (through observations). Third, the spatial analysis needs to be related to and linked to the social analysis in order to disclose how and to what extent they correspond.
4.1 Method

The Stockholm study includes a set of five different sub studies in Stockholm’s south. One concentrates on analysing the spatial system while the other four are focused upon capturing social implications; how spaces are used or how resources are distributed or made available across the city. The empirical study focuses upon eighteen squares/neighbourhood centres. The study of co-presence is carried out at squares/centres while the three complementary studies represent other public spaces where an exchange between people might take place; places that are seen as being less public but yet not private, namely workplaces, schools and libraries. The exchange that may take place as people share space could, for example, be between residents within a neighbourhood or between residents and non-residents indicating an exchange across the city. Each of the sub study is to some extent self-contained but an important goal is to draw conclusions from the results when taken together.

To some extent, the methods vary in the different sub studies as a result of the differences in character and due to variations in the available data. A more detailed description of methods will therefore be presented and described in relation to each sub study in Chapter 5. The results of the analysis help to establish the spatial affordance\(^2\) of each area with regard to what type of social processes/solidarities the place provides an arena for.

Spatial analysis

**A configurational approach**

In this thesis, a configurational morphological approach is applied to study segregation based on the architectural theory space syntax (Hillier

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\(^2\) Originally the concept of affordance was coined by Gibson and described what an environment affords animals or humans in terms of shelter, water, tools etc. (Gibson 1979). According to Gibson, affordances of the environment are what it provides its users with, either good or bad. In this thesis, affordance is primarily discussed in relation to what the built environment affords its users in terms of potential for primary and/or secondary (bridging) networking processes.
An important aim is to establish continuity and discontinuity in the urban fabric, i.e. the spatial integration and segregation and to identify some of the consequences of the spatial conditions that are related to segregation. Depending on the properties of the spatial system, accessibility will be affected in different ways, for example access to other people, to service, to job opportunities. Such differences may be discussed as variations in the living conditions that different areas acquire. The spatial properties are also argued to influence to what extent there is a potential for an urban public life to develop and what characteristics it may include. A prerequisite for exploring these conditions is to analyse urban public space as a system of spaces in order to understand interrelations within and across the city. This refers to how space is understood within space syntax theory; this space is not only about properties of individual spaces but also about inter-relations between the many spaces that constitute the layout of a city (or a building), i.e. the configuration of space (Hillier 1996).

One attempt with the empirical study is that the analyses should reflect a street level perspective or a kind of ‘lived space’ perspective (Hillier 1996; Lefebvre 1991). Methods applied need to have the ability to take into consideration both the local and the global urban context by acknowledging that urban spaces are parts of a larger system. Thus, accessibility analysis considers the system of public spaces, the street network or more specifically in this case, the network that pedestrians are able to use. The strong focus on public space is argued to be essential when searching for alternative methods of how to define an urban segregation that is not primarily based on the residents and their social profile but rather based on the configurative properties of urban layouts, partly since these are what architects, urban designers and planners deal with in their daily practice and therefore have a chance to change or create. A comprehensive analysis that facilitates these places and neighbourhoods is analysed in similar ways and in the urban context is argued to be a necessary requirement in order to conduct comparative evaluations of the spatially-related inequalities between neighbourhoods and establish the spatial affordances that different places hold.

**Space syntax**

Space syntax began with the observation that space is the common ground of physical and social cities and there has been an attempt within the theory to develop descriptions and analytic tools capable of capturing the social logic of space (Hillier & Hanson 1984). One key idea is that the use and the understanding of material space is influenced and gov-
erned by, for example, the relationships between spaces. Such a system of relations between spaces is described as the configuration of a city (or a building). Spatial configuration means relationships between spaces: the simultaneous existing relations among the parts that make up the whole. The concept of configuration that was introduced along with space syntax theory has the potential to reshape research questions. Configuration, i.e. a topological description, can illustrate that even cities (or buildings) that appear to be very similar may have very different configurative properties (or the other way around). One principle of this is shown in figure 3:9 at page 102, where three different models of the same shape and size, prove to be very different from a topological perspective illustrated with the graph, a so-called j-graph (Hillier & Hanson 1984). The configurative properties may be discussed in terms of performativity, i.e. what the material or physical environment perform rather than what it represents or symbolises (Markus 1993; Marcus 2012).

The spatial relations’ potential to embody or carry social ideas is theorised and transformed into measures within space syntax by linking them to geometric representations of the system of spaces studied (Hillier & Hanson 1984). The notion of integration and segregation is a way of formalising these terms and this suggests that there could be an approach to urban research that is both quantitative and at the same time informed by the search for social and cultural influences and meanings (Hillier & Vaughan 2007, 207). Through comprehensive analyses of space combined with observations of human activity, it has become evident that space and social activity are related and it has been argued that space syntax reflects both the objectivity of space and our intuitive engagement with it (Hillier & Vaughan 2007, 208-212). Moving or staying in space, interacting with other people as well as just seeing the space that surrounds us from one point in it all have a certain geometry and are reflected in the elements used to represent urban systems as cities and buildings. The elements used for representing such artefacts are the axial line, the convex space and the isovist, see figure 3:8 at page 102 (Hillier 1996; Benedikt 1979). How cities (and buildings) are organised in terms of these three geometric ideas is useful when analysing human experience of space and the use of space.

A spatial system, for example a city, may be represented by a so-called axial map where spaces are represented by axial lines and where the map is the result of the fewest and the longest lines that cover the whole spatial urban system. Layouts that shape shallow graphs are defined as integrated, meaning that there is high accessibility between spaces while layouts that shape deep graphs are segregated. It is also possible to talk about
distributed and non-distributed systems (Hiller & Hanson 1984; Hillier et al. 2012). In distributed systems, the configurational properties are more similar across the system than in non-distributed systems where the hierarchical or ‘tree-like’ character creates greater differences between spaces with regard to the configurational properties.

![Figure 4:3: The open space structure and the axial map (Hillier & Hanson 1984, 91).](image)

Besides analysing spatial integration and segregation, the configurative analysis has two additional aims: first, to examine the potential that neighbourhood centres/squares hold for urban exchange; whether urban form has a segregating effect, preventing people from sharing public space or whether urban form facilitates a sharing of space with the potential to concentrate people in a public space. Second, to establish to what extent the urban layouts allow for an exchange between neighbourhoods. Configurational analysis uncovered by various space syntax techniques has proved to shed light on the elusive pattern of objects in architecture and urban design and gives quantitative expression to the idea that it is how things are put together that actually matters (Hillier 1996, 1). Hence, the focus is on the structural level of form compared with traditional morphological approaches in general. Since configuration deals with relationships between artefacts rather than with the specific form of artefacts themselves or with the topology of form rather than the geometry of form, this means that spatial configuration can illustrate how people are connected, mediated and integrated through public space rather than statistically averaged across large areas (Marcus 2007a, 255). The reasons for applying space syntax methods and tools are because they enable an analysis of the spatial relations within the system that needs to be established and it is possible to visualise patterns of spatial integration and segregation. Due to the fact that the configurative measures are quantitative and that the spatial system is analysed in a way that discloses neighbourhoods’ relationship to the city as a whole, it is argued that a fair comparison between neighbourhoods is enabled. Moreover, the space
syntax approach makes it possible to analyse places and neighbourhoods on different scales depending on the question in hand: from the very local scale to an intermediate or the city level (a gradual scale) which is essential if relating to the urban segregation issue which is inherently relational to its character. This is, however, not unique to the space syntax method.

**Space and the three distributions**

In order to capture the social performance of space related to physical structure and spatial relations (configuration), the current work builds on what was applied in the licentiate thesis (Legeby 2010b, 82) and initially proposed by Koch (2004, 30-32), namely a methodology that acknowledges the difference between distributions *in, through and of* space. To quote Koch:

“The distinction between these, in short, consists of what is what is placed, what appears, and how space is distributed by material boundaries.” (Koch 2007, 81-82).

According to Koch (2007, 81-83), these are invariably intertwined but the point is that by shifting focus in the analysis, it sheds light on some of the performative qualities and characteristics of space.

Distribution *in* space refers to what is normally found in geographical analysis, for example analysis of residential segregation and emerges as patterns of how different categories are distributed in an urban system. Distribution *of* space refers to how space is structured and shaped by built form, based on an analysis of space in itself. This captures the relationship between spaces within a certain system influenced by how urban layouts are designed. Distribution *through* space is how the built environment and public space is used by people: how activities or different land uses distribute themselves in urban space and how these are spatially related. In the analysis of distributions *through* space, the distributions *of* space are combined with certain content found in the urban environment (for example other people, work places, stations for public transport etc.) and this illustrates what is made accessible through material (architectural) space (Legeby 2010b). This is argued to reflect a rather realistic street level perspective since it captures people’s accessibility to different things through the street network (Marcus 2007b; Koch 2004, 2007). Even though this enables an analysis that may capture distinctly different modalities of spatial distribution, they are still closely interrelated as will be reflected in the different analyses. The distributions *in, of* and *through* space will hence influence the outcome and it can be identified which of the three distributions are at work in different situations, for example to
what extent the immediate surroundings may or may not have an effect on a certain place. Taking the spatial context into account is seen to be crucial in order to increase knowledge about how these different places perform because places, as Hiller argues, are not local things:

“They are moments in large-scale things, the large-scale things we call cities. Places do not make cities. It is cities that make places. The distinction is vital. We cannot make places without understanding cities.” (Hillier 1996, 151).

This means that even though some of the places and neighbourhoods included in this empirical study are highly similar with regard to their local urban layouts (e.g. planned according to the neighbourhood unit principles), their architectural appearances (e.g. mainly three storey lamella buildings) and their urban morphology ‘type’ (e.g. ‘low rise community’ or ‘metro community’ according to Stockholm’s twelve urban characters, Kallstenius & Fredlund 2001), it is most likely that because they are positioned in different urban contexts this has an impact on their performances in various ways that needs to be elucidated and understood.

Configurative measures

The aim in the configurative analysis is to identify how spatial properties correspond to use of urban spaces. To meet this end, five configurative measures are argued to have relevance for the segregation issue: integration and ‘betweenness’ that covers centrality, the spatial reach, pervasive centrality and finally, the integration interface.

Centrality measurements: integration and choice/betweenness

Analysing the spatial integration of a system defines how accessible each space (or its representation: the axial line) is from all other spaces (or axial lines) in the system (Hillier & Hanson 1984, Hillier 1996). In a way, it is a method used for describing relations between the centrality and periphery and more precisely, this ‘topological analysis’ measures how far away or how ‘deep’ each space is in the system, in relation to all others. Distance in the system is measured either according to topological distance, i.e. axial steps or turns which are applied on the axial line model or according to a geometric distance which is calculated by assigning the degree of the angular change in direction between all lines in the system and this is normally applied to the segment line model. In a simplified way, Hillier explains that from the topological definition of distance, we gain the system of fewest turns maps and with the geometrical definition, we gain the system of least angle change maps (Hillier 2009, K01:4).
For the configurational analyses, one needs to be able to limit the size of what area to study within a system and limit the catchment area of the spatial system, so to speak. In a topological integration analysis based on an axial map, the radius of the system is normally limited to the number of turns, from local to global, e.g. applying radius of 2, 6, 10, 16, 30 axial turns up to radius of \( n \) if the whole system is analysed. The topological integration measurement is a normalised value which allows for comparison across scales and may even allow comparison between different systems, for example different cities (Hillier & Hanson 1984).

In the geometrical integration (the least angel integration analysis), the system is normally limited by a metric radius, from local to global, e.g. of 500, 1 000, 2 000 and 5 000 meters. These measurements are (as a default value) not normalised and comparisons need to be made, taking this into consideration and dealing with it in different ways (Hillier et al. 2012).

Within space syntax research, highly integrated spaces have been found to correlate to certain kinds of land uses; businesses or other activities that depend on high accessibility as well as high movement flows, while segregated spaces are found to correlate with uses that are favoured by a more quiet situation. Distance in integration analysis is measured using topological steps, where every change of direction is equivalent to the distance of one step, i.e. turning from one axial line to another. Integration may be measured at a comprehensive level, i.e. global integration and at different levels down to the very local level, i.e. local integration. This is carried out by defining the catchment area by choosing a radius that reflects the scale that needs to be studied. Analysing global integration means that the catchment area includes the whole system (or at least a large part of it) and as the radius is decreased, a more local scale is analysed (for example a radius of two axial turns reflects the local level).

Another way of measuring centrality is to analyse how many distance-minimising paths there are between every pair of segments each segment lies on; a way to identify important links connecting the spatial system called choice or betweenness. This is a syntactic measure that illustrates how often a segment falls on a route between other segments that minimises distance. Each segment then acquires higher values for every route connecting segments within the system that passes through that particular segment. The two measurements choice and betweenness are examples of measurements which emerge from these kinds of analyses (Hillier 2009a). Even though the principle of how to calculate choice differs slightly from the principle of how to calculate betweenness (i.e. based on different but similar algorithms), the results are very similar though not comparable in absolute numbers (Hillier 2012, Hillier et al. 2012).
Choice, radius 3000 metres.

Figure 4:5. An example of choice analysis of Södertälje.
The two measurements of integration and choice/betweenness indicate centrality but in different ways. The theoretical difference between integration and choice/betweenness analysis according to Hillier is that integration reflects closeness of a space (represented by an axial line or a segment) to its context which makes it possible to intuit, while ‘choice’ or betweenness reflects how a space (represented by a segment) features on routes between locations which might be quite remote and therefore it cannot be intuited (Hillier 2007, 3). Hillier argues that choice (or betweenness) analysis identifies routes that are most likely to attract movement and that they reflect the potential for through movement while integration is argued to reflect to-movement (Hillier 2007; Hillier & Iida 2005, 553), indicating that through-movement constitutes longer trips (e.g. strangers passing an area), while to-movement constitutes shorter trips (e.g. local trips) (Hillier et al. 2012). However, the empirical evidence for such an assumption is still rather weak and it is uncertain to what extent such a categorisation of walking reflects walking behaviour. In a study of walking in cities, Choi (2012) has found that walking appears to be a rather complex activity where longer trips in certain built environments include many stops along the route, indicating that to-movement and through-movement are highly intertwined and are thus difficult to categorise as different types of movement. In this thesis, it is first and foremost the aspect of an inflow of strangers that is of interest. According to Hillier, this would then be dependent on and influenced by choice values. Due to the lack of clarity in this respect, the difference between the two centrality measurements of choice/betweenness and integration may be pointed out without ascribing a certain kind of movement to one or the other measurement. Instead, the difference may be described in terms of choice/betweenness identifying the shortest path from one space to other spaces and as such the spaces (represented by segments) that more often link to other spaces within a certain radius are highlighted, while centrality described through the integration measurement takes into account how each space is connected to all other spaces within a given radius. What Hillier and Iida have proved is that both the configurative measures of choice and integration correlate strongly to movement flows (Hillier & Iida 2005). However, such unequivocal or consistent evidence is still not yet established for Stockholm (nor for Södertälje, see Legeby 2010b) which brings about a need to call for cautiousness in drawing conclusions that directly link high choice values to high pedestrian flows. This needs to be further tested and validated. This does not, however, change the fact that the network acquiring high centrality, the so-called foreground network (Hillier 2009) can still be described as the most ef-
ficient structure for providing access through the system, interlinking spaces on various scales, i.e. capturing a kind of spatial flow.

![Table 4:1. Description of the differences of the configurational analysis and the kind of radius used in this thesis.](image)

**Spatial reach**

Analysis of the spatial reach of an area is carried out for all eighteen places in order to illustrate their spatial embeddedness: to what extent the places are spatially accessible from their context and to what extent a place is connected to its surroundings. An analysis of spatial reach responds to the operationalised question that deals with the possible impact from a neighbourhood's spatial context.

The spatial area of reach – defined here as the reach in topological steps – captures how deep or shallow a place is positioned in relation to its context (compare Hansson & Zako 2007). The area of reach is said to illustrate the functional boundaries of a neighbourhood to a higher degree than, for example, the administratively defined boundary of a neighbourhood. The aim of analysing the spatial reach of a place is thus twofold: first, to explore to what extent there is a mismatch between administrative defined neighbourhoods and the spatial reach of an area from the perspective of the neighbourhood centre. Second, the spatial reach is argued to establish the extent to which a place is spatially isolated or positioned in relation to its context that may increase understanding of the potential for a social exchange between neighbourhoods.

**Integration interface: overlapping scales**

Within the space syntax field, an overlapping of the local and the global scales has been a central theme from the start (see for example Hillier & Hanson 1984; Hillier 1996; Hillier 2009b; Hillier et al. 2010; Peponis 1997; Al Ghatam 2012). This has been an essential inspiration for the method applied in this empirical analysis and this was also explored in the licentiate thesis (Legeby 2010b). An integration interface means that the urban spatial system is readable on different scales and since different
Radii of integration reflect different scales of the urban system, a key for understanding the relationships between districts and the city as a whole is to understand the relationships between the different radii of integration (Hillier 1996, 171).

The integration interface is analysed by correlating local (e.g. radius 3) and global integration (e.g. radius n). According to the theory of movement economy and what has already been proposed in *The Social Logic of Space*, spaces that are highly integrated at a local level will attract local movement flows, spaces that are highly integrated at a global level will attract global flows (more long distant flows) and spaces that are highly integrated on both the local and the global levels simultaneously will facilitate both local and global movement flows, thus generating favourable conditions for creating a so-called integration interface (Hillier 1996, 174). According to Peponis (quoted in Hiller 1996, 174), cities with such properties are constructed to be interfaces between scales of movement. According to Hillier, such a space receives multiplier effects, leading to higher densities of development which in turn result in a positive feedback loop (Hillier 1996, 168). In this thesis, it is argued that whether global integration in fact means that people from more distant areas move through the spaces or not needs to be explored and analysed further. In the empirical analysis, the relevance of this theory will be tested by comparing the spatial potential with the co-present situation at each of the eighteen places.

Analysis of the integration interface will be carried out for the eighteen places included in the empirical study. However, since preliminary results indicate a stronger correlation between movement and (topological) integration than between movement and (geometrical) choice (Legeby 2010b), overlapping scales will preferably be investigated according to what is suggested in Hillier & Hanson 1984 or Hillier 1996, i.e. comparing local and global integration.

**Foreground and background networks**

According to Hillier, many cities are showing a network of linked centres called the foreground network that is set against a background network of largely residential space (Hillier et al. 2007; Hillier 2009; Hillier et al. 2010). In London, the foreground network is said to identify the main structure of global routes; it contains the largest centres in London (Hillier 2009b, K01:4). Hiller argues that such a structure is both the result of and support for an interaction between economic and social factors. Centrality according to Hillier pervades the urban grid in a very intricate way and as centrality appears on different scales, a pervasive centrality
that defines the foreground network should be seen as having a pervasive function in cities (Hillier 2009b). Hillier argues that this type of urban form is sustainable since economic and social activities are related to space in a way which minimises ‘travel distances’ (Hiller et al. 2010). This means that the distance between high centrality lines (provided that they hold this pervasiveness through scales) has importance for decreasing this ‘distance’. In the empirical study, the foreground and background network will be analysed from the perspective of how the squares/centres are positioned in relation to stretches of high centrality that identify the foreground network and in relation to the background network, a kind of periphery. Moreover, how loose or tight the foreground network grid is in different parts of the city will be established as well as the balance between the foreground and background network. The pervasive centrality is also said to be analysed by establishing the extent to which configuration (integration and choice/betweenness respectively) is consistent through scales at the different squares/centres. A similar analysis was used in the Södertälje study where the integration core was demonstrated on different scales (Legeby 2010b).

**Defining neighbourhoods or ‘areas’**

From a segregation point of view, it could be interesting to elaborate upon boundaries that separate different neighbourhoods and see whether these boundaries also mean a separation of people. It is argued that this has relevance since the urban expansion in the south of Stockholm is planned to a large extent according to the neighbourhood unit principles where a clear physical unit or enclave was believed to support and be beneficial to the creation of a social unit (see for example Markelius 1946; Sidenbladh 1948; the General Plan for Stockholm 1952). Within space syntax, the assumption that ‘areas’ are created by well-defined boundaries has been challenged and questioned. It has been shown that neighbourhoods that were designed to promote enclosure, territoriality and spatial hierarchy to foster community and a local identity turned out to perform in an opposite way than was intended (Hillier 1988; Peponis et al. 1997, Hillier et al. 2007; Hillier et al. 2010). It was found that many of these areas had a weak relationship with their surroundings (or at least an unintelligible one) and paths through them were excessively segregated with the result that space become under-utilised and movement was discouraged etc. – something argued to be especially unfavourable for the underprivileged (Peponis et al. 1997). However, the urban expansion in the south of Stockholm took place in parallel with the building of a subway system (that partly replaced an existing tram system) with a possible result that the borders
may not be that strong from a performative point of view. To what extent are these neighbourhood embedded in their surroundings? And how may this embeddedness influence an inflow of non-locals to the area?

It is suggested that, in urban environments, a wide range of different kinds of borders exists; some have a very distinct character, e.g. water that divides two districts, some are strong but perhaps not completely impossible to pass, e.g. major roads or high-ways while some borders have a more permeable or diffuse character. The reasoning behind boundaries that either encourage or inhibit a mix in public space may be supported by Koch’s discussion of how space can define *difference* and more specifically how borders in the formation of categories and contexts are given form (Koch 2007, 144-154). Koch describes situations of co-presence and intervisibilities that may form categories and in relation to this, he describes the boundaries that create these situations as being either of a ‘linear’ character or of a ‘painterly’ character. The former are distinct and separate categories, while the latter allows different categories to merge with each other (Koch 2007, 147). In a way, linear and painterly boundaries may be seen as different strategies that can be used in combination with distance/proximity and visibility in order to create a kind of categoric differentiation. The reasoning of linear and painterly boundaries may thus be discussed in relation to the neighbourhood units and the extent to which these ‘enclaves’ actually have linear or painterly boundaries and what consequences this may have for social segregation; how are boundaries and distance used as strategies to separate or integrate different neighbourhoods? When linking back to the notion of pervasive centrality (Hillier 2009b) and the creation of ‘area-sation’ through inter-accessibility (Peponis et al. 1997), it appears as though distinct boundaries and distance are not necessary in order to create identifiable ‘areas’; other strategies can also create ‘difference’ and a certain identity, maintained for example by painterly boundaries and proximity. Another way of studying how areas are created is through spatial differentiation and how the internal structure relates to the contextual structure is described as ‘fuzzy boundaries’, a concept developed and explained by Hiller & Yang (2007) and related to the concept of pervasive centrality as well as integration interface. The technique tries to define the boundary in terms of space of an urban area (Hillier & Yang 2007). However, in the Stockholm study, this specific measurement will not be applied but a similar analysis will be elaborated that describes the spatial reach of each square/centre.

A relevant example of how embeddedness may be explored empirically and what this may imply for the inflow of non-locals to an area is a study conducted in Bahrain (Al Ghatam 2012). It was found that districts well-
embedded in an urban context acquired a mixture of local and non-local movements in public space while weakly embedded districts are dominated by a local population only. The method Al Gatham used for analysing embeddedness included studies of how the local spatial properties related to the global properties. Al Gatham introduced two measurements (2012, 7-8, 16). The first is called ‘segment intelligibility measure’ where local angular integration (radius 500 metres) is compared with ‘global angular integration’ (radius 2000 metres) and the second ‘segment-crossing measure’ is when a local choice measure (radius 500) is related to a more comprehensive choice measure (radius 2000) (Al Gatham 2012, 16). It is important to point out that in Al Gatham’s study, there is a high correlation between movement flows and choice values and segment angular integration respectively.

**Social analysis**

To be able to empirically establish whether there is a relationship between spatial configuration and patterns of co-presence, a social analysis is required. Thus, beside an advanced spatial description of the city, detailed information about the people in public urban space is also needed. The social data that the analysis generates will be synthesised with the spatial data.

**Capturing intensity and constitution of co-presence**

Both the mix of people and the intensity in public space is argued to influence the character of urban life and thus affects what kind of urban networks or solidarities may emerge. In the empirical study, data of who is co-present in squares/centres and in libraries has been gathered by asking people a number of questions based on a questionnaire. Information about pupils at comprehensive schools and the location of workplaces was provided by the municipality and by the regional planning office (TMR). The studies of constitution were complemented with observations capturing the intensity.

During a period of a fortnight, each square/centre was visited twice on different days of the week (some places also on a Saturday); once before lunch during the morning hours and once during the afternoon. The questionnaire included questions about where people lived (i.e. their home address), gender, age, aim of visit, to what extent they recognise others, mode of transportation, how often they visit the place as well as two questions about how they perceive the place during the daytime.
and evening respectively. However, the question that will be highlighted in the empirical study is the one identifying where people live. This is due to the interest in investigating potential exchange among people who live within a neighbourhood and between people who live in different neighbourhoods across the city. The questionnaire for the libraries differs slightly from the one that was used in the squares and centres.

The intensity of co-present people is captured through two different kinds of observations of co-present people in the square/centre. The first observation is performed by counting how many people are present during a very short period of time (i.e. within four minutes), here called ‘momentary intensity’ but repeated several times during the day. The second observation carried out is performed by analysing pedestrian flow, measuring the number of walking people (in different directions) at several so-called gates in the square/centre and its immediate surroundings at different times during a weekday. In all, the pedestrian flow is observed three times at each gate and each area has between 10-22 gates. These kinds of observations have proved to be both reliable and consistent: a comparison of tests has showed remarkably similar results and remarkably little variation with the weather as well as distributions with time of day and therefore it is argued that relatively few observations would give a fairly reliable picture of the system (compare, for example, with Hillier & Hanson 1984, 23). This supports the idea referred to in chapter two that everyday life has a highly routinised character that rarely offers surprises or deviations from the normal pattern.

**Linking configurational properties to social practice**

The analysis of the spatial system on the one hand and the social analysis including co-present situations on the other hand need somehow to be related and synthesised in order to increase understanding of the role of the built environment in social processes. How then may relationships between spatial configuration and patterns of co-presence be established? The method suggested includes a number of correlation analyses, an analysis that is explorative in character. Nevertheless, the correlation analyses are used for testing different types of correspondences between configurational measurements on the one hand and social data on the other hand. Applying correlation analysis requires quantitative data and an important condition is that the samples are large enough. In some tests, it is possible to use data for all (eighteen) areas but in other cases, the
different places/areas need to be analysed separately since the point is to actually illustrate that they perform differently in various ways.

The following methodological procedure is proposed to establish whether spatial form can influence variations of co-presence and if so, establish how it influences intensity and constitution of co-presence. Integration and choice/betweenness on different scales as well as integration interface are compared with the share of non-locals according to data gathered through questionnaires. In addition to this, observations of intensity (defined as movement flows and as momentary intensity) are correlated with the share of non-locals. Finally, population density (defined as accessible population) is correlated with the share of non-locals. Other configurational properties analysed such as pervasive centrality, foreground and background network and spatial catchment area are discussed in relation to the result derived from the questionnaires and observations.

It needs to be stated that the correlation analyses are used in an explorative manner with the aim of identifying differences and similarities when comparing different places and neighbourhoods as well as understanding the range of plausible social consequences for different types of urban layouts. The correlation analyses are not necessarily seen as responding to causality but rather plausibility and there is a strong focus on correspondences and the weakness/strong of such correspondences. The correlation research methods are used as a possibility of recognising instances at different places where explanatory values can be obtained by showing that certain variables have strong relationships with other variables even if this does not necessarily demonstrate that one variable causes another (Groat and Wang 2002).

**Programs and tools**

The following programs and tools are used in analyses: for configurational analysis UCL DepthMap, version 10 (Turner & Penn 2001) and Place Syntax Tool (version from November 2010) (Ståhle et al. 2005). The GIS-program MapInfo Professional 10.0 was used for geographical analysis. Statistical analyses are primarily made in SPSS 19.
4.2 Material

The choice of study areas

In the licentiate thesis, the city of Södertälje was chosen as a study object due to the following reasons: the segregation problems were and still are of great concern in the city, the size of the city (nearly 70 000 inhabitants) made it possible to study a whole city not just districts and the city is largely characterised by post war development as is typical of many other Swedish cities of the same size. As the focus in this second phase has partly shifted, looking more specifically at the prerequisites for sociability in public space, the empirical study and the choice of study areas has been adapted to this. Among other things, analysis needs to be carried out as to where one can expect people to encounter one another and as a result of the focus upon urban configuration, the places are selected to represent different socioeconomic profiles and different planning and urban design ideas. The neighbourhood square or centre has stood out as a relevant study object: these are both symbolically and functionally important places for encounter in a neighbourhood and at the same time, a kind of display window for the neighbourhood. Stockholm thus offered a wider variety of squares and centres with regard to urban layouts originating from different times (Söderström 2003) and in addition, Stockholm has more squares/centres to choose from. The southern part of Stockholm as a study area also results from the attempt to coordinate four different PhD studies that are currently being undertaken at the School of Architecture to compare results and collaborate about data gathering, among other things.3

The sample that was selected in the end included eighteen squares/centres. Two of them were located in a typical inner city environment (at Södermalm) and the other sixteen were evenly spread out in the outer city towards the south. The Nytorget square was first mentioned in the middle of the 17th century and today there is a mix of buildings mostly originating from the late 19th century and the beginning of the 20th cen-

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3 The other PhD studies studying Stockholm from different perspectives are being carried out by Eva Minoura, Eunyoung Choi, and Sara Sardari Sayyar.
Aspudden originates from 1910 and was constructed for a working population and the villa areas in Mälarmödlen date from the 1920s and 1930s. Hammarbyhöjden represents the 1930s era with its typically functionalistic (modernistic) character. Many of the neighbourhoods developed as part of the great expansion of Stockholm during the second half of the 20th century were highly influenced by neighbourhood unit planning ideals (see for example Franzén & Sandstedt 1983) as well as by the General Plan for Stockholm (1952) that, at this time, made way for several of the areas included in this study, for example Gubbängen, Västertorp, Hökarängen, Farsta, Björkhagen and Bagarmossen. Rågsved was planned and built during the 1950s. Areas from the late 1950s and the 1960s are Bredäng, Skärholmen and Gamla Östberga. Examples from the late 1960s and 1970s include the eastern part of Bagarmossen and Östbergahöjden (Söderström 2003). Among the more recent developments are Skarpnäck and Södra Stationsområdet from the early 1990s and the most recent development of those selected was planned during the late 1990s but is still under construction – Hammarby Sjöstad. A more detailed description can be found in Chapter 5.

The spatial model

The model of the spatial system is the most important material for this empirical study and other kinds of data are linked to this. The spatial system of Stockholm is represented through a spatial model built up as an axial map drawn by hand. Each street, space, path etc. that is possible for pedestrians to use is represented in the axial map which enables configurative analyses to be made. The base of the axial map is the result of joint cooperation between the research group at the School of Architecture, Spatial Analysis and Design (SAD) since the beginning of 2004 and partly the result of mapping carried out by the consultant firm Spacescape in connection with their different assignments and the map used in this empirical study is a refinement and development of this map. The level of resolution and precision still varies slightly throughout the Stockholm area as a result of which areas form the focus in the various analysis.

It needs to be emphasised that this axial map is not a so-called street centreline generated map which has become more common recently.

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4 For example: Lars Marcus (2000), and Alexander Ståhle (2005 and 2008).
5 Developments mainly made by Ann Legeby, Sara Sardari Sayyar and Lars Marcus during 2011-2012.
(where the centre line of a street is used and transferred into an axial line or a segment) (see for example Dalton et al. 2003; Hillier 2009b; Turner 2009). For regional analysis or more comprehensive analysis, the street centreline map has proven to be useful however how the results fare in a more detailed analysis could be questioned, especially those focusing upon pedestrian movement (Turner 2009). It is also argued that, in cities where there is a large discrepancy between the spatial system accessible to cars and the spatial system accessible to pedestrians, as the case is in Stockholm, it is uncertain if the street centreline map is as adequate as the one drawn by hand. Means of assistance while drawing the axial map include GIS-maps, aerial photos and internet services providing both 2D and 3D photos of the urban landscape (e.g. www.hitta.se and www.eniro.se), combined with a number of site visits. (more about how the axial maps have been drawn and what criteria have been constructed is explained in Legeby 2012).

An iterative process refining the axial map

The first version of the axial map has been subject to modifications and revisions throughout the two year research period as part of an iterative working process in order to better respond to the needs of this empirical study. The geographical focus is on the southern part of the city of Stockholm which has implications for how the axial map is revised. The first fully usable version of the axial map was finished in early spring 2011 which was then used for various pilot studies (e.g. by Sardari 2011; Ann Legeby 2011a, 2011b; Marcus & Legeby 2012). Continuous evaluations of the results indicated that further refinements were needed for this empirical study; some links were found to be missing, the map was inconsistent in terms of its precision and refinements were needed to adjust to existing buildings. The next version was finished in June 2011. The pilot studies had revealed other circumstances that needed to be acknowledged and dealt with. For example, adjustments were needed to the axial lines at several squares/centres and schools which are subject to analysis (i.e. among the eighteen areas in focus). Furthermore, a general overhaul in the level of resolution was further elaborated to achieve a satisfying level of consistency. It was found that some areas that were ‘over-mapped’ in relation to the current needs had to be simplified and that some other areas that were ‘under-mapped’ had to be complemented. In addition, a general checking of green open spaces, parks and areas with undulating terrain was needed. During the autumn of 2011, several versions were tested and the map that is presented in this thesis is based on a version from February 2012. The results in this thesis may therefore slightly dif-
fer from those presented in pilot studies published in various papers but analysis has been continuously updated as far as possible. The axial map includes approximately 59,000 axial lines. The Stockholm municipality covers an area of about 190 km² but to cover its spatial context, the axial map covers an area of about 670 km².

**Limitations of the axial map**
The primary purpose when using the axial map as a model for the city is in urban analysis. This includes both studies at a local neighbourhood scale as well as the more comprehensive scale. Some simplifications are, however, made to keep a consistent level of resolution in the study that suits the questions in focus (for further details, see Legeby 2012). The map is made to work for different configuration analyses (Hillier & Hanson 1984, Hillier 1996) as well as accessibility analyses using the Place Syntax Tool (Ståhle et al. 2005). It is important to emphasise that the starting point for all analyses is the pedestrian (walking) perspective. Moreover, the axial map is not primarily made to suit a geometrical analysis, e.g. a ‘least angular’ analysis (when the analysis takes into account how sharp every turn is in the model) but rather an axial line-based analysis such as (topological) integration analysis. It is argued that these are not always fully compatible. Since the axial map is used for analyses with the Place Syntax Tool, some adjustments of the axial map have been undertaken. For example, there has been an awareness of the address points’ positions in relation to their closest axial line insofar as the accessibility analysis emerges in a realistic manner, i.e. making sure that address points connect to the correct axial line and not to the wrong line. Moreover, the southern part of Stockholm has been looked at more carefully since the focus of the analysis is upon this part. Finally, it needs to be emphasised that the eighteen squares in focus are prioritised and the accuracy is therefore checked more carefully around these places, for example through field visits.
The questionnaire

Variations in the constitution of co-presence are captured in this study by interviewing people in public urban space/libraries using a questionnaire. An important limitation to point out with this method is that since interviews are carried out by one to two people, it is not necessarily the case that the respondents were simultaneously co-present. However, it has documented who visits the place and it is likely that the majority will share space at some point. The questionnaire included questions about the respondents’ home addresses and some about their habits, for example information about gender, visit intervals, length of visit, purpose of visit, if they recognise other people through a kind of crowd familiarity and how they got there, i.e. mode of travel/transportation. The respondents’ home addresses were geocoded in a GIS-database together with the other responses. The first seven questions were the same for the squares and for the libraries but then there were three additional questions for those in the squares (e.g. about their preferred time of visit - daytime and evenings) and one additional question for the libraries, i.e. their purpose for visiting the library.

Within a period of two weeks in May 2011, ten people in total were involved in interviewing people – students and colleagues. Each area was visited at least twice, once during the morning hours (10-13) and once during the afternoon and early evening (15-18). Some of the areas were also visited on a Saturday (11-14).

In general, people were quite willing to answer the questionnaire. A few did not want to participate in the study for various reasons, the most common reason was reported to be that people were in a hurry and did not have time to stop and talk. In the end, the percentage of answers was between 49% and 91%. Places with the lowest percentage of answers were Rågsved, Skärholmen and Skarpnäck and areas with the highest percentage were Bagarmossen, Hammarbyhöjden and Hammarby Sjöstad. In some places, the percentage of answers turned out to be low partly because the co-present people did not speak Swedish and for that reason, they declined to participate in the study.

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6 The following have participated in collecting data from the squares, centres and libraries: Matilde Kautsky, Oscar Lindgren, Joel Hernbäck, Axel Heyman, Valinka Suneson, Sara Sardari Sayyar, Eva Minoura, Eunyoung Choi, Lars Marcus and Ann Legeby.

7 The percentage of answers increased as the interviews went along: to some extent, people who carried out the interviews learnt how to approach people in a way that did not turn them away and some of the interviewers changed how they were dressed. For example, a T-shirt with the KTH-logo made it easier to stop people and ask them to answer questions.
Observation data

The method for capturing the intensity of co-presence in public spaces is based on direct observations of the everyday practices in the squares and centres. The attempt is to use the data from the observations in order to understand different level of intensity that each place acquires and the data need to be in a format that can be analysed in relation to configurational data from the different places.

The intensity could be established in several different ways and here two types of intensity observations were used: observations of pedestrian flows and simultaneously counting co-present people (a kind of extended ‘snap shot’). The first observation method captured intensity by observing pedestrian flows at a number of gates.8 The gates for the observations were located in the squares or centres and on paths and streets in the vicinity (not more than about 500 metres away). The gates were chosen so that both spatially integrated and segregated spaces were included in the samples. The pedestrian flow was observed three times during a day and the direction of the flow was noted. In total, 325 gates in the eighteen areas were observed. The second observation captured momentary or

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8 These observations were made by Matilde Kautsky, Ivar Forrs and Ann Legeby.
temporary intensity, recorded over a four minute period, indicating how crowded the square or centre is.\textsuperscript{9}

Census data and property data

When relating spatial and social data, it is important that the data is aggregated as far as possible on the same scale level as the spatial data is organised. For the current purpose, it is an advantage if the social data is rather detailed. However, such data has proved to be difficult to get hold of. Even though census data in Sweden in general is said to be available for research purposes, the experience from this work is that it is rather difficult to use such detailed data, for example, due to integrity reasons or due to the fact that it is expensive. It was even found that social data with a high geographical resolution is generally not available at municipal authorities or regional authorities working with and responsible for spatial planning and urban design.

The methods used in the empirical study call for certain requirements of the data. First it needs to be able to link social data to a geographical location, e.g. an address point, a property, a block or any other administrative unit. Second, the data needs to be detailed enough so that it is correctly linked to the specific configurational characteristics present; the more aggregated the data is, the more difficult to capture the influence of urban form and configuration. The optimal situation is to receive the data at a detailed level (high resolution) and have the freedom to aggregate during the process so that aggregations are adjusted to different specific situations (i.e. to different research questions). It needs to be highlighted that using data, e.g. at the property level or the address point level as is the case in this study, is still rather unusual within urban research. So what kind of data does exist and perhaps even more importantly, which data is available for this kind of research? The experience from this study is that the gathering of data in itself and the organising and structuring of data constitutes an immense part of the work. Yet this is an important step before starting the analyses. There are some important facts about how Swedish census data is gathered and organised that need to be highlight-

\textsuperscript{9} First all co-present people in the square/centre are calculated and then everyone who enters the square (from all directions) within the time period is added. People who might leave the square during this limited time period are not noted.
ed. Below is an overview of data that was available for the project and the geographical level is noted. In the empirical part, it is further described how the data has been prepared and linked to various geographical units.

The geographical levels

Data is aggregated according to certain geographical/administrative units that are important to highlight in order to understand the inherent delimitations in analysis. The following geographical levels are being discussed and used within this research project.

1. **The address** point is the most detailed level used in the empirical analysis. Addresses are represented by a node in the geographical information system to which data may be connected.

2. **The property** (the real estate) is the next level to which social data is connected. Properties within the Stockholm municipality are represented by polygons and within the regional planning office, the properties are represented by a node positioned as a kind of central point of the property (or in some cases, a group of properties). Data is linked to these two types of objects e.g. facts about the residential population or the buildings, house type, building area etc.

3. **The block** level includes a certain number of properties often delimited by public space such as streets and parks. In the Stockholm municipality, the data set includes about 7 200 blocks.

4. **The base area** (also called the NYKO-area in some municipalities (short for ‘nyckelkodsområde’ in Swedish) represents a kind of small neighbourhood level even though the size of these areas differs greatly. Stockholm is divided into 407 so-called base areas and Sweden as a country is divided into 87 000 areas (SCB 2006).

5. **The district** level is larger than the base area and Stockholm is divided into 132 districts, a subdivision that corresponds to the so-called base areas.¹⁰

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¹⁰ Another level often used for analysis of residential segregation is the so-called Small Areas for Market Statistics (SAMS) and Sweden is divided into 9 200 SAMS-areas. The SAMS subdivision was created 1994 and was revised in 2003 (SCB 2011, MIS 2011:1. Regionala indelningar i Sverige den 1 januari 2011.)
Stockholm is part of the Stockholm Region that consists of 26 municipalities and in some of the analyses, data from a larger area than the Stockholm municipality is used in order to avoid so-called edge effects. Apart from Stockholm, the axial map covers the following municipalities (or partly): Nacka, Tyresö, Huddinge, Botkyrka, Ekerö, Järfälla, Sollentuna, Upplands Väsby, Sollentuna, Sundbyberg, Solna, Danderyd, Täby and Lidingö.

![Diagram](image.png)

*Figure 4.7: The geographical levels to which information is linked: 132 districts, 407 ‘base areas’ and properties (representation of a property and the address point).*

**Data provided by authorities: the municipality and the region**

The geographical information included in different data sets (e.g. including population and buildings) is of crucial importance for the spatial analysis which needs to be treated carefully. Data on the following levels is used in analyses: the property level, the block level and the base area level. Social data and maps are provided by the city of Stockholm (both by the Planning Authority and the Statistical Office (USK/Sweco) and by the Regional Planning Authority, the Regional Growth Environment and the Planning, Stockholm County Council (TMR). The original source in both cases is Statistics Sweden (SCB). Below is a presentation of the data and the geographical aggregation level is noted. Some of the datasets include data from different dates since the original source is updated at different times: some data is updated annually while other data is updated every third or fifth year. Hence, to have an up-dated dataset means that it will include data from different years. This needs to be acknowledged and in some analyses, this is a limitation and a weakness, yet this is what
is available. The data from TMR of the population originates from two different data sets.\footnote{When comparing the datasets, some differences have been found, e.g. the subdivision of geographical units slightly differs between data from the city of Stockholm compared with data from the Regional Planning office. In most cases, there are only minor differences.}

<table>
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<th>Source</th>
<th>Geographical level</th>
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<tbody>
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<td>SBK</td>
<td>Property (transferred to addresses)</td>
</tr>
<tr>
<td>Working population/Work places</td>
<td>SBK</td>
<td>Property (transferred to addresses)</td>
</tr>
<tr>
<td>Housing units, building year, owner-ship, house type</td>
<td>TMR</td>
<td>Property</td>
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<td>USK/Sweco</td>
<td>Block</td>
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<td>Residential population incl. age</td>
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<td>Property/Block</td>
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<td>Foreign/Swedish background</td>
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<td>Base area</td>
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<tr>
<td>Unemployment</td>
<td>TMR &amp; USK/Sweco</td>
<td>Base area</td>
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<tr>
<td>Education</td>
<td>TMR &amp; USK/Sweco</td>
<td>Base area</td>
</tr>
<tr>
<td>Income (mean/median)</td>
<td>TMR &amp; USK/Sweco</td>
<td>Base area</td>
</tr>
<tr>
<td>Schools: where pupils live</td>
<td>Stockholm, Education dep.</td>
<td>District/‘Neighbourhood’</td>
</tr>
</tbody>
</table>

Table 4.2. Overview of data available in the study.

The most detailed geographical level that is found is the property level. For example, statistics compiled by Statistics Sweden (SCB) make reference to the property. Important in this context, however, is to explain how this geographical unit is represented. The property is not described as a unit (e.g. a polygon) but as a coordinate position (i.e. a node). This position therefore represents the unit/the property and the attempt is that the node should be the central point of each property. The node (and the data connected to it) can be linked to the property area (i.e. a polygon) either through the property number or via the map.

Information about the residential population (where people are registered) is available on a property level (real estate) and the source for this is \textit{The Register of the Total Population} (RTB). The data for the residential popu-
lation at a property level provided by the city of Stockholm is from 31-12-2009 and the data from TMR is included in the data set called FastPAK and is from 01-01-2010. The source for data relating to the properties is normally the Swedish Tax Agency and the Property Taxation Registry (Fastighetstaxeringsregistret). Information about the residential population at a base area level is also provided by TMR which originates from a database (områdesdatabasen 2010). This includes other kinds of social data, e.g. income, education levels, Swedish/foreign background and sick leave.

**How social data is linked to the spatial model**

Information about the residents and about the working population is provided at the property level. When using the space syntax approach and the axial map, it is important to highlight how data is linked from the plot/property to the urban spatial network (streets, paths etc.). In the Place Syntax Tool (PST) analysis, a node and its data is linked to the closest axial line or segment. If there is a polygon representing a property, PST provides two options as to how to link data from a property to the spatial system: either through automatically generated points along the property border (where the density between these entrance points can be chosen manually) or from the centre of the polygon to the closest line/segment. For the analyses carried out in this study (where small radii are also used), there is an obvious risk that data may be linked to the wrong line (i.e. in the wrong direction) since the properties in the outer city are rather big and the buildings are not necessarily evenly spread within each property. To circumvent any undesired effects, a measure is proposed in order to improve the detailed level of the data in an artificial way. This method was applied in the licentiate thesis but in this case, data at the NYKO-level was ‘forced’ down to the property level (Legeby 2010b). Now, the data at the property level is ‘forced’ or transferred down to the address point level. This enables data to be linked from each address point to the spatial system. This is performed by preparing both the property layer and the address point layer (the GIS-files) and then distributing the content of the property level to the address points included within that property. It is argued that such a transformation improves the accuracy of the analysis, since data does not go in directions where there are no address points which would otherwise be the case. This implies that there

12 A more detailed description of this process, including how properties were put together to match other databases, is available in Swedish, see Legeby 2012.
will still be minor errors in comparison to reality, however the errors are said to be minimised by this method.

Figure 4:8. A principle for how data is transferred from the property level to the axial model and from the address points to the axial model.

Figure 4:9. The axial map covers the municipalities of Stockholm, Solna, Sollentuna, Lidingö, Danderyd, as well as part of Täby, Haninge, Huddinge, Nacka, and Tyresö.
5. The Stockholm study

Introduction

In order to increase understanding of how spatial form influences social segregation in the city, attention is drawn to the social consequences of urban configuration. Spatial analysis is combined with social analysis in order to explore how urban layouts can influence our everyday practices in public space. Who might we encounter as we use the city: in the street, at the local centre, on the bus, at the library? To what extent is the city segregated from this perspective; with whom might we share public space? A comprehensive body of research has been undertaken on residential segregation. Nevertheless, it is argued that segregation in public space is a neglected research issue. More specifically, this thesis aims to increase understanding of social implications relating to the configurational properties of urban layouts and it was deemed important to identify and apply those theories and methods that tie in with this. In Chapter 2, certain theories were identified as being relevant to the research questions formulated in this thesis and drawing on these theories, it was suggested that co-presence is of the utmost importance for social processes and for how urban social networks may emerge which, in turn, has an impact on society at large. In Chapter 3 it was argued that a spatial theory is needed to achieve increased understanding and knowledge of how urban form and the configurational properties of urban layouts influence co-presence. The space syntax theory was argued to be relevant when analysing spatial urban systems and has the ability to respond to the criteria discussed.

One way forward to respond to the challenges facing cities as a result of the urban segregation problem is to disclose how spatial configuration potentially influences the constitution of co-presence gatherings (i.e. the mix of people) as well as the intensity. The aim in the end is to increase knowledge of how public space, shaped by urban form, influences the potential for co-presence and co-absence respectively and to what extent space creates potential for encounter between different groups of the
population and how this varies across the city. Moreover, how configuration influences the resources available locally will be explored in order to respond to issues related to unequal life opportunities and issues related to an unequal distribution of urban resources across the city.

The main hypothesis tested in this empirical study is that the level of inflow of non-locals to local public space is related to and influenced by configurational properties. The constitution of people – i.e. the mix of locals and non-locals – that may occur in public space is argued to represent a very important aspect of the segregation phenomenon. The fact that this has particular relevance for (at least many) Swedish cities is based on results from earlier studies where it has been indicated that an inflow of non-locals both contributes to local street life and provides certain opportunities for local residents that are different from what other residents may give and moreover that such an inflow is often rather limited (Legeby 2010b, Legeby & Marcus 2011). What is important with such an analysis is first that it illustrates what exchange may potentially take place between people across the city at different places and second, that it indicates what resources are found locally in different parts of the city. As neighbourhoods are compared, it is possible to demonstrate certain inequalities that are strongly related to and influenced by urban planning, urban design and architecture.

The approach for exploring this subject starts from two directions; on the one hand, a configurational analysis is conducted for the city of Stockholm including its immediate surroundings. This is carried out in order to establish the configurational properties of the urban layouts across the city. On the other hand, various social analyses of the population are carried out, for example analysis of those co-present in public space but also of the residents. In addition to these two analyses, a third step includes the fact that the spatial data is synthesised with the social in order to disclose the social consequences of the configurational properties, partly through explorative correlation analyses. The study will be conducted in a way that enables a comparison between places and neighbourhoods and thus differences can be identified and described. Some of these differences may be regarded as inequalities if seen from an urban segregation perspective.

In order to study urban segregation as it is expressed in public space as a result of everyday practices, a set of studies are carried out which are formulated and designed to respond to the different aspects of the research questions and to the operationalised questions attached to these. The spatial analysis – including the configurational analysis – and the analysis of co-presence at the neighbourhood square/centre constitute
the main components of the empirical study. Along with these analyses, three complementary studies are carried out, argued to capture specific aspects that bear relevance for the complex segregation matter: a study of the access to work places (focusing on opportunities in the labour market), a study of the constitution of co-presence at schools and a study of co-presence at libraries. In spite of the fact that these complementary studies were less comprehensive than the main studies and that methods and approaches need to be developed further in future, it was nevertheless found that these thematic studies have contributed valuable information about the social implications of urban layouts and their configurational properties. An important aim of the complementary studies is to illustrate how the different themes that are relevant for the issue of segregation may be investigated and explored in a way that at the same time has relevance for the field of urban design and architecture. In the discussion references will be drawn to the findings of the Södertälje study presented in a licentiate thesis (Legeby 2010b).

To be able to illustrate the characteristics and the peculiarities of Stockholm’s urban landscape, an outline is given including a short description of the urban development and expansion and information about population growth, followed by a more detailed description of the eighteen places forming the focus of the Stockholm study. In addition to this, an overview of the residential segregation situation in Stockholm is given.

Then follows the two main studies: first, a spatial analysis including a configurational analysis and a density analysis and second a socio-spatial analysis where co-presence is studied in different public spaces. This section also explores how the spatial data relates to the social data. Thus, the main aim is to explore the possible correspondences between the configurational properties of the urban layout and the social consequences that are reported in the questionnaires or established through observations. In order to respond more specifically to the issue of urban segregation, the potential for an exchange among local residents as well as the potential for an exchange between local residents and non-residents is studied so as to contribute to the interpretation and discussion of the results.
Spatial analysis

Configurative analysis
A comprehensive spatial analysis – a configurative analysis of the city including its surroundings – is essential in order to link various social outcomes and practices to configurational properties and thus respond to the research question regarding what social consequences urban form may have. For example, the suggestion that patterns of spatial continuity or discontinuity or spatial integration or segregation, in the urban layouts have social implications can only be examined if there is an accurate and relevant spatial description of the city.

To establish the spatial relations between neighbourhoods as well as between the parts and the city as a whole, a comprehensive model of the spatial network that acknowledges the city as a spatial system is needed and the system of urban spaces be represented by an axial map. Patterns of spatial continuity and discontinuity are examined through the analysis of spatial integration and segregation at different scales, from the local to the global. The descriptions of the city that this approach produces vary considerably from many of the descriptions produced within residential segregation research, where segregation is defined through a comparison of the social characteristics of the residents living in different geographically defined units, e.g. administrative units (discussed in Legeby 2010b). What the configuration analysis identifies are the spatial relations within the city; how different areas and neighbourhoods are spatially connected between themselves as well as how these areas relate to the city as a whole.

Analyses that are argued to respond to the theoretical concepts such as pervasive centrality and integration interface (overlapping scales) will be carried out and neighbourhoods compared based on the findings. Moreover, the spatial area of reach that each neighbourhood has will be compared with both the social area of reach as well as with the boundary of the administrative unit in order to reveal to what extent these correspond. It is argued that this will shed light on how relevant the administrative subdivision of the city is from a user’s perspective.

Density analysis
A number of density analyses are conducted where statistical data is linked to the urban network system (i.e. the axial map). Density here is measured in terms of the accessibility to ‘attractions’, for example to other residents, to work places or to various amenities. The access is analysed within a certain metric radius through the street network and illustrates what access the residents (or other users) are provided with locally.
Social analysis

Co-presence at neighbourhood centres/squares
In order to capture the extent of segregation in public space according to how it is used in everyday life, co-presence has been studied at eighteen different places. Information has been captured through observations and through interviews of those who are at these places. Information from the questionnaires is analysed in a comparative manner and is used to describe urban life characteristics at these places. Explorative correlation analysis follows, linking the configurational properties to the social data captured through questionnaires and observations.

Workplace accessibility: opportunities in the labour market
Employment is seen as a key factor within the realm of social segregation and exclusion. The uneven distribution of unemployment and the uneven income distribution in Stockholm that often coincide with ethnic residential segregation stand out as increasingly stark manifestations of urban segregation and of increasing social polarisation – a situation that has proved difficult to change in spite of several initiatives. In Stockholm young people and newcomers are increasingly facing considerable difficulties in the labour market, of which the consequences are of great concern (SOU 1997; Zenou et al. 2006; OECD 2006). This study focuses on how the built environment may play a role for people’s chances in the labour market. The starting point for this investigation is twofold: first, geographical access to jobs has been identified as a highly important factor affecting people’s chances of success in the labour market (Åslund et al. 2009; Gobillon et al. 2005; Zenou et al. 2006), a mechanism related to the spatial-mismatch hypothesis (Kain 1968). Second, co-presence in public space affects the life chances that a neighbourhood provides. For example, the public culture that may develop, including certain views and norms, is arguably affected by those who share public space (Zukin 1995; Grannis 1998; Strömblad 2001; Collins 2004; Franzén 2009) and it is argued that information and knowledge that non-locals may bring to an area is different from ‘provincial news and views,’ believed important in obtaining a job (Granovetter 1983). Moreover, a strong relation is found between the intensity of the street life and the number of people who work in proximity (Legeby 2010b) and why this is a reason to establish such attraction density. Through applying advanced spatial analysis using space syntax and the Place Syntax Tool in combination with information from questionnaires and observations, this study identifies inequalities, comparing neighbourhoods in Stockholm’s south.
Co-presence at schools

Since school is compulsory, it means that for children and for their families, the school becomes an important platform or arena for various kinds of social relations in society. It is argued that the constitution of co-present pupils has high relevance for the issue of urban segregation. As a result of the policy of free choice (Kallstenius 2010; Kallstenius & Bunar 2007) Swedish schools potentially influence social relations over a larger geographical area than before. Previously, schools had primarily a local catchment area and most often the constitution of the pupils at the school mirrored the residential constitution of the neighbourhood where the school was located. Since this is not necessarily still the case, schools have turned into an arena that may potentially facilitate a mix of people that differs from the composition found locally among the residents (it is, however, possible that the constitution could be either more or less homogeneous). In this study the aim is to link spatial properties to the likelihood that schools have either a limited local catchment area or a wider catchment area, which may be expressed as variations in the constitution of co-present pupils at the school according to where the pupils live. The sample of schools includes 33 schools located in the proximity of the 18 squares/centres being studied. The constitution of pupils is analysed according to where they live, highlighting the diversity of the different schools. This is in turn is compared with various types of social data for the neighbourhoods where the school is located.

Co-presence at libraries

The aim of the library study is to investigate the extent to which neighbourhood libraries facilitate an opportunity, for locals to share space and also for locals and non-locals to share space. Visitors’ home addresses are collected through questionnaires at five different neighbourhood libraries. A questionnaire is used to establish for whom these kind of arenas constitute a meeting place and to reveal whether they have a local character or if they have an audience from a wider area, living further away from the library and through that also attracting non-locals to a place. The results from the libraries are compared with the results from the squares/centres where these libraries are located.
5.1 Background

The study area: Stockholm

Stockholm is located in an archipelagic landscape characterised by proximity to water and hilly terrain. The landscape has significantly influenced how the city has been shaped and developed over time. In a passage from a traveller’s guide from 1841 (Bahr 1975 [1841], 1), the following description is found:

“Few cities have a location such as this. She sits, like a queen, on her mountains and hills with a mantle of greenery casually draped across her shoulders, while Mälaren and the waves of the sea peacefully repose at her feet. Nature, having done everything for this city is here a great poem of former battles between the elements only to ultimately unite beneath the verdant islets’ peace and shimmering water’s play.”

This describes the characteristics of the landscape where Stockholm is located which is emphasised also in more recent descriptions of Stockholm’s urban expansion by Lundevall (2006, 13):

“Just where the granite bedrock meets the remains of a gravel moraine, between a mild and salty water, precisely there a city is moored – Stockholm.”

The urban expansion of Stockholm can be described as having developed in a number of phases, all characterised by different planning models and strategies. One important phase of the urban expansion of Stockholm and one that has had great influence both on the planning process and what questions have been prioritised, was the one during the second half of the 19th Century (Sheiban 2002). Urban design and planning was more consciously used to make way for a continued economic and industrial development. Regulatory plans for areas north and south of the existing city were developed and adopted during this period. To a large extent these were designed with the aim of facilitating infrastructural needs as well as the need for expanding the city to include new dwellings for the growing population (Stockholms Stadsbyggnadskontor 1976). A generally expressed aim of these plans and regulations was to facilitate movement and transportation and this included both flows on land and on sea:
“The concept ‘movement’ was both the starting point for and the gist of the city’s planning. It was both the concrete and the abstract content in the issues that arose in the context of city planning in Stockholm.” (Sheiban 2002, 48).

Sheiban’s interpretation is that the sanitary and aesthetic aims were secondary in relation to the economic aim during the latter part of the 19th Century.

Lundevall (2006) has identified ten planning perspectives that have strongly influenced the development of Stockholm from the mid 14th century until today. It is more or less only the core of the city (Stadsholmen or today Gamla Stan/The Old Town) that has not been laid out according to a predefined plan (at least as far as is known). But ever since the city grew out of its original walled enclosure, after a hundred years, new additions have been planned in line with various design principles. Hence the urban development of Stockholm has been far from spontaneous.

Stockholm is located where the topography presents highly difficult conditions, a factor that has been highly influential throughout each phase of its urban development. Apart from the oldest part of Stockholm, Stadsholmen/Gamla Stan, that still today holds some of its medieval character, Stockholm is very much a result of deliberate urban design and planning. The European architectural currents continuously reached their way to Stockholm. Below is a description of the ten important planning perspectives as defined by Lundevall (2006).

1350-15th Century
During the 14th Century, international and national trade increased, as did the population. The first phase of Stockholm’s planned development was the expansion beyond the original city wall; land fill was carried out and the old wall was replaced with a new one. The area of the city doubled during this period.

1523-1600
After the wall was outgrown, development followed both north and south of Stadsholmen (Gamla Stan) as very little space was available after earlier densification. It was a time of peace and the military function of the city wall became less important. The settlements outside of the city walls, primarily along the road leading into the city, became permanent. At this time, most buildings were of wooden construction.

1635-1685
Sweden’s period as a great power during the 17th Century fuelled economic growth and Stockholm now developed as a capital city. The first great expansion took place and was characterised by Renaissance
plans with right-angled streets and blocks. The renewal of Stockholm is seen as one of the largest urban design projects in Europe during the 17th Century.

1850-1870

The technical and infrastructural innovations came to characterise the development towards the end of the 19th Century, including the railway, sewage systems, gasworks and the paving of streets. During this period, the population increased to over 100,000 inhabitants.

1870-1900

As industrialisation had an effect, the migration to cities increased rapidly, resulting in a fifty-per-cent increase of the population only in a decade. The so called Plan of Lindhagen was approved in the 1880s and bore similarities with many other city plans in Europe, for example Paris, Vienna and Berlin. The plan had certain specific aims: to improve the traffic situation (the infrastructure), health aspects, fire prevention and city aesthetics. The plan included a grid structure (mainly orthogonal) with prominent features such as public parks and boulevards that would improve communications.

1900-1930

In the beginning of the 20th Century most of the available land was claimed and the city of Stockholm was more or less forced to incorporate new land in order not to lose tax revenues and to meet the overcrowdings. The population increase, in combination with a reaction towards what was perceived as too densely populated a city, called for a new kind of urban development. Comprehensive investments in the public transportation system enabled access to more distant parts which became developed during the first three decades of the 20th Century. This expansion included primarily single family houses in the outer city according to the English and German versions of the Garden City model and large perimeter blocks in the more central parts. The population in the outer city trebled during the first decade of the century.

[1930s]

The 1930s were characterised by the problematic overcrowding situation and a lack of available land. During this period primarily multi-family units with small apartments were built according to modernistic urban design ideals. During this period a new type of building was introduced: the three storey lamella building that became a commonly used house type during this period. The tram line built at this time strongly influenced where urban development took place.
Figure 5.1: The urban development of Stockholm (Markelius 1946, 15-19).
1945-1975
The housing shortage continuously called for comprehensive development; the inner city was subject to extensive clearance and reconstruction, partly as a result of building the subway system and in the outer city the expansion continued. Increased access to cars and the opening of the subway system in 1950 dramatically changed the conditions for urban expansion. The period that followed was largely inspired by the neighbourhood unit planning – ideas that influenced the urban development from 1945 and onwards. Several areas were developed according to this concept and with this the local neighbourhood centre was introduced. The population of Stockholm reached 808,000 in 1960.13 Towards the end of this era, the scale of development changed and the large-scale project, the so-called Million Homes Programme,14 was launched. The idea of traffic separation was implemented as were more rational building principles (also discussed in Legeby 2010b).

1975-1990
The immense criticism of the large-scale principles of the Million Homes Programme that followed led to a time of reconsideration, resulting in the rehabilitation of the ideals characterised by semi-closed building blocks in an often orthogonal grid like structure (with some resemblance to an architectural appearance common before 1900). The housing shortage was at this time no longer a pressing issue. The development during this phase was characterised by social and political movements, like the ‘green wave’ and ecological preferences were more prominent.

1990-
During the 1990s the housing shortage increased again. There was very little land available that was easy to develop and new incorporations were no longer an option. A new strategy for Stockholm’s urban development was launched: from geographical expansion to a densification of the built-up areas. Former industrial areas were identified to have the potential to be transformed into areas with housing. Densification projects were implemented in the inner city and in the outer city, infill projects were carried out.

14 The Million Homes Programme was an initiative with the aim to meet the housing shortage by building one million new homes during a decade, between the years 1965 and 1974.
The Comprehensive Plan 2010

With this as a background, one can look at the contemporary planning perspectives or ideals that are, of course, the result of the history of the city, in combination with what is seen as the challenges of today. The latest applied Comprehensive Plan for Stockholm is from 2010 and has the title *The Walkable City*. Beside the goal to facilitate walkable conditions, one important aim is to plan new housing in order to meet the housing shortage as a result of the on-going urbanisation; the increase amounts to roughly 20,000 people every year. After a period of densification within the inner city (i.e. the strategy of the Comprehensive Plan 1999) not much land was left available and additional strategies were launched. One of those strategies was to develop and concentrate future development to nine nodes in the outer city. In Stockholm’s south, Skärholmen, Fruängen, Älvsjö, Högtdalen and Farsta were identified as suitable for further development (Comprehensive Plan 2010, 37). The densification of these nodes was suggested to include investments in infrastructure and a pronounced aim to achieve a mix of housing units and workplaces. It was emphasised in the plan that the design of public spaces, such as streets and squares, should be made with high standards so that they can contribute to attracting people to these areas (Comprehensive Plan 2010, 38).

More specifically, ‘The Walkable City’ referred to a strive making it easier to reach different parts of the city on foot and decrease distances between different parts of the city. The motives for doing so – according to the Comprehensive Plan – were that the citizens move over larger geographical areas to work, shop, for education and for seeing friends and that this calls for better means of getting around the city without using the car. However, in a sense, such development (i.e. moving over larger areas) is difficult to combine with more ‘walking only’. Implicit in this is – one may presume – that ‘walking’ is combined with, for example, public transportation or similar, meaning a strive to decrease car dependency. In the plan it is said that there are certain barriers (e.g. roads or unsafe ‘pockets’) that have a negative impact on the pedestrian circulation within the city. Furthermore it is stated that an increased integration between different parts of the city is beneficial for increased safety and increased social cohesion (Comprehensive Plan 2010, 16). The needs identified and addressed in the Comprehensive Plan of 2010 have in this sense some similarities with those needs identified and addressed during the second half of the 19th Century. For example, in the Lindhagen Plan: the need to improve the city’s capability of facilitating ‘flow’, ‘movement’ or ‘circulation’. Noteworthy, in both plans, the concept ‘movement’ is not only confined to traffic and transportation flows, but holds an idea that
an interconnected street system has an integrating effect on the city as a whole, economically and socially (Sheiban 2002, Comprehensive Plan 2010). In the Comprehensive Plan (2010, 17) it is stated that in order to increase social integration it is essential to develop more common (public) meeting places where people of different background can encounter each other in a ‘natural’ way. However, it is not established in the plan in which parts of the city the lack of meeting places is a salient problem today or which parts of the city that are impaired by limited access. Yet the plan provides general recommendations in relation to this, for example to create safe and diverse places both outdoors and indoors and that places that today are densely populated should be prioritised, for example neighbourhood centres, parks, squares, schools, libraries and nodes for public transportation (The Comprehensive Plan 2010, 17).

Figure 5.2. The Walkable City, the Comprehensive Plan 2010 (Stockholm Stad).
Population growth
Stockholm has experienced periods of dramatic population growth. At the end of the 19th Century, between 1875 and 1900, there was, on average, an annual increase of 4.3% and at the turn of the century there were as many as five people per housing unit in Stockholm. During the 25 years that followed, the increase was less intense, an annual increase in average of 1.9% and the number of people per housing unit was 3.9 by 1925. The population increase continued until 1960, when the population decreased within Stockholm but at the same time the region grew, partly as a result of movement flow going from the city to the surrounding municipalities. This negative population growth continued for almost twenty years. In 1980 the population started to increase again but it was not until around 2000 that the population recovered to 1960’s level, then with 1.7 people per housing unit. After 2000 the population continued to increase and so did the number of housing units, albeit not to the same extent. What is noteworthy is the number of people per household decreased very rapidly during the 20th Century: by 1905 the most common household had six people while in 1975 the picture was the opposite, then a household of six was the least common and instead the household of only one person was the most common, reflecting, for example, welfare development. This had consequences for how population density shifted over time in a neighbourhood just in terms of the size of households. It is most likely that Stockholm, was perceived by its inhabitants as extremely densely populated around the turn of last century and that urban life had a very different character compared with the situation a hundred years later.

Population and housing units

<table>
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<th>annual incr.</th>
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<td>-</td>
<td>-</td>
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<tr>
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<td>-</td>
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<td>365 222</td>
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<tr>
<td>2000</td>
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<td>404 988</td>
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<td>2010</td>
<td>847 073</td>
<td>443 647</td>
<td>1.9</td>
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Eighteen areas of Stockholm’s south

The sample squares and centres are located in areas representing different periods of development and include different urban design principles and models. The overview below highlights some key aspects of each area. The main source for this paragraph is *Stockholm utanför tullarna* (In English: Stockholm outside of the toll gates) (Söderström 2003).
Nytorget
The square at Nytorget in Södermalm is today a part of the inner city. The square was mentioned as far back as the mid 17th Century. Wooden constructed buildings from the 18th Century are found east of the square, while other buildings are from late 19th and early 20th Centuries. Today this neighbourhood is a highly popular part of Stockholm and during the last three decades the area has gone through a gentrification process. There are many cafés, restaurants and small shops in this area. A school, Katarina Södra, is found south of the square.
Aspudden

Aspudden was developed between 1910 and 1940 with primarily multi-family houses, initially aimed at the working class. The area was built partly through private initiatives (on speculation) and was initially not served by public transportation. Today a concentration of services as well as the subway station is found where Hägerstensvägen meets Erik Segerställs väg, of which a short segment of the street has been converted into a (car-free) square. Throughout the area the ground floor is to a large extent used for various small businesses and services, especially along Hägerstensvägen, the main street through the area.

Figure 5.7. Aspudden.
Mälarhöjden

In Mälarhöjden, the villas and summer residences of the wealthy were built during the first three decades of the 20th Century. In those days, access to the inner city was partly serviced by regular boat traffic, thus, access to the inner city was rather good. The first tram line was built in 1913 which resulted in increased development. Building construction was given an impetus during the 1920s and continued for several decades. The local square and the terminus for the tram, became an important hub for the area with shops, a cinema and a school nearby. During the 1980s and 1990s the character of the area changed as a result of reconstruction and additions. Today, few of the small shops are left in the area. In the middle of the former open square (Hägerstensvägen), where the subway station is today, a grocery shop was constructed in the mid-1990s.

Figure 5:8. Mälarhöjden.
Hammarbyhöjden

Hammarbyhöjden or ‘the white city’ is a typical example of 1930s modernist architecture. The planning of the area started in the late 1920s, but the district was mainly built between 1936 and 1939. This was before the subway was built, but the area was clearly within ‘cycling distance’ of the inner city. Initially the apartments were aimed at families with children (primarily working class or people less well off). Some houses even came with facilities for the younger children, such as day nurseries, to make it possible for women to work outside the home. Compared with earlier developments, the lamella houses were placed rather freely in the terrain, yet there was a direct and close relation between the buildings and the streets. Initially the area had a fairly rich supply of small shops, although there was no school and a lack of other service such as post office or bank branch. In 1958 the tram (west of the area) to the inner city was replaced by the subway which reduced travel time significantly. After a few decades the population decreased and the area had an ageing population. The size of the households changed, for example, a two-room apartment (i.e. one bedroom apartment) that had previously been the home for a family with three children, could in the 1970s be inhabited by just one person. Considerable effects followed from this population decrease: shops, schools and services disappeared. In the end of the 1980s an upgrade and renewal program was launched which included construction of approximately a thousand units in the area. Lately there has been a change of generations within the population of the area.

Figure 5.9. Hammarbyhöjden.
Gubbängen

The plan for Gubbängen was approved in 1944 after an architecture competition in 1940 that included Gubbängen and Hökarängen. The plan for Gubbängen was mainly implemented between 1944 and 1950. The subway was constructed between 1941 and 1950 and provided good access to the inner city. The local neighbourhood centre was built shortly after the neighbourhood had developed and at the square a nine storey building was built and a cinema (today a theatre) along with some other services. The area was planned with a variety of house types: terraced houses and multi-family houses. Several buildings, such as schools, churches and dwellings, were designed by well-known Swedish architects.

Figure 5:10. Gubbängen.
Hökarängen
Hökarängen is contemporary with Gubbängen, built at the end of the 1940s. Hökarängen and Gubbängen are described as so-called subway suburbs (Söderström 2003). In Hökarängen Sweden’s first pedestrianised street was built going south from the local square. Traffic separation had been discussed in Sweden for a long time at this point and in Hökarängen these ideas were applied to an extent, providing an early Swedish example. Initially the idea of a car-free centre met great resistance from the local shopkeepers but proved to be a success once it was implemented (Söderström 2003). The housing units in the area are located in enclaves following the terrain: multi-family houses of three and four storeys, terraced houses and at the square a nine storey point block house placed at the axis of the pedestrianised street. Initially the district had about 16 000 inhabitants, today about 7 000 people live here.
Björkhagen

In the end of the 1930s the City Planning Authority started to plan housing areas south of Hammarbyhöjden. The area of Björkhagen was planned in parallel with the subway, a so-called ‘subway suburb’, complementing and reducing pressure on the inner city. The city plan was approved in 1945 and included three storey lamella houses and six storey point block houses, primarily made up of small apartments. The multi-family houses dominated the area but terraced houses were also built. The subway opened about ten years later. Shops and services, as well as a school, were located at the centre that opened in 1959. Nearby, the well-known Marcus Church was built, designed by Sigurd Lewerentz.
Västertorp


Figure 5:13. Västertorp.
Bagarmossen

Bagarmossen was developed in the beginning of the 1950s according to a plan applied in 1950. The neighbourhood was planned primarily to facilitate housing but was equipped with a neighbourhood centre and three schools. The three storey lamella houses formed the majority of the housing stock in the area, with a few two storey terraced houses located to the south of the area. The subway did not serve the area until 1958 and by then there was a terminus by the square Lagaplan. A change of the administrative municipal border made way for new housing developments in 1969 as part of the Million Homes Programme, along Byälvsvägen, north east of the neighbourhood centre.

Figure 5:14. Bagarmossen.
Gamla Östberga
Gamla Östberga was developed for housing in a very experimental way during the 1950s. It was seen as a very modern district when it was built and several new building techniques were tested as a result of the industrialisation of the building process; prefabricated concrete constructions and building cranes were used as were new kinds of facing material. However, the original plan by Markelius was modified: building density was increased and a large park in the middle of the area was preserved. Around this park there was a ring road lined with two rows of housing. The local neighbourhood centre (Stamgatan) included a few shops and initially the visual contact between the square and the central park was an important feature but this visual contact was later blocked by a pre-school. Point block houses were located close to the neighbourhood square.

Figure 5:15. Gamla Östberga.
Bredäng
The General Plan for Stockholm from 1952 included the development of Bredäng and Skärholmen. The building process that started in 1962 was characterised by rational building methods and the extensive use of prefabricated elements. The hilly terrain influenced the urban layout: blocks of buildings were places between natural boarders and edges. The layout followed the ideas of traffic separation. Commercial services were concentrated around the neighbourhood centre (1965) along with other services and institutions; a church, a library and schools. The neighbourhood centre and subway station were surrounded with buildings of higher density, while the development at longer distances from the centre was less dense including, for example, single-family houses. The multi-family houses were constructed as slab houses of eight to nine storeys and lamella houses of two to three storeys. These multi-family houses were placed in groups of 10-14 houses as enclaves in a landscape of green open spaces. The neighbourhood has seen very few changes since it was built, but was complemented with a school and some new point block houses.
Rågsved

Rågsved was planned during the 1950s as a continuation of the neighbouring areas to the north: Bandhagen and Högdalen. The difficult conditions for the foundation-laying resulted in a redesign of the original proposal: the centre was shaped as a horse shoe, lined with an outer circle of higher multi-family houses. A school and recreation areas were located close to the centre and the area also included lower multi-family houses. The first part was finished in 1956 directly south of the subway station. In Rågsved, as in many areas in the outer city, the residential population decreased: from about 13 000 in the mid 1960s, to only 8 000 in the 1970s, a transformation that had a negative effect on the centre. During the 1980s the area was complemented with two housing enclaves to the south-west. Today 11 000 people live in Rågsved.
Farsta

Farsta is a typical example of a so called ABC-city (Arbete=Working, Bostad=Housing and Centrum=Centre) and is a southern parallel to Vällingby in the northwest of Stockholm. Markelius worked on the plan (applied in 1955), with the intention of building a centre that could serve about 65 000 people and, in addition, it included housing units as well as work places for industry and other business. The subway was extended from Hökarängen to Farsta in 1958. The Farsta centre opened in 1960 and was structured around an elongated square – with inspiration from Italian piazzas – surrounded by different types of services and commercial shops. Adjacent to the square, two large car parks reflected an acknowledgement of a car owning society. The centre was marked with high point block buildings and slab houses that provided high density while buildings with lower density were placed at a distance in enclaves: lower lamella houses and terraced houses. Today Farsta centre has more than 100 shops and about 1 500 parking space (Stockholms handels- och köpcentrumsguide 2005; Wikipedia 2013a).

Figure 5:18. Farsta.
Skärholmen
The development of Skärholmen was planned during the 1960s and designed to meet the needs of the emerging ‘car society’. The plan was applied in 1963 and the overall principle was that buildings with higher density were placed closer to the subway station and lower density at longer distances. Skärholmen was designed with a secondary system for pedestrians to avoid conflict with vehicles yet maintaining good accessibility for cars. Garages and parking for the residents were located close to the housing units. The Skärholmen centre opened in 1968 and was planned to support several districts and neighbourhoods in Stockholm’s south with an indoor car park (initially 4 000 parking spaces – the largest in Northern Europe). The centre was organised around two car-free squares and apart from commercial services there are churches, a theatre, a community centre, schools and offices. In 2008 the centre was rebuilt and today Skärholmen has around 200 shops and 3 000 parking spaces (Wikipedia 2013b).

Figure 5:19. Skärholmen.
Östbergahöjden

Östbergahöjden and Östbergabackarna are two areas developed between 1966 and 1969 as part of the Million Homes Programme. In total there were 1 200 housing units, mostly four-storey lamella houses with external galleries. The neighbourhood centre offered commercial and public services and next to the square there was a school. The area was designed with a strong traffic separation and the main street for cars was laid out as a ring road while the inner parts were basically car-free and primarily for pedestrians. No connections for cars were provided to neighbouring areas either to the south or to the east, only pedestrian paths. Starting in 2001 there has been a redevelopment of the area and many of the rental houses were transformed into condominium ownership (the prices, however, have been rather low compared to neighbouring areas). In connection to this, a densification project including 200 new housing units was added. Today about 3 500 people live in Östbergahöjden.
Skarpnäck
Planned in the 1980s, ‘Skarpnäck city’ contains around 3 400 housing units. The urban layout, influenced by the fad for inner city environment, was designed with a specific kind of semi closed blocks and an orthogonal grid street structure. However, the grid was not integrated with its surroundings and this enclave, built up by four sub-areas, was developed with four to five storey houses. This means that in spite of the fact that Skarpnäck was designed with perimeter blocks, it is still likely that the neighbourhood performs as an enclave within the urban landscape. Most commercial and public service, as well as a library and a church, were located close to the main street of the area, while schools were located in the outskirts of the area. Most building entrances were not placed adjacent to the streets but via courtyards. Recently, terraced houses (about 40 units) have been built to the south of the area.
Södra station
The area around ‘Stockholm Södra’ railway station at Swedenborgsgatan/Fatbursgatan was developed between 1986 and 1995. The development was partly built over railway tracks. The street network was only partly connected to existing streets in the surroundings and the area was given a kind of internal system of car-free paths, partly separated from the other network by using different levels. The central part of the area included about 3 000 apartments. Some of the buildings were arranged in semi-closed blocks leaving many of the courtyards accessible from the streets.
Hammarby Sjöstad
Hammarby Sjöstad was developed from late 1980s onwards. It is an example of how a former industrial area (e.g. once an important area for the textile industry), was transformed into a new city district including housing alongside commercial and public services, offices and public institutions. In 2002 a housing exhibition was held in the central part of the district. The area was planned to be completed in 2017 and to have 11 000 housing units and 25 000 inhabitants. Hammarby Sjöstad was well known internationally for its comprehensive sustainability considerations and environmental ambitions including energy usage, waste management and care sharing.

Figure 5:23. Hammarby Sjöstad.
Segregation in Stockholm

Social segregation may be defined and measured in many different ways (for a longer discussion see Legeby 2010b). In an urban context it is common to place social segregation on a par with residential segregation, which is most often defined from a demographic, socio-economic or ethnic perspective (RTK 2006). The data is normally aggregated on certain administrative areas.

Two reports from the City of Stockholm (2001, 2006) present how the ethnic, social and economic segregation changed from the end of 1980s to the end of 1990s and from then until the beginning of 2000 in the city of Stockholm (and in the county of Stockholm). In 2006 report, a social index is developed for Stockholm with the aim of describing the segregation situation. The social index includes four factors: income, employment, immigration and education (Stockholm Stad 2006). On a macro level it was found that there were no major changes during the fifteen years studied (1987-2003), neither in the city nor in the county. There were fewer areas categorised as having an ‘average situation’, while more districts improved socially. During the period, the proportion of those categorised as ‘socially vulnerable’ remained constant. Therefore it was concluded in the report that segregation increased marginally: many districts improved their situation but not the most underprivileged areas. However, during the last five years of the period covered, from 1998 to 2003, the differences decreased between the districts compared.

Looking at the four factors respectively, during the latter part of the period income increased in general in Stockholm city compared with the county and so did the share of citizens that lived in areas with high-income levels. At the same time, the percentage living in areas with extremely low and very low income levels was largely unchanged. This was interpreted as an increase of the polarisation of income levels, meaning economic segregation increased (Stockholms Stad 2006). The difference in education levels when comparing different districts did, however, decreased. The share of people born outside of Sweden increased from 14% in 1987 to 20% in 2004 - more specifically it was the share born outside of Southern and Western Europe that increased. Still, the number of geographical areas with a large share of people born outside of Sweden remained the same. The employment rates of people aged between 20 and 64 decreased from 85% in 1987 to 73% in 2003, but the differences of the areas within the city did in fact decrease to some extent. In 2010 the employment rate was 76% in Stockholm, slightly higher than in 2003 but still not reaching the same level as at the end of the 1980s (Statistisk om Stockholm 2011).
How segregation developed after 2006 has not been studied by the City of Stockholm in the same manner. However, the government has made annual reports to follow up the situation in those districts characterised by exclusion included in the Local Development Agreements within the framework of Urban Development (Integrations- och jämställdhetsdepartementet 2009; Arbetsdepartementet 2012). In the 2009 report five districts in Stockholm were included. In 2012 only three of these districts were still part of the framework, namely Husby, Rågsved and Skärholmen (in total fifteen districts in Sweden were included in the national programme). The intention of this statistical follow up was to describe the gap between the excluded areas and the average situation in the municipality and be able to follow how it develops over time (Arbetsdepartementet 2012). A considerable difference was found between the excluded areas and the municipality/region as a whole, according to seven indicators analysed. Employment levels were reported to be considerably higher –
around 30 percentage points – than the average, but there was no increase during the period. The number of people dependent on economic subsidies decreased between 1997 and 2010. The share of young people who were neither employed nor enrolled in educational institutions increased in five of the fifteen areas, while the share decreased in ten areas. Still, the difference compared to other parts of their municipalities was significant. In terms of education, a negative development based on how many pupils qualified for studies at upper secondary school (the Swedish gymnasium) was found in all districts (Arbetsdepartementet 2012).

The Södertälje study

In an attempt to more closely link the segregation issue with urban form, a shift in focus was introduced with the Södertälje study: from residential segregation to a stronger focus on segregation in public space (Legeby 2010b). Such an approach was argued to increase the understanding of the social consequences of urban form and its spatial configuration. It was argued that physical separation between people or between activities has an obvious direct relationship with how cities are shaped and structured by built form and, moreover, that urban public space is often neglected in discussions on segregation. The consequences of spatial segregation and integration were analysed: analytical methods were applied and tested in order to identify uneven distribution of resources, uneven access to public space as well as uneven access for both the local population and to people living in other parts of Södertälje, aspects argued to have specific relevance for the discussion on urban segregation, especially within the field of urban design, planning and architecture. It was found that neighbourhoods performed very differently from a social perspective, including those planned and designed according to similar urban models and with a similar appearance. A ruptured interface between the global and the local structure was found that clearly speaks of segregation in public space. This rupture is argued to have social consequences, especially in areas that are residentially segregated. The results illustrated how urban form could both create and reproduce segregation patterns.

The results of the Södertälje study are presented in a licentiate thesis (Legeby 2010b) and in various articles and papers and the findings will be incorporated and referred to in relation to the Stockholm study. (Legeby 2008, 2009a, 2009b, 2010a, 2010b, 2010c; Legeby & Marcus 2011; Marcus & Legeby 2012).
5.2 Spatial analysis

Urban segregation is here addressed from a perspective that centres on the role of urban form and spatial configuration: on the theories arguing that, on the one hand, co-presence and its variations of intensity and constitution has importance for social processes and networks and on the other hand, that patterns of co-presence and movement – for example, distribution of intensity as well as constitution – are influenced by spatial configuration. Yet further aspects are related to the question at issue; exchange and inequality. A focus upon these aspects is a result of attempting to respond to how the issue of segregation is manifested in cities. First, ‘exchange’ refers to the potential that different social groups have to exchange information etc. in public space and depends upon how information might circulate. In residentially segregated cities, such an exchange might, for example, refer to an exchange between people living in different neighbourhoods and districts within the city. Second, ‘inequalities’ are often discussed in the segregation debate and the attempt here is to establish whether neighbourhoods afford different possibilities: what configurational properties do different places have and how do they affect what resources are found locally? Who will have access to various urban places in the city? What kind of social processes and urban social networks are supported as a result of the spatial prerequisites?

In this thesis an exploration will be made into how the potential for an exchange between neighbourhoods is influenced by configurational properties; what consequences this might have for the constitution and intensity of any co-present people in public spaces. More precisely, the extent to which the configuration of urban layouts might have an integrating or a segregating effect for people who use public space will be studied. This calls for a network analysis that investigates the parts of the city in relation to the system as a whole that can be performed at different scales. To this end, a configurational analysis of Stockholm will be carried out. Furthermore, to enable a comparison, the sample needs to include places and areas that represent different urban design principles and are found in different geographical positions in the south of Stockholm. Knowledge of the configurational properties of the different areas will be out to use for testing hypotheses about the relation between spatial properties and their social consequences in different places and neighbourhoods.
The spatial analysis will establish the level of continuity or discontinuity across the city, that is how well integrated or segregated different places and neighbourhoods are in the urban fabric. This is argued to either support or inhibit traverse movements (Peponis et al. 1997), influencing the potential for an exchange between locals and non-locals (Hillier & Hanson 1984; Hillier et al. 1993, Hillier 1996). This can increase the understanding of the potential for an exchange on the local level as well as an exchange between people in different neighbourhoods and districts. The local level refers to what is more or less within reach within a short walk. The scale used to capture the inter-accessibility between neighbouring areas also tries to describe the embeddedness of an area, how well it is linked and connected to its immediate surroundings, its context.

Initially, the focus of the analysis is on the spatial conditions, meaning that it is an analysis of the spatial system and its configuration. Then observations of co-present populations will be connected to this result. This will allow the investigation of possible correspondences between space and, for example, movement flows, population density or observed intensity.

**Configurational analysis**

The configurative properties in this study are captured through five different analyses considered to have relevance for the current focus. The first two capture spatial centrality, that is, first the integration analysis and second, the choice/betweenness analysis. The integration and choice/betweenness analyses demonstrate the pattern of centrality in the urban system, i.e. establishing what is spatially central and what is spatially peripheral and in relation to this, the notion of foreground and background networks is discussed. The third analysis captures the extent to which centrality pervades at different scales of relevance for the discussion of inter-accessibility and ‘area-sation’ (Peponis et al. 1997; Hillier & Yang 2007; Hillier et al. 2009). The fourth analysis illustrates how the configurational properties influence a neighbourhood’s relation to other areas and captures the relation to its context. It is the analysis of the spatial reach, in this case, the topological reach, that is believed to describe what is close and what is more remote from a specific square or centre as people use these urban environment. The aim of the spatial reach analysis is twofold: first it highlights how deep or shallow an area is in relation to its surroundings and second, it highlights to what extent there may be a divergence between the administrative subdivision of units and the spa-
tial area of reach. Finally, the concepts inter-accessibility and pervasive centrality are closely related to the concept of integration interface which is the fifth analysis that illustrates the local-to-global relationship. In a way, this captures the intelligibility of an urban system; to what extent a local place relates to its surrounding or to the city as a whole. In this study the integration interface is measured in terms of the correlation between local and global integration (or local and global choice/betweenness). The integration interface analysis shows to what extent different urban scales overlap.

Patterns of centrality: integration and choice
Integration and choice are similar to broadly used measures in spatial modelling called centrality and betweenness, with an important difference however and that is how distance is measured (or costed). Integration is a spatial centrality measurement and describes each axial line’s accessibility (or closeness) to all other lines in the system in relation to how close it could be in a kind of optimised structure i.e. the diamond graph (Hillier & Hanson 1984). The diamond graph is characterised by an almost normal distribution of nodes across its levels, found to represent a more realistic benchmark for comparing spatial settings of different sizes (Hillier & Hanson 1984; Bafna 2003). Distance in the system is measured either according to a topological distance i.e. axial steps or turns which are here applied on the axial line model or according to a geometric distance which is made by assigning the degree of the angular change of direction between all lines in the system applied on the segment line model (see Chapter 4 for a detailed description).

Choice and betweenness measure centrality by analysing how many distance-minimising paths between every pair of segments each segment lies on. Choice or betweenness thus identifies important links that are connecting the urban spatial system, delineating the so-called foreground network set into a background network that is less accessible (Hillier 2009b). More specifically this syntactic measure illustrates how often a segment is on a route that minimises distance. Each segment then acquires higher values for every route connecting segments within the system that passes through that particular segment. The two measurements, choice and betweenness, are examples of measurements stemming from these kinds of analyses (Hillier & Hanson 1984; Hillier 2009b, 2011; Hillier et al. 2012. See Chapter 4 for a detailed description).
**Integration analysis of Stockholm**

The integration analysis of Stockholm clearly shows that there is an asymmetric distribution to the centrality core at the global scale (i.e. the city scale, from radius of 30 axial turns and higher), stretching out towards the south from the city core as well as towards north-west. This indicates that Stockholm does not have a centre-periphery relationship that follows a simple concentric form; the shape is more a ‘ten to six’ shape (if compared with a clock face). This ranking order of integration reveals a deeper structure in the urban system that is difficult to visualise without an analysis of the axial line model. It is important to note that the distribution towards the north-west follows roughly the shape of the administrative municipal borders. Similarly, it is also possible to see that the intensity of integration fades abruptly towards the east as Stockholm is bounded to the neighbouring municipality (Nacka) and to a large nature reserve (Nackareservatet). In the southern part of Stockholm where the eighteen areas are located, the results show that about a third of these squares or centres are positioned outside of the high integration zones and may be described as segregated positioned, while a third of the places are within high integration zones or directly adjacent to these. The last third, then, is found in zones of intermediate integration.

The integration analysis at a mid-range radius, radius of 16 axial turns, shows that new clusters of high integration intensity appear. In the south of Stockholm there are two strips reaching out, one directly towards the south and one towards the south-west. Also at this level there is very weak continuity in the system in an east-west direction and there are clearly large bands of more segregated areas. This means that in many places there are large distances between the integrated stretches: the properties are not mingled to any larger extent at this scale level, which speaks for a rather weak spatial connection from many of the areas to their spatial context. There are, however, some fragments of a ‘deformed wheel character’ that connects some areas to the highly integrated stretch going towards the south. Yet about a third of the places within the sample are located in less integrated positions and at this level the others are more difficult to separate in respect of their configurational position (except from the two inner city locations).

The analysis at a lower mid-range, radius of 10 axial turns, illustrates how the pattern becomes smaller-scaled at this level, but that the axes going in the north-south direction are still stronger than others. The fragments of a ‘deformed wheel’ that appeared at radius 16 are even more pronounced at this scale. Most of the eighteen places are positioned close to lines of high centrality clusters, apart from about three or four
of them: those areas are weakly integrated even at this rather local level. The integration analysis at the very local level, radius of 2 axial turns, appears to be highly mingled and it is difficult at the comprehensive view to identify any specific clusters of high integration, apart from the inner city. However, there is an interesting difference found when it comes to the balance between integrated and segregated spaces: the western part has many more segregated lines compared to the eastern side that has far fewer segregated spaces.

Figure 5.26. Integration analysis of Stockholm radius 50.
Figure 5.27. Integration analysis of Stockholm, radius 30.

Figure 5.28. Integration analysis of Stockholm, radius 16.
Figure 5.29. Integration analysis of Stockholm, radius 10.

Figure 5.30. Integration analysis of Stockholm, radius 2.
Betweenness analysis of Stockholm

The geometric betweenness analysis of Stockholm does not show the same strong centrality distribution that was revealed by the integration analysis: centrality here covers the whole area which due to the fact that betweenness highlights the most important links that efficiently link or connect the system at different radii. However, the betweenness analysis also confirms that the western part and the eastern part in the south of Stockholm are poorly connected spatially. Furthermore, the inner city to the south forms a rather tight weave of important links, while the weave that is formed between the inner city towards the south-west is much looser, illustrating that in this region there are very few strong connections linking the system. The inner city is particularly distinct in this respect: the weave is much tighter here than in the outer city but it also needs to be highlighted that, for example, Norrmalm is different from Södermalm. It may be emphasised that these kinds of effects are highly dependent on how an area is linked to its immediate surroundings; for example, even if areas have similar block sizes and a similar structure of the street network as found in the inner city, it does not mean that they prove to have a similar weave of important links on the global level. In analysis at lower radii (500-1 000 m) the degree to which neighbourhoods become spatially separated from the so-called foreground network can be seen more clearly.

Figure 5:31. Betweenness analysis of Stockholm, radius 5 000 metres.
Figure 5.32. Betweenness analysis of Stockholm, radius 2 000 metres.

Figure 5.33. Betweenness analysis of Stockholm, radius 1 000 metres.
It is worth noting that at the comprehensive scale there is a mismatch between where important links are found and where many of the squares/centres are located, meaning that there is a weak connection between these specific places and the larger spatial system, that is, to the city as a whole. The radius in the analysis needs to be reduced to 1,000 metres before a few of these squares/centres are picked up by the more important links in the system.

Even if the betweenness analysis demonstrates that there is a spatial discontinuity in the system and that it is stronger in certain parts of the system, it is difficult to ascertain what social impact such spatial discontinuity might have. Does it affect the exchange between neighbourhoods and between people who live in different areas? Does a spatial fragmentation inhibit inflow of non-locals? To establish whether the spatial properties might have such social effects, one needs to draw comparisons with the constitution of co-presence. The hypothesis that works as a starting point for this elaboration is that the inflow of non-locals is limited in many neighbourhoods in Stockholm and that such absence of non-locals (strangers) is unfavourable for urbanity and for social processes at large (fewer opportunities afforded locally) which has an especially unfavourable effect on those who live in such areas.
Combining centrality measures

As the two measurements – integration and betweenness – indicate centrality in different ways, these two analyses, made on a global scale (integration radius 50 and betweenness radius of 3 000 metres), have been superimposed in order to illustrate the extent to which neighbourhoods might provide centrality or non-centrality if both measurements are taken into consideration simultaneously. What is found in such combined images is that the spatial preconditions vary considerable. A third of the squares/centres acquire high centrality both according to integration and betweenness (Södra station/Swedenborgsgatan, Nytorget, Hammarby Sjöstad, Hammarbyhöjden, Aspudden and Gubbängen), a third acquire centrality only according to one of the measurements (Skärholmen, Mälarhöjden, Gamla Östberga, Rågsved, Björkhagen and Rågsved) and a third acquire both low integration and low betweenness values (Västertorp, Bredäng, Östbergahöjden, Farsta, Skarpnäck and Bagarmossen).

Looking more specifically at Stockholm’s south, it can be seen that connections in an east-west direction are surprisingly few and weak. The combined analysis reveals that the weave of high centrality spaces has a very loose character (if referring to betweenness) overlaps with areas of lower integration, while a tighter weave (or a denser web) corresponds with areas of higher integration.
To sum up, the configurational analysis demonstrates that there are large spatial differences in Stockholm’s south; some areas are characterised by a manifest spatial isolation and others are more spatially integrated and these differences are not related in a consistent way to the geographical distance from the inner city. It remains to be examined whether these variations in the spatial preconditions also mean variations in their social performance. These findings can be linked to what Hillier describes as the theory of foreground and background network (Hillier et al. 2007; Hillier 2009b; Hillier 2010). The foreground network pattern is what appears as spaces with high values forming a network characterised by high accessibility. The clusters of segments acquiring higher choice values tend to increase as the radius that limits the catchment area is decreased. In London, which might be described to have a continuous urban fabric partly as a result of the favourable terrain conditions but also as a result of how the city has developed over time, the foreground network is argued to identify the main structure of global routes (Hillier 2009b, K01:4). Moreover, this network picks up the largest centres in London and Hiller argues that this structure is both a result of and a support for an interaction between economic and social factors:
“[…] the possibility that the generic spatial form of the self-organised city may in and of itself contribute to sustainability” and that:

“[…] an understanding of the spatial complexity of real cities seems to be the required first step in understanding their spatial sustainability.” (Hillier 2009b, K01:3).

London and Stockholm are arguably cities of a different nature, the former representing a continuous city (according to Hillier, a ‘self-organised city’) and the latter representing more of a ‘planned city’ with significant natural constraints as a result of the characteristics of the terrain and as a consequence of its location on several islands as part of an archipelago. The configurational analysis has illustrated that the features found in Stockholm do not appear in the same way as in London: economic activities are, for example, not necessarily picked up by the foreground network (Sardari Sayyar & Marcus 2013). Specific studies made of the retail sector in Stockholm showed a rather weak correlation between the intensity of retail and betweenness values, but slightly stronger correlation between retail intensity and integration values. There might be many reasons for this mismatch between economic activity and spatial centrality in Stockholm: for example, principles of traffic separation or other planning regulations such that retail and economic activities outside the inner city are directed to a large extent to either planned local neighbourhood centres or to specific non-residential zones. Nevertheless, the foreground network is still likely to identify the important streets and paths that connect the different neighbourhoods within the city.

In the analysis of integration and betweenness presented above, it is found that the selected eighteen centres are not consistently located where spaces acquire high integration or betweenness values. In line with the reasoning of foreground and background networks, one may argue that some squares and centres have preconditions that support businesses and liveliness or even urbanity (those coinciding with the foreground network), while other squares and centres acquire spatial conditions that potentially support quietness and will primarily depend on the local area or become very dependent on access by public transportation and/or by car traffic. Such places can hardly be argued to acquire spatial properties that support the emergence of qualities related to urbanity. Moreover, if studying the kind of beneficial balance between the foreground and the background network that Hillier (2009b) discusses, it appears as if in some parts of the south of Stockholm this balance is strongly impaired: as the weave is very loose it creates a large and rather unfortunate distance between the two networks. This means that large parts of the background area are spatially
separated from – and have poor access to – the foreground network and the urban resources that often are found there.

**Pervasive centrality**

The concept of ‘pervasive centrality’ can be used to discuss the degree of inter-accessibility that an area offers. According to Hillier (2009), the idea of ‘pervasive centrality’ means that the function of centrality in cities pervades the urban grid in a more intricate way than has been thought and that such consistency in the centrality pattern should be seen as a pervasive function in cities. The eighteen places in Stockholm’s south have been studied with the aim to establish to what extent these places are characterised by pervasive centrality. The level of integration has been analysed at different scales. Empirically this has similarities with how integration cores at different radii may overlap; the most integrated lines at different radii (going from local to global) are highlighted and represent the core of integration or the core of spatial centrality. In the Södertälje study it was found that very few of the studied neighbourhood centres acquired a pervasive centrality, then studied as the integration core (Legeby 2010b, 112), it was more common that there was a clear mismatch between the highly integrated spaces on a local level compared with those highly integrated on a global level.

In the Stockholm study, a slightly different method is applied in the analysis where the integration and betweenness measures at five different radii respectively are included. The result is presented in the table below and integration and betweenness is defined by the value of the line/segment with the highest value that is passing the square or centre (thus, it does not need to be the same line throughout all scale levels). The result shows that about half of the squares and centres acquire a pervasive centrality when both measurements are taken into consideration. A third of the squares and centres do not prove to hold a pervasive centrality according to integration through the scales. It is worth noting that two of the areas acquire, in comparison to the whole sample, low integration and low betweenness values over scales, namely Bredäng and Östbergahöjden. Östberga torg is well integrated and has high betweenness values only at the local scale, while at Bredängstorget the highest values of integrated/betweenness are found at radii 10-16 and 1 000 metres respectively. If looking only at betweenness values, it is found that Östbergahöjden, Gamla Östberga and Bredäng are distinct from the others and have comparatively low values throughout the different radii. Spaces that acquire both high integration and betweenness values at all studied radii include Södra station and Gubbängen.
Table 5.2. High/low integration and betweenness through scales.

<table>
<thead>
<tr>
<th>Square/Centre</th>
<th>Neighbourhood</th>
<th>Integration r 2</th>
<th>Integration r 6</th>
<th>Integration r 10</th>
<th>Integration r 16</th>
<th>Integration r 30</th>
<th>Betweenness 500</th>
<th>Betweenness 1000</th>
<th>Betweenness 2000</th>
<th>Betweenness 3000</th>
<th>Betweenness 5000</th>
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<tr>
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<td>Mälarhöjden</td>
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<tr>
<td>Rågsvedstorget</td>
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<td>Södra station</td>
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<tr>
<td>Östberga torg</td>
<td>Östberghöjden</td>
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Studying and describing the city taking into account aspects of inter-accessibility and pervasive centrality is argued to be highly informative for discussions on how centrality performs and how it challenges the dichotomised concept of ‘core and periphery’ which is commonly referred to within urban design theory. In such discussions it is often the core, the inner city, that is described as being in opposition to the periphery, the suburbs (see for example Park & Burgess 1925). If applying other kinds of descriptions and other ways of understanding cities as complex systems – for example, according to the concept of foreground and background networks – it is argued that centrality or the core, does not necessarily need to be positioned in a ‘core-like’ position. Instead, centrality may be found to be more evenly spread out over an urban area, forming a network of high centrality that covers a larger part of the urban system. It is also possible to see how its intensity grows or shrinks depending on what scale a city is observed. It is suggested that this illustrates the complexity of centrality that needs to be acknowledged in order to understand the performance of different urban layouts. Moreover, this implies that the pattern of centrality is not completely fixed, rather, it changes depending on the scale at which it is studied. It becomes possible and perhaps more interesting, to discuss how centrality is distributed at different scales and if it is pervasive or not (which may be related to the discussion of distribution...
in, of and through space in Legeby 2010b, initially in Koch 2004). Which
neighbourhoods are intersected by such spatial centrality and which are
positioned in the background network and thus spatially segregated? Is
the spatial centrality evenly distributed over the city or do some parts
have a denser foreground network than other areas? Which neighbour-
hoods are linked to centrality already at a larger scale or is it possible to
define at what scale the spatial structure becomes a part of the continu-
ous intersecting spatial network? Understanding patterns of centrality of
these kinds makes it possible to establish how the spatial systems in a city
perform as a network. For example, it is possible to establish the degree
to which a neighbourhood is embedded and connected to its context and
the reverse, it is a way to establish the degree of spatial isolation or spatial
segregation. It is exactly these conditions which are relevant and need to
be established when trying to establish how the spatial structure and con-
figuration influence the potential for exchange between neighbourhoods:
if neighbourhoods are easily accessible for the local residents and, more
importantly, if areas are also easy to access for non-residents.

The spatial reach
Urban spatial analysis is dependent on some kind of geographical sub-di-
vision. This can be done according to land use, architectural appearance
or according to the historical urban development. Many urban analyses
with a social perspective use a sub-division based on administrative units.
How areas are subdivided or at what scale data is aggregated are matters
that need to be acknowledged and dealt with in all spatial analysis. Is there
a mismatch between the administrative subdivision in Stockholm com-
pared with how neighbourhoods are described in general, for example in
media or how citizens perceive boundaries of neighbourhoods or how
neighbourhoods are used? Such discrepancy (see Stockholm examples in
Ceccato 2001) may be described as a kind of mismatch between perceived
and conceived space or even lived space, if using Lefebvre’s terminol-
ogy (1991). The adequacy of the administrative subdivision from a spatial
perspective is therefore explored in this study. If boundaries of urban
areas are to be better understood from a configurational perspective, it is
relevant to disclose how different the administrative boundary of an area
is compared with a boundary based on configurative properties.

When looking more carefully at the administrative subdivision of
Stockholm according to the level of 'base areas’ (407 within Stockholm),
it is possible to see that in the inner city, each unit includes only a few
blocks, while in the outer part of the city the units tend to be geographi-
cally larger, albeit not necessarily larger in population. It is also possible
to see that in some cases, the administrative unit (the base area) is too large to match an appropriate context for the studied place and some of the squares/centres are located more or less between two administrative units which may be problematic in the process of linking spatial data to social data.

Figure 5:37. The administrative sub-division for the south of Stockholm; districts, base areas (blocks). The 18 places in the south of Stockholm marked.

The size of the area of reach
The spatial reach of an area that is analysed here is defined as either the metric reach along the street network or as the topological reach along the street network that could be argued to be closer to how people perceive and orientate space (Hiller & Hanson 1984; Hillier 1996). As the topological reach of each place is identified, this illustrates how ‘deeply’
or ‘shallowly’ the area is located in relation to its context (compare with Hanson & Zako 2007). The metric reach a place has is sometimes easy to understand if taking into account what natural or manmade boundaries there are (e.g. topography, traffic barriers etc.). The topological reach (the depth) that a place has may be trickier to understand or predict without support from configurational analysis. A method is proposed here for identifying these areas of reach by using the Place Syntax Tool, where the minimum distances from each of the studied squares and centres to all address points in the system are analysed through the street network system, i.e. represented by the axial map. The results show that the eighteen places have widely varying catchment areas both in terms of size and shape. In order to illustrate four different scales, the maps have been coloured to show different levels, from the very local to the contextual level and up to the global level (the whole system), coloured in red, orange, yellow, light blue and all address points more than 30 axial turns away from the square or centre are white.

The analysis of the spatial reach, the configurational depth, reveals large variations within the sample, much more than if the metric reach of different areas is compared. Starting with an intermediate scale level, namely radius of 16 axial turns (yellow fields in the figure), it is possible to cluster five of the places as having a small area of reach; Mälarparken, Busmästaretorget, Skärholmstorg, Farsta torg and Östberga torg. Noteworthy too is that both Farsta and Skärholmen have a strongly limited area of reach in spite of the fact that these centres are programmed to serve not only a local area, but a much larger area in the south of Stockholm. Thus, it is argued that the spatial conditions are not supporting such intentions, meaning that the urban layout is not designed to support the land use that is proposed. This is not necessarily a surprise, however, since the area was designed to rely on car traffic and the subway and most likely it was believed that this would be enough. Conversely, squares/centres in the inner city have a very large area of reach – up to ten topological steps, while at the next level (radius 16) the area becomes considerable limited due to natural boundaries since Södermalm is an island surrounded by water with only five bridges connecting it to the rest of the city. A place that proves to have an utmost strategic position is Gubbängstorget and to some extent this is also true for Gamla Östberga torg/Stamgatan, but at lower radii the area is limited and is comparatively small (e.g. radius of 6 axial turns).

The variation in size of the catchment areas demonstrates variations in places’ performance. Places with a limited area of reach on the level of 10 axial turns are Västertorpsplan, Östberga torg, Rågsvedstorget and
Lagaplan (Bagarmossen). The important finding here is that there are significant differences among the areas which will be illustrated by the following examples. Östberga torg includes an area of only 2 km² while Nytorget includes 8 km² (still limited as a result being located on an island) and Gubbängstorget includes as much as 11 km² (10 axial turns). Comparing the size of the catchment area at radius 16 Östberga torg corresponds to 9 km², only about a third compared of Nytorget’s catchment area of 32 m².

The large variations are argued to partly be the result of the segregation of public space, deriving from topography and from how the urban layout is configured. This is partly as a result of the fact that in the outer city there is a structure of much shorter axial lines, implying that there is a more complex or maze-like structure that is creating this larger depth (or distance) to its surroundings. In an urban system characterised by a spatially integrated and distributed system with fewer barriers (natural and/or man-made), one can expect much less variation among the neighbourhoods compared. The spatial area of reach that each neighbourhood square/centre has could be argued to represent a kind of functional catchment area, albeit not necessarily equivalent to the social catchment area; whether these spatial conditions also have an effect on the share of non-locals present at these squares or centres remains to be examined.
Figure 5.38. Area of reach for the 18 centres illustrated by address points: radius of 6 (red), 10 (orange), 16 (yellow) and of 30 axial turns (blue), 3 pages.
axial steps

- 0-6
- 6-10
- 10-16
- 16-30

Hammarby Sjöstad
Hammarbyhöjden
Skarpnäck
Rågsved
Gubbängen
Hökarängen
The spatial versus the administrative area

As an illustration of how in some cases there is a mismatch between the spatial area of reach on the one hand and the administratively defined unit (the base area) on the other hand, with the administrative border superimposed upon the configurative area of reach illustration (both the metric and the axial catchment areas). What is found is that very few neighbourhoods have an administrative subdivision that reflects the places’ functional catchment areas. When comparing the spatial catchment area it is found that an 800 metre radius as well as the 6 axial turns radius (describing a kind of local area of reach) reflects the administrative base area only in four cases (out of eighteen): namely Bredängstorget, Västertorpsplan, Finn Malmgrens Plan/Hammarbyhöjden and Björkhagen centrum. This is an important finding that needs to be taken into consideration in all analysis using other kinds of statistical data aggregated according to administrative geographical units (for example the base area level). It indicates that analysis of places with such mismatch would benefit from using less aggregated data, for example at the block level or even the property level.
Integration interface: overlapping scales

From an urban segregation perspective, the analysis of the integration interface (Hillier & Hanson 1984; Hillier 1996) is in this thesis argued to be the most important configurational analysis since this is related to theories of how urban layouts have the ability to structure co-presence among people of, for example, different social groups, between different ages and genders and, not least, between inhabitants/residents and locals/non-locals. Not least, this appears to be highly critical in a residentially segregated city. The integration interface is in one way establishing the extent to which spatial properties overlap at different scales, that is, to what extent there is a correlation between values of the local and the global level. For example, within an area the local integration values (e.g. radius of 2 axial turns) are compared with the global integration values (e.g. radius n or a high radius such as 30, 50 or 80 axial turns) and all lines within a selected area are taken into account. Analysis of overlapping scales may be done in many ways and in space syntax literature has been referred to as integration interface or synergy (see for example Hillier 1996, Chapter 4). An intelligibility analysis is a similar way to examine the extent to which a system is intelligible based on whether the well-connected spaces also are the ones that are well-integrated (correlating connectivity with integration, see for example Hillier 1996, 124-136). This gives a chance to understand the position or status of a local place within the larger system in which it is embedded (Hillier 1996, 129).

If integration correlates at different scales, i.e. at different radii, it means that an integration interface and a compression of scales is created (Hillier et al. 1993; Hillier 1996; Peponis et al. 1997). It has been argued that such compression indicates that different scales of movement overlap, and some spaces thus facilitate local and global activities to share space. The spatial relations on the global level are the contextual relations, while those found within an area may be described as internal or local relations. It has been argued that in situations of a weak correlation between the local and the global scale there is a lack of clear relation from the local level to the global structure; a disruption of relations at different scales and a separation of locals from non-locals (Hillier 1996, 175). Such a situation could be described as a local-to-global mismatch, said to discourage traverse circulation and that it could be difficult to develop a clear sense of the larger scale of urban organisation locally (Peponis et al. 1997). Hence, this implies that the social performance of an individual space – a square or a centre – is highly dependent on inter-relations to neighbouring areas and to the city as a whole that is here argued to have significant importance when studying the segregation of public space.
Such a phenomenon is even discussed in relation to disurbanism (Hillier 1996; Hanson 2000).

To be able to study the potential for multiple everyday activities and how this may be influenced by a spatial overlapping, one first needs to establish to what extent there is an integration interface in different parts of the city, i.e. to what extent there is a correlation between local and global integration. Hence, a local measurement is compared with a global measurement and analyses are made of integration values (axial topological analysis), as well as segmental angular analyses of angular integration and choice/betweenness. For each area, a selection is made from the larger axial/segment map including an area of 500 metres radius (as the crow flies) around each square or centre. (N.B. the values thus originate from the analysis of the large model, i.e. the axial map that includes the larger Stockholm area). This selection of lines/segments is argued to provide a good description of the immediate context around each place. The result of the correlation analysis between local and global integration is shown in the table below (correlation analyses made in SPSS).

<table>
<thead>
<tr>
<th>Neighbourhood</th>
<th>R²-value for correlation: radius 2 &amp; 30</th>
<th>R²-value for correlation: radius 2 &amp; 50</th>
<th>R²-value for correlation: radius 6 &amp; 12</th>
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Table 5.3. Correlation between local and global integration.
Figure 5:41. The correlation between local and global integration for the eighteen neighbourhoods.

From the correlation analysis between local (R2 and R6) and global integration (R30 and R50) it is possible to see large differences when comparing the areas. These differences can, in a simple way, be neither related to when the areas are planned and built (that was indicated in the Södertälje study, Legeby 2010b, 120), nor to their proximity to the inner city. Areas with weak correlation, neighbourhoods with a significant disruption between the local and the global scale, are Gamla Östberga, Östberghöjden, Bagarmossen, Skarpnäck and Västertorp. Areas with strong correlation are Nytorget, Södra station/Swedenborgsgatan, Gubbängen and Hammarby Sjöstad – areas that are all close to (or even part of) the high integration core in Stockholm. In these areas the spatial properties are expected to potentially generate what Hillier calls multiplier effects (Hillier 1996, 174). However, in order to test such an assumption, one needs to capture the extent to which these places have the potential to attract for example both locals and non-locals. In this study this will be captured through establishing where people who visit these areas live and what kind of everyday activities may take place.

Figure 5:42. Correlation between local (R2) and global integration (R30).
An indication of the extent to which neighbourhoods are open to non-residents can also be illustrated by the pattern of the scatter plots for each area, in addition to the integration interface. In line with Hillier’s findings (1996, 170-175), a steeper regression line means that the most integrated lines within a neighbourhood are more locally than globally integrated; meaning that their local integration is intensified for their degree of global integration. The reason for this is, according to Hillier (1996), that such a local area has its heart linked to the supergrid lines that surround it by strong integrators and forms an edge-to-centre structure (Hillier 1996, 171). This implies that the sub-area is more spatially distinctive, while a less steep line implies that neighbourhoods are sets of smaller spaces related to the main grid but not forming a distinctive sub-area away from it. In the sample from Stockholm’s south, about a third of the neighbourhoods have a weak integration interface combined with less local than global integration: Östbergahöjden, Gamla Östberga, Skarpnäck, Bagarmossen and as a very local radii is analysed (r2) also Hökarängen, Västertorp and Rågsved demonstrate such properties. What may be concealed, however, if comparing only the strength of the correlation, is whether the integration values themselves are low or high: it could be a strong correlation even though both the local and the global values are low, which was also found in the Södertälje case (Legeby 2010b). In order to see how the different places are positioned in terms of high or low integration and in relation to each other, the maximum value of global integration at the square/centre is presented. The two inner city squares are the most integrated ones on the global scale, while Bredäng, Farsta, Östbergahöjden, Rågsved and Mälarhöjden are the least integrated squares. Thus, even if Farsta were found to have a rather high correlation between local and global integration, it is still a fact that the area is spatially segregated within the global system. To some extent this is also true for Bredäng, Rågsved and Mälarhöjden.
Figure 5.44. Diagrams for each area (scatter plots): correlation between local (R2) and global integration (R30).
The Södertälje study revealed a tendency of the integration interface decreasing as the areas were planned and built historically: the overlapping of scales was most prominent in the city core, but weaker in the more modern areas (Legeby 2010b, 120). However, there was no clear consistency in the relation between the strength of the correlation and when the area was built; areas designed according to the same urban model ideals were found to perform very differently in Södertälje. For example, the four Million Homes Programme areas did not consistently cluster together; neither did the areas from the 1940s and 1950s perform in a consistent way.

The same diagram, made for the eighteen areas in Stockholm, reveals that again the inner city areas prove to have a strong correlation between the local and global integration. And similarly to Södertälje, among those areas that are contemporary, the integration interface does not come out in a consistent way. Thus, it is not possible to simply argue that areas planned during the 1940s and 1950s acquire similar spatial characteristics in this respect. It is worth noting that even Gubbängen and Hökarängen – originally included in the same plan and only separated by a green field about 300 metres wide – turn out to be rather different in terms of their integration interface. This means, for example, that areas planned according to the neighbourhood unit planning ideals may have a lot in common when it comes to architectural appearances or historical characteristics, but one should not take for granted that they have similar spatial affordances; even though they share many features they may still be rather different from a performative perspective. Most likely this is because the architects involved have made their interpretations of the neighbourhood unit and in fact materialised such models into the built form in different ways. Hence, a conclusion from this analysis is that consciousness is needed when trying to pair a certain urban typology
with certain performative characteristics. It is important to acknowledge the contextual structure beside the internal structure.

Figure 5. Integration interface in relation to year of development.

**Density analysis**

Spatial accessibility is significant, but in this context it is also important to understand *what* and *how much* is accessible in terms of urban resources. Therefore, it is essential to take into account aspects of density that play a highly strategic role in all urban analysis. Beside the configurational analysis, density analyses are also performed; density in the sense of what is accessible in terms of people, working places etc. from different places *through* the street network within a certain metric radius. This kind of density analysis is, of course, highly influenced by, for example, what is found locally and what is found in the proximity (related to land use) and consequently, density is influenced by how urban space is structured and shaped (related to spatial distribution).

Density for an area may be captured and described in many different ways depending on the method chosen. As a result of a focus upon co-presence in public space, population density will here be described as the number of people that are within reach from every square or centre; i.e. the access to residential and/or working population (see for example Legeby 2010b). This method circumvents the difficulties described above using data that is aggregated on to large administrative units. By using the Place Syntax Tool it is possible to apply a so-called floating boundary for the catchment area and, in addition, to take into consideration what attractions are found within a certain distance (e.g. metric or topological) along the street network and is thus not limited to an analysis of the ‘straight line distance’.
In the Södertälje study, a strong correlation was found between people visible in the public space (measured as pedestrian flow) and the accessible population within one kilometre. The correlation (R) between pedestrian flow and the total population (both residential and working population) was 0.95 and the correlation with the working population only was 0.91, while it was considerable weaker between pedestrian flow and access to the residents, only 0.49 (Legeby 2010b, 195). As the pedestrian flow was compared to the accessible population within three axial lines, the correlation turned out to be even stronger. As a comparison, the correlation value (R) between the pedestrian flow and the number of residents living in the neighbourhood – defined according to the administrative subdivision – was only 0.25 (a non-significant value). The conclusion from this was that the size of the (accessible) working population is highly influential on the extent to which the urban public space is populated (Legeby 2010b).

Turning back to the Stockholm study, the first diagram illustrates the accessible population from each square/centre within a kilometre, reflecting about a ten minute walk. It is important to highlight that the two inner city squares are distinct to all other places located in the outer city: these two places boat values more than three times higher than the neighbourhood squares/centres in the outer city. This is a difference that most likely has a significant impact on co-presence in public spaces. Moreover, it is demonstrated that the accessible population from the two larger centres, Farsta and Skärholmen, is rather similar compared with any of the other squares or centres in the outer city. This means that in this respect, these two areas do not have better preconditions facilitating the function as a regional centre than many of the other squares/centres. This indicates that these two centres are highly dependent on a high inflow of people travelling from rather remote places, for example either by subway, bus or by car.

![Accessible population within 1000 m](image)

*Figure 5:47. Accessible residential and working population within 1 000 metres from the squares/centres.*
Figure 5:48 illustrates sixteen of the centres (the two inner city places excluded) and the relation between access to residents compared to access to a working population (or workplaces). This is highlighted as the access to a working population is suggested to have great influence on the street life, especially during day time. Places with higher access to a working population, the ones found in the upper part, are likely to have a more intense urban life. It is also possible to read this diagram diagonally from the lower left to the upper right to understand access to the total population, but at the same time note the relation between what is suggested to be locals and non-locals (compare also with the diagram above). Three of the areas form a cluster at the top: Farsta, Hammarby Sjöstad and Aspudden, having high access to the total population. Mälarhöjden comes out as the least dense neighbourhood within the sample. Östberghöjden, Gamla Östberga, Gubbängen and Bredäng also have low densities. The analysis of density is summarised in the table and figures below.

<table>
<thead>
<tr>
<th>Square/Centre</th>
<th>Neighbourhood</th>
<th>Residents within 500 m</th>
<th>Residents within 1000 m</th>
<th>Working pop. within 500 m</th>
<th>Working pop. within 1000 m</th>
<th>Total population within 500 m</th>
<th>Total population within 1000 m</th>
<th>Workers/residents within 1000 m</th>
</tr>
</thead>
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<tr>
<td>Erik Segersälls v. Aspudden</td>
<td>4383</td>
<td>14067</td>
<td>358</td>
<td>2789</td>
<td>4741</td>
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<td>906</td>
<td>4481</td>
<td>11854</td>
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<td>9921</td>
<td>537</td>
<td>1543</td>
<td>3878</td>
<td>11464</td>
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</tr>
<tr>
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<td>612</td>
<td>1025</td>
<td>4655</td>
<td>10490</td>
<td>0.11</td>
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<td>Farsta torg Farsta</td>
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<td>11012</td>
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<td>1524</td>
<td>3422</td>
<td>11088</td>
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<tr>
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<td>671</td>
<td>1484</td>
<td>6242</td>
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<td>17638</td>
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<td>19393</td>
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<td>1950</td>
<td>3815</td>
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Table 5:4. Access to residents and working people from the square/centre within walking distance through the street network.
In order to illustrate how the pattern of population density relates to the spatial structure, the density map is superimposed upon the betweenness map. From this illustration it is possible to see that many of the important links in the outer city are separated from where high population density is found; there is a mismatch between high concentrations of people and spatial centrality measured as betweenness. This indicates that traverse circulation is not encouraged where high concentration of people is found. It is also unlikely that non-locals ‘pass by’ such concentrations, meaning that it is unlikely that non-locals become part of the residents’ everyday routines carried out locally. Quite the converse, circulation is directed away from many densely populated clusters.
Figure 5:50. Accessible residential and working population within 500 metres from every address point superimposed on the choice analysis.

Summary: spatial analysis
The configurational analysis of Stockholm showed an asymmetric shape of the centrality core. A stretch of high integration goes from the inner city towards the south and one stretch heads to the south-west. The area in-between these stretches is characterised by spatial segregation and there are few strong connections going in an east-west direction. This is partly confirmed by the betweenness analysis that revealed a relatively tight weave of important links in the inner city and to some extent towards the south while this weave takes a much looser character to the
southwest. Two conclusions may be drawn from the analysis of spatial reach; first, when defining the boundary of an area, the configurative perspective needs to be taken into account and the possible mismatch in relation to the administrative boundary needs to be acknowledged, i.e. the difference between 'conceived' and 'perceived' space. Second, the potential impact the context has on an area is likely to vary considerably as a result of the size and the shape of the area of reach, thus, it is argued that a focus on the contextual structure and how the locals relate to its context is essential to elucidate the social implications of the built environment.

The analysis of the integration interface revealed large differences in respect of the configurative preconditions and more importantly, that the performance of a neighbourhood cannot be easily understood drawing only from its architectural appearances or historical characteristics. This means that even if neighbourhoods are planned according to the same urban model and have similar architectural appearances, they may still be rather different in terms of their spatial affordances and in their performance. This call for consciousness, and also analysis of local areas, needs to take into account the contextual influence and the configurational properties if the performance from a social point of view is to be disclosed.

Taken together, the results reveal great differences between the neighbourhoods which are argued to have great impact on those who live in or visit the areas. Not only are the inner city and the outer city found to have rather different spatial characteristics, more importantly, the spatial differences between neighbourhoods in the outer city as they are compared turn out to be significant. A conclusion from the configurative analysis is that spatial centrality or continuity is highly dependent on the spatial context and therefore such conditions are, to a large degree, also influenced by remote changes beside modifications at the local level. This is an important finding to highlight, especially within the urban design field. How often do we find normative rules and urban models that proclaim that one kind of principle or spatial order is argued to perform in various ways, irrespective of the conditions in the surrounding environment? What this analysis proves is that how an area is designed on a local level only has a limited effect on how it will perform in a ‘real’ situation; to be able to understand its performance, the properties of that specific urban context also need to be elucidated and understood.

To exemplify, Jacobs’ (1961) four ‘rules’ for how to plan for a diverse city illustrate why the local order needs to be understood in a wider context. Jacobs argued that a mix of primary uses, small blocks, aged buildings and concentration were essential ingredients in creating a diverse
city. Drawing from the empirical result we can argue that such principles if applied too locally would still fail to perform as intended if the context had a deviating spatial logic rather than a specific area. Hence, much to all urban designers’ chagrin the ‘reality’ appears to be much more complex than what simplified urban models suggest; it is necessary to understand how local areas interplay with their further surroundings. As a precondition for increasing the understanding of this urban complexity, architects and urban designers need to more carefully study the object at hand, namely the city and acknowledge it as a system or a network. Too locally applied principles will hardly fulfil the intended outcomes if the surrounding built environment lacks a similar spatial logic: there might be a mismatch of spatial performances that may, in some situations, prove counterproductive. To conclude, the strong impact that the context has on local conditions is an important lesson to learn, especially in light of the strong area-based focus found in many anti-segregation initiatives.
5.3 Social analysis: patterns of co-presence

From a residential perspective, Stockholm is described as segregated, but is the city also segregated when it comes to how people use public space and carry out everyday activities? To what extent do people experience places that are not in the vicinity of their homes and to what extent can a local place encourage an inflow of non-locals affecting the character of urban life? The aim of this specific analysis is to provide social data that can be linked to the above presented spatial data and through that process, link social practice and social consequences to urban form and different configurational properties.

In the previous section it was showed that the sample of areas studied acquired rather different configurative preconditions and characters. Now we proceed to analyse co-presence in different public spaces in the different areas as a way to capture the local affordances. The first analysis is a study of co-present situations at eighteen squares and centres in Stockholm’s south, focusing on the intensity and the extent of the mixing of people from different parts of the city. The second analysis is an investigation into access to work places and other aspects argued to be important for opportunities in the labour market. The third analysis is an investigation into the mix at different schools in the south of Stockholm according to where the pupils live, trying to establish what kind of social arena schools may form. The fourth analysis investigates the co-present situation at public libraries in five of the areas, also in this case to study the potential that libraries have to become a social arena. For each of these studies, correlation analysis is carried out: the outcomes of the social analysis are studied in relation to the outcomes of the spatial analysis with the aim of establishing possible socio-spatial relationships and correspondences.
Co-presence in public space

The study of co-presence in public space is suggested to reveal patterns of segregation as expressed in urban space. The result of the analysis will be used to increase the understanding of how the spatial layout of the areas affects the intensity of co-presence on the one hand and the constitution of co-presence on the other. The intensity is argued to be crucial to capture because the number of people that are co-present influences the ‘situation’ if referring to Goffman (1963) or influences the dynamic density if referring to the Durkheimian expression and, as such, has importance for social processes (unfolded in Chapter 2). Focus will be upon analysing the potential for an inflow of non-locals to various areas since constitution has been argued to have relevance for segregation. It needs to be highlighted that most public spaces in the outer city are dominated by residents, even at the neighbourhood square/centre, which makes it relevant to focus more explicitly on the inflow of non-locals.

Eighteen different squares and centres in the Stockholm’s south are included in the study. Intensity is captured through observations of pedestrian flows (N=325 gates) and through observations of momentary intensity, that is how many people are co-present at a square at the same time (N=180). Constitution is captured through interviews at the sites according to a questionnaire (N=2224). It needs to be highlighted that the questionnaire does not necessarily capture the constitution of simultaneously co-present people, rather, it captures constitution of people who visit the square/centre at some point during a day. Such mapping makes it possible to increase the understanding of who potentially may share public spaces and how this varies from place to place across the city. There is also a descriptive purpose, illustrating the character of the urban life at each place through the people who are there, why they are there, for how long they stay etc. This captures to some extent how resources are made available at the local level: what amenities are found just around the corner in different neighbourhoods? From an urban segregation perspective, this is an important condition to identify, especially if it can be proved that urban form has an impact on such outcomes.

With whom may we share spaces?
From the results of the questionnaires it is possible to describe and better understand the characteristics of co-presence at each place. The results are analysed in a descriptive manner and a comparison between squares and centres are made. By describing the outcome of the questionnaires, several aspects of the character of urban life are captured.
**Who’s there and why?**

The distribution of age is aggregated into six different groups, starting from seven years old. The result shows that people aging between 25 and 44 are well represented at all eighteen places. Five of the squares/centres have a younger profile: Bredängstorget, Östberga torg, Rågsvedstorget, Skärholmstorget and Skarpnäck. Areas that have many different ages represented are Farsta torg, Gamla Östberga, Gubbängstorget and Mälarhöjden. Areas with a large share in the groups of elder people (i.e. 65-74 and 74+) are Hökarängen and Västertorp. From information gathered while conducting the interviews, it was found that there were surprisingly high numbers of people who were over 90 years old at some of the squares/centres, for example Bagarmossen, Hammarbyhöjden and Västertorp. During conversations with these people it was found that many had lived in the same geographical area for a very long time. Some even lived in the same apartment since the neighbourhood once was built, while some had moved as their family situation had changed, either they had moved to a larger or a smaller apartment and sometimes they had moved in order to live in an apartment where the building had a lift. These people often mentioned the decline in services as a problem, arguing that the supply of available goods and services was much richer ‘in the old days’.

The distribution between men and women among the informants was fairly, even if most squares have predominance of women. From the notes that the interviewers were asked to take, it was reported that Skärholmen actually had a slight predominance of men, even if this was not reflected in the questionnaires because here the interviewer made an effort to try to also question women (that means that the selection was not random in this respect).

By analysing why people had come to the square, it is possible to both understand the diversity of activities that may take place and it partly illustrates what kind of meeting place the square or the centre could potentially be. In a way this captures to what extent these places encourage single or multi-purpose use. The purposes asked for were: if people lived and/or worked in the neighbourhood, if they came to shop, visit health care services, meet friends or ‘other’. In the category ‘other’ people reported, for example, that they went to school in the area. The squares/centres may be grouped and characterised as follows:

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15 In one case an informant did not agree to any of the group of ‘man’ or ‘women’, a fact that needs to be taken into consideration in future studies, maybe an additional alternative is needed to cover this group.
• At Östberga torg, Gamla Östberga, Västertorpsplan, Gubbängstorget, Lagaplan in Bagarmossen, Finn Malmgrens Plan in Hammarbyhöjden and Lugnets allé in Hammarby Sjöstad a large share of those co-present were residents and were also shopping within that area. Also Mälarenhöjden, Bredäng, Björkhagen and Aspudden, fall under this description even though this group (i.e. live in the area and shop in the area) was less dominant here.

• The three squares/centres Skärholmstorget, Farsta torg and Hökarrängsplan had people who came to shop and the share of non-locals was high. That Farsta and Skärholmen were found in this group was expected, but that shopping was the primary reason for people who were at Hökarrängsplan and that the place attracted a rather large share of non-residents was more of a surprise. This could be explained by the fact that Hökarrängen is easily accessible from many of the larger transportation routes.

• The two inner city squares, Nytorget and Swedenborgsgatan in Södra Stationsområdet, were distinct from other areas within the sample in that there was a greater inflow of non-locals and that people were here for many different purposes. The alternative ‘other’ was well represented and people at Nytorget were, for example, reporting that they visited the park or the playground or were walking the dog, while at Swedenborgsgatan ‘other’ was related to public transportation: about a third reported that they changed from one transportation mode to another.

• Finally, Skarpnäck was in a way a kind of its own, since a large share of the informants reported that they live in the area and only to a very limited extent reported other purposes beside that.

Another factor that strongly influences the character of the urban life and also influences what kind of social processes that might emerge was how frequently people visit the place and for how long they stay. Situations where people came rarely or where people only stopped by for less than quarter of an hour, the conditions for developing different kinds of social networks appear to be comparatively poor.

Starting with visit intervals, it was found that as many as fifteen of the areas have people that visited these places on a daily basis. This indicates that the crowd at these places has a potential to meet regularly and frequently. This result links well to what was described in the theory chapter that our everyday practices are routinised to a high degree (Giddens 1984). However, three of the places, Skärholmstorget, Farsta torg and
Nytorget, have another distribution: the daily visitors are not dominant even though they still amount to about a third. Instead, those who come more rarely – once a month or once a week – are well represented. That Skärholmen and Farsta are places with a large proportion of shoppers was not a surprise as they constitute major shopping centres. At Nytorget the recreational purpose was important, e.g. visiting the playground.

When studying the length of the visit, three different categories appeared. The first category was the ‘quick-visit-place’, where people were passing through or only made shorter visits (including ‘passing’ or a stay less than 30 minutes) e.g. Skarpnäck, Rågsved, Mälarparken, Aspudden and Södra station/Swedenborgsgatan. The second category was the ‘stay-for-a-while-place’, dominated by those who stay one to two hours, including Skärholmen and Farsta. The third category was the ‘mixed-visits-place’ where there was a rather even distribution between shorter and longer stays was found: in Östbergahöjd, Gamla Östberga, Björkhagen, Hammarby Sjöstad, Hammarbyhöjden, Bagarmossen, Högkällan, Gubbängen, Bredäng and Nytorget, of which the former three still had a predominance of shorter visits but where rather many stayed ‘all day’ which distinguished these places from for example the ‘quick-visit-place’.

One effect of frequently sharing a public space is that people over time may recognise each other. Informants were asked about how familiar or how anonymous the crowd was to one another. In three places people reported that they recognised others to a large extent (the alternatives ‘most’ and ‘many’ were well represented), namely Björkhagen, Bredäng and Östbergahöjden. These places have a rather large proportion of residents among those who were co-present and a large share of the visitors came on a daily basis. Places where many of the respondents instead reported that they recognise only ‘a few’ or ‘none’ were Nytorget and Södra station/Swedenborgsgatan, together with the two larger centres Skärholmen and Farsta. But also Aspudden, Mälarparken, Rågsved and Hammarby Sjöstad prove to have a similar situation.

The crowded familiarity and the frequency of visits raises questions about what kind of solidarity these different preconditions may be related to. Co-presence in itself is no guarantee for the emergence of a sense of community or the building of urban social networks. As Collins (2004) argues, co-presence is a necessary but not sufficient ingredient for interaction rituals; other conditions play a role in this context as well. In addition, Nytorget and Södra station may have a similar share of non-locals (see below) but at the same time, since a lot of people are only passing by in Södra station, it is unlikely to support ‘crowd familiarity’, since they are co-present only during a very short period of time.
The mix of locals and non-locals

The most central aspect studied in relation to the overarching aim of this thesis was to establish to what extent the square/centre constituted an social arena for the residents or if the place also constituted an arena for an exchange between neighbourhoods across the city: if the place attracted both locals and non-locals. The constitution among co-present people has relevance for issues related to urban segregation. How large a share of the co-present people were locals and how large a share were non-locals?

Many of the squares/centres in the outer city are described as local neighbourhood centres (compare Olsson et al. 2004). But in what sense may these squares be characterised as local? Arguably there is a lack of thorough studies of the constitution of the visitors at these suburban centres that can establish to what degree they are facilitating an urban space for the local population only or if they facilitate an urban space for people from many different parts of the city to encounter. Here it is established the extent to which centres in the south of Stockholm attract local visitors and non-local visitors. A local resident is defined as a person living about a ten minute walk from the square or centre, i.e. defined as 1 000 metres’ walking distance along the street/pathway network. From the analysis of the constitution of co-present people according to where people live, it becomes possible to study the reach of a certain place (similar to ‘allrummets räckvidd’ according to Hägerstrand 2009).

Östbergahöjden was the place within the sample that has the highest share of local residents; only a fifth of the informants lived more than 1 000 metres from the square or centre. The opposite relation was found at Skärholmen, the area with most non-locals and where only a fifth lived within 1 000 metres from the square. Also the inner city places – Nytorget and Södra Station/Swedenborgsgatan – had rather high proportion of non-locals, 61% and 59% respectively. Also worth noting is that some of the centres in neighbourhoods developed along the subway line during the 1940s and 1950s and designed according to the same urban design principles (e.g. ‘smalhusstad’ according to Stockholms Byggnadsordning), were found to have rather different characteristics regarding the aspect of localness: at Lagaplan in Bagarmossen 76% were locals, Björkhagen 63%, Gubbängen 57% and Hökarängen 55%.
Establishing the percentiles of 0.25, 0.50 and 0.75 of the distance between the square and the home addresses illustrates that most areas were populated with people who lived relatively close to the squares or centres (see table 5:5 and figure 5:51-52). At almost half of the squares, as much as 75% of the visitors lived within about 2,000 metres. Only four of the squares/centres were found to have a large part of their co-present people living at greater distances from the squares (more than 8,000 metres away), namely the two inner city places along with the two larger centres. Another point of interest is that Södra station/Swedenborgsgatan had a rather local population after all, since the 50 percentile equals 1,665 metres. Combining this information with previous information regarding purpose of visit and frequency, it is likely that the public transportation node (including commuter train, subway and busses) is what primarily attracts non-locals to this place. This indicates that land-use programming is highly influential and that certain kinds of land uses can override other factors such as spatial configuration to some extent, for example, without a train station as an attractor it is likely that Swedenborgsgatan would be dominated by local residents to a much higher degree.
The corresponding figure for distance to visitors’ home addresses measured in axial turns shows a similar situation with many places having half of their co-present people from a relatively local area. The four areas that stand out from the sample in terms of metric distance also prove to have remote visitors according to axial step distance. However, three other areas also host visitors who live far away according to the axial analysis, namely Bredäng, Hammarby Sjöstad and Hökarängen.

Comparing the diagrams of metric and axial distance, it is illustrated how the metric and the axial distances diverge. In Bredäng for example, there is a larger increase in distance according to the axial step than the metric distance, indicating that this area has a larger depth (i.e. more axial lines/turns are needed to reach the same metric distance) in comparison to the other places. In addition, it needs to be highlighted that in many areas a metric distance of 1 000 metres corresponds to as much as ten axial turns, a phenomenon primarily true for places in the outer city. This means that these places were configuratively more deeply positioned than others. An analysis of the mean length of the axial lines that surrounds these squares (a radius of 500 metres) confirmed these differences. Starting with the number of lines, the result showed large differences within the sample: between about 100 to just above 200 lines. A large variation was found when analysing the mean length: from 102 metres to 255 metres. Around
Nytorget for example, the mean length of a line was more than double that of many of the other places. The length of an axial line relates to the size of urban spaces which has consequences for how people in public space may be visible to each other. For example, people who move will be co-present for a longer time to each other when moving along longer spaces/streets (longer axial lines) than in systems built up by smaller spaces (shorter axial lines). However, at longer distances it is, of course, difficult to be aware of individuals, but it is still possible to perceive how crowded a street is even if many people are at longer distances. In areas with many small spaces (identified by shorter lines) moving people will spend less time in each space (or along each axial line). This fact, in combination with the fact that there is a much lower population density (e.g. accessible population), speaks for significantly less populated urban spaces. Again, co-absence appears to be more relevant to discuss than co-presence in some of these areas.

<table>
<thead>
<tr>
<th>Square/centre</th>
<th>no. of lines</th>
<th>mean length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mälarrödön</td>
<td>216</td>
<td>102</td>
</tr>
<tr>
<td>Rågsved</td>
<td>279</td>
<td>107</td>
</tr>
<tr>
<td>Västerort</td>
<td>215</td>
<td>118</td>
</tr>
<tr>
<td>Bredäng</td>
<td>227</td>
<td>123</td>
</tr>
<tr>
<td>Björkhagen</td>
<td>198</td>
<td>124</td>
</tr>
<tr>
<td>Hammarbyhöjdön</td>
<td>205</td>
<td>131</td>
</tr>
<tr>
<td>Östbergahöjdön</td>
<td>203</td>
<td>134</td>
</tr>
<tr>
<td>Skärholmen</td>
<td>178</td>
<td>139</td>
</tr>
<tr>
<td>Farsta</td>
<td>205</td>
<td>148</td>
</tr>
<tr>
<td>Gamla Östberga</td>
<td>167</td>
<td>150</td>
</tr>
<tr>
<td>Aspudden</td>
<td>189</td>
<td>153</td>
</tr>
<tr>
<td>Bagarmossen</td>
<td>208</td>
<td>159</td>
</tr>
<tr>
<td>Hökarängen</td>
<td>176</td>
<td>162</td>
</tr>
<tr>
<td>Gubbängen</td>
<td>147</td>
<td>168</td>
</tr>
<tr>
<td>Hammarby Sjöstad</td>
<td>144</td>
<td>171</td>
</tr>
<tr>
<td>Skarpnäck</td>
<td>175</td>
<td>179</td>
</tr>
<tr>
<td>Södra station</td>
<td>156</td>
<td>213</td>
</tr>
<tr>
<td>Nytorget</td>
<td>106</td>
<td>255</td>
</tr>
</tbody>
</table>

Table 5.6. The number of lines and mean length within a radius of 500 metres from each square/centre.
**The social area of reach**

Having discussed the reach of co-present people in terms of metric and topological distance, we now turn to analyse in what direction the people who share space at the neighbourhood squares/centres live. In the Södertälje case it was found that not only the distance of the reach varied, but also the directions or the shape of the catchment area (Legeby & Marcus 2011; Hassanzadeh Khansari 2010). By plotting the home addresses for those who were co-present it was found that the patterns of some places had indeed a manifest direction for their catchment areas (some of the points are placed outside of the scope of the map, for example people living in other cities and countries, but the majority are visible). From the integration analysis we learned that Stockholm’s south is divided in two ‘high centrality tails’ with very few connections going in an east-west direction between them. This is to some extent in concordance with how the public transportation lines are structured. Does this pattern also coincide with visitors’ addresses?

The result demonstrates that the shape of the social area of reach for some places has a direction that follows either the integration pattern and/or the subway line pattern while such a pattern is not salient for other squares/centres. Starting with the western part, it is possible to see that Skärholmen has a catchment pattern that clearly overlaps with how the subway runs: the scatter has a very distinct direction going from north-east to south-west. This reveals that Skärholmen as an attractor is highly dependent on the subway (in spite of its generous parking facilities). Hence, about forty years after its opening, most visitors live along the subway line and very few live in other directions. Bredäng, only two subway stops from Skärholmen, has in comparison a more local catchment area but also here the pattern follows the subway line. A similar pattern is evident for Mälarparken and Aspudden located along the same line. Studying these areas as a group, it is likely that an exchange between these areas is facilitated, but not with areas located to the east and to the south.
Figure 5:54. The location of the visitors’ home addresses plotted for each square.
At the squares/centres located along the subway line going to the south-east, the pattern of social reach does not clearly overlap the location of the subway; thus, it is not possible to ‘guess’ the location of the subway line only from looking at the scattered dots (as in the previous example). These areas are also closer to the strip of high centrality (i.e. high integration) going in a north-south direction. It is worth noting that many of the visitors to Bagarmossen and Björkhagen have their home address in the direction of the inner city while Hammarbyhöjden and Skarpnäck lack such a concentration of the visitors’ addresses, instead they are more spread out: the address dots of Hammarbyhöjden are placed within a 180 degree sector west of the area and the address dots of Skarpnäck are concentrated to a 90 degree sector running north-west. None of the four areas have very few or none of their visitors living east of them. It is also found that where people live, the social area of reach, coincides to a large degree with the spatial area of reach, especially in the outer city.

Figure 5:55. Black dots illustrate the visitors’ home addresses for Nytorget, Bredängstorget, Rågsvedstorget, Östbergatorget and Lagaplan, superimposed on the configurative area of reach.
The middle branch of the subway line going south passes Gubbängen, Hökarängen and Farsta and these places have their address dots spread in sectors of about 250 degrees, where the ‘empty’ sector is towards the south or south-west. Both Gubbängen and Hökarängen are located within the high-integration-strip that, however, does not reach all the way to Farsta. In spite of this, Farsta has a large area of reach. This indicates that the programmed land use, i.e. as a regional (shopping) centre, has a strong power of attraction that overrules the configurative preconditions. This is confirmed by the large percentages using public transportation and cars among the visitors. Rågsved with its very limited area of social reach, 75% of its visitors live within 975 metres, has its more remote visitors’ home addresses distributed evenly in all directions.

Östbergahöjden and Gamla Östberga are not connected to the subway or the tram. These squares prove to attract very few non-locals and they may be characterised as very local. Apart from the low inflow of non-locals it needs to be highlighted how limited the exchange between these two areas is in spite of their proximity. Geographically the areas are close, but the map of the spatial area of reach tells another story: the inter-accessibility is impaired. From informal discussions at site it was revealed that people living and working here talked about two very different identities of the areas (indicating a hierarchy), a difference that some people were keen to maintain. Since the two areas are spatially weakly integrated and that their spatial areas of reach overlap to a limited extent, it is suggested that the configurative properties support and reproduce the different identities and thus hierarchical social order. Partly, the social networks are being reproduced as a result of people not visiting the ‘other’ area and not sharing space with residents from the neighbouring area.

Figure 5:56. Limited exchange at squares in Östberga: orange dots illustrate addresses of co-present people at Gamla Östberga and the blue dots the addresses of co-present people at Östbergahöjden.

Figure 5:57. Spatial area of reach: Östbergahöjden (left) and Gamla Östberga (right).
Locals and non-locals in combination with income levels

Whether a mix of locals and non-locals also means a diversity of socio-economic backgrounds is, of course, more difficult to prove, at least with the data available within this study. An attempt to establish if a higher inflow of non-locals also means a contribution of diversity is tested here through the analysis of diversity according to socio-economic aspects. Information of the median income level found in the base area where the visitors report that they live is added (income levels from 2009, TMR). The analysis that identifies the income level among the co-present people (i.e. in the area where they live) is believed to reveal the potential mix of people from a socio-economical perspective. The thematic maps illustrate income levels in Stockholm, on the block level as well as on the base area level.

Figure 5:58. Median income levels on block level. The 18 squares as red dots.

Figure 5:59. Median income levels on base area level. The 18 squares as points.
The diagram below shows on the x-axis the distance from the square to where a visitor lives (metric distance) and on the y-axis the median income is defined in the area where they live. The median income level for the area where the square/centre is located is marked as a dotted line. The diagrams reveal the diversity found at a square/centre according to income levels among those who were co-present. Since places with a low inflow will have a limited diversity, it is possible to see how dependent places are on the inflow, argued to be especially important in areas with low income levels, e.g. Rågsved, Skärholmen, Östbergahöjden, Gamla Östberga, Bagarmossen, Bredäng, Farsta and Hökarängen. In these areas it is found that the level of inflow is significantly influential on the diversity of income levels available at the square/centre. The two regional centres, Skärholmen and Farsta, attract people with a large variation of income levels. Even those living in areas with low income levels travel a long distance to get to these places. This is especially prominent in Skärholmen. This tendency is also true for Bredäng. One area that diverges from other areas is Södra Station since most visitors come from areas with lower income levels than found at Swedenborgsgatan (even though the median income here is high). This means that the area attracts very few people living where the median income level is high; nevertheless, the inflow of non-residents contributes to a more diverse co-present situation. Other places located in areas where there is a high income level (>300 000 SEK/year) are Mälarhöjden and Hammarby Sjöstad. The inflow of non-locals to these areas results in an increase of the diversity according to income levels, especially in Hammarby Sjöstad. It means that the visitors to these areas live in areas with different income levels. It could also be noted that non-locals in Aspudden, with a similar median income to Nytorget live closer in comparison and they come from areas with lower income compared with the non-locals found in Nytorget. Hence, the diversity in respect of having different income levels represented can be said to be higher in Nytorget than at the square/centre in Aspudden. To conclude, the empirical study illustrated that a higher share of non-locals implied that the diversity increased.

16 More detailed information is available for Stockholm Municipality, but since a large share of the residents come from neighbouring municipalities, the more aggregated data for base areas has been regarded as more relevant.

17 Ten out of eighteen squares/centers are located clearly within one so-called base area. Eight of the squares are, however, located at the border between two (or three) administrative areas and for these areas a mean value is calculated (based on the median values) that is represented by the red line; Södra station, Skarpnäck, Hökarängen, Farsta, Rågsved, Gamla Östberga, Mälarhöjden and Skärholmen.
Figure 5.60. Diagrams illustrating median income levels in the area where visitors come from in relation to how far away they live from the square/centre. The red line represents the median income in the area where the square/centre is located.
How to get there?

In the questionnaire people reported which mode of transportation they used to get to the square/centre. Walking was the most commonly reported mode of transportation. At five squares/centres, more than 60% of the informants reported that they came by foot: Nytorget, Hammarby Sjöstad, Västertorp, Rågsved and Östbergahöjden. As far as Rågsved, Östbergahöjden and Västertorp are concerned, this probably had to do with the fact that many of the visitors lived very close to the square (Nytorget making an exception).

Public transportation was the second most common transportation alternative: subway, bus, tram or commuter train. That public transportation was used by such a large proportion indicated that the transportation system in itself most likely constitutes an important space for encounters across the city. The places that are close to a subway station had a large share of people using the subway, except from Rågsved with only 3%. Areas with a lower share of people who use public transportation were Hammarby Sjöstad, Rågsved, Västertorp, Nytorget, Östbergahöjden and Gamla Östbergahöjden. The latter two having no subway station close to the squares. Hammarby Sjöstad is not connected to the subway but is served by the tram. The closest subway station from Nytorget is about 600 metres away, but there are several bus routes with stops in the vicinity. Noteworthy too is that in spite of the fact that Rågsved torg is connected to the subway, only 3% used it, whereas 22% came by bus.

At the two larger shopping centres, Farsta (with 1 500 parking spaces) and Skärholmen (3 000 parking spaces), only about a quarter walked. Instead, half of the visitors at Skärholmstorg and a third at Farsta torg used the subway and about a fifth (18%) came by car to Skärholmstorg and 26% to Farsta (i.e. the highest share within the sample). The use of cars was however low in general. Eleven of the places had less than 10% car users. Four places had a higher share: Västertorp (13%), Gubbängen, (15%), Hökarängen (17%) and Gamla Österberg (23%), an area not connected to the subway system. Many of the co-present people in Gamla Östberga came by car and lived in the adjacent villa areas.

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20 Many visitors in Gamla Österberg who lived in the adjacent villa area came to collect packages sent by mail, a service that at the time of the field study was found in the grocery store at the square. It is likely that this (i.e. the programming of the land use) had an effect on the constitution of co-present people at the square.
inner city areas, along with Bagarmossen, had the lowest shares of car users among the co-present people, only 3-4%.

When it comes to cycling, the greatest proportion of cyclists at 14% were at Björkhagen. At the other places the share that had cycled did not exceed about 10%. Fewest bikers were found in Bredäng, Skärholmen, Skarpnäck and Rågsved (only 1-2%).

In an international comparison (Western world) it appears that the use of car is relatively low in Stockholm while the use of public transportation is high, as is walking. In walkability studies it is argued that walking and bicycling are far more common in Europe than in North America and that this holds also for public transit that normally requires walking and/or biking to reach the transit stop (Basset et al. 2008). In a comparison made in 1995 it was found that the proportion of trips made by walking and biking was 39% in Sweden, 16% in England and Wales and only 7% in the US, while the Netherlands reported as much as 46% (Pucher & Dijkstra 2003).

Observations of intensity

The level of intensity is important for the kind of social interaction that may take place; the co-present situation may be characterised by low or high intensity (Collins 2004). This analysis aims to first establish the intensity at the squares/centres argued to represent the most intense places in each neighbourhood, second, establish what might be defined as ‘crowded’ or ‘quiet’ in the context of Stockholm. In the previous paragraph, density was estimated through an analysis of the access to residents and to the working population, a kind of potential intensity that each place holds. Now intensity will be established through direct observations of everyday practices at these places. Two methods are applied: the first captures intensity through the observation of pedestrian flows.21 In total there are 325 gates for pedestrian flow observations in the eighteen areas; the flow was counted three times a day and the direction was noted. Gates for observations were located at the squares/centres and at paths and streets in the vicinity (not more than about 500 metres away). The second observation captured a so called momentary intensity, counting all co-present people within a four minute period.22 When analysing co-

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21 These observations have been carried out by Matilde Kautsky, Ivar Forrs and Ann Legeby.
22 All co-present people at the square/centre are first calculated and then everyone who enters the square (from all directions) within the time period is added. People who might leave the square during this limited time period are not noted.
present situations it was crucial to capture both ‘flows’ and ‘staying’ at a site, emphasised by Koch (2007) who argues that there is an intricate play between movement and being and that analysing ‘movement densities’ will not necessarily include analysis of ‘being’ as much as space syntax research assumes (Koch 2007, 285).

Intensity as pedestrian flow

Analysis of the pedestrian flows reveals large differences in intensity when areas are compared. Highest flows (median value) are found in the two larger centres Farsta (490 pedestrians/hour) and Skärholmen (224 pedestrians/hour) together with the inner city areas, Södra Station (348 pedestrians/hour) and Nytorget (186 pedestrians/hour). These areas also hold the highest share of non-locals (between 59-83%); hence, the areas are characterised by both high intensity and a high inflow of non-locals. Areas with low pedestrian flows are Östbergahöjden and Gamla Östberga and these areas have the lowest influx of non-locals (19% and 22% respectively). This proves that there is a correspondence between pedestrian flows and non-locals in public space. Thus, a situation with low intensity but a high share of non-locals is not likely to be expected. Moreover, in light of earlier studies where accessible residents correlated weakly with intensity in public space (while the correlation was stronger with the working population) it is likely that high movement flows are also dependent on a high inflow of non-locals. Therefore the residents themselves cannot be expected to create ‘crowded’ places to any higher degree. An inflow of non-locals is thus supporting the emergence of high-intensity situations. That Södra station/Swedenborgsgatan has high pedestrian flows can partly be explained as a result of the station for commuter trains. Gates not directly connected to the station prove to have considerably lower values and are more similar, or even lower, to what is found around Nytorget. Again, the impact of programmed land use proves to be important. Even though intensity is high in Skärholmen and Farsta, it needs to be pointed out that this intensity appears to be highly concentrated around the square. Gates only a short distance away from the square have considerably fewer pedestrians, meaning that intensity decreases rapidly with distance from the square. Hence, the impact of a programmed attractor (e.g. shopping mall or train station) appears to be strongly concentrated geographically and its influence on the neighbourhood at large appears to be limited, the effect can be described as very local.

Areas where lower flows are recorded, less than 100 people/hour as their median values, are Mälarhöjden, Västertorp, Bredäng, Rågsved,
Skarpnäck and the least intense areas in this respect are Gamla Östberga (30 pedestrians/hour) and Östbergahöjden (24 pedestrians/hour). These areas also have among the lowest population density at a local level.

**Pedestrian flow per hour (median value)**

![Figure 5:61. Median values for pedestrian flow (all gates).](image)

**Intensity as momentary intensity**

The analysis of the intensity of co-presence at the squares/centres varies considerably among the places compared. The busiest place, Skärholmstorget, had about 320 people simultaneously at the square and the least intense place only 15 people. At Skärholmstorget the main entrances to the shopping mall as well as the subway entrance are located at the square and there are two highly integrated paths that pass the open public space. Previous results that showed the different lengths of the visits represented at this square, with only 10% were ‘passing by’, demonstrate that the high intensity is in this case also paired with a low turnover. An opposite example is Södra station that is very much influenced by how people arrive on (or head for) public transportation, especially salient during rush hours. As many as two thirds of the co-present people were only passing and 80% stayed less than half an hour, which implies that the street life is arguably characterised by both a hectic tempo and a high turnover of people.

Bredängstorget, Farsta torg and Södra Station/Swedenborgsgatan are relatively intense places while places that stand out for having a low intensity in this respect are Gamla Östberga and Östbergahöjden. These places also had a large share of people who were only passing by (more than 40%). Mälarhöjden and Björkhagen are places with low intensity according to the momentary intensity analysis and these two places

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23 Two different levels are studied in Östberga, first the lower level that is separated from car traffic (i.e. Östberga torg) and the upper level adjacent to this where the bus stop is.
have even higher shares of passers-by, 73% at Mälarhöjden and 48% at Björkhagen, affecting the character of the street life. Adding the categories of passers-by and those who stay about half an hour, the combined shares are as much as 94% at Mälarhöjden and 70% at Björkhagen.

These different examples of low intensity places combined with behaviour where people stay for very short periods proves that many of the studied places in the outer city are characterised by co-absence rather than co-presence. From the result it can also be concluded that there is no simple relation between movement densities and densities of being. If one wants to increase the understanding of the preconditions for public culture and increase the understanding of what resources are available locally, analysing pedestrian flows will not be sufficient. It is argued that one also needs to acknowledge other aspects such as ‘being’ – the length of visits is important for the multi-purpose activities which, in turn, are of social significance.

![Momentary intensity](image)

**Figure 5:62. Mean values of momentary intensity (no. of people) and standard deviation.**

**Linking configurative properties to social practice**

Having developed spatial and social data for Stockholm, we are now able to address the core question: namely, can spatial configuration create co-presence and if so, can it influence its intensity and its constitution? From a residential perspective Stockholm is described as segregated, but is the city also segregated when it comes to how people use public space? The correlation analysis is used to link social data to urban form and is carried out in an explorative manner. This is partly a result of how the sample is chosen: it includes different types of area such as larger centres and local neighbourhood squares and centres, as well as inner city places. The

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24 The correlation between pedestrian flow and being turns out to be stronger at lower values, but much weaker as the values increases (triangle shaped scatter), R=0.57.
statistical analysis is used in order to both identify similarities and try to establish to what extent the eighteen areas perform differently due to their dissimilarities in the urban layouts. The statistical analyses below are in some cases based on the whole sample (N=2224 informants or N=325 gates for pedestrian counts) and in some cases the data is aggregated to the eighteen neighbourhoods. The inflow of non-locals is thus correlated with the following five measures: integration, betweenness, integration interface, population density and observed intensity.

Correlation: in-flow and integration

Non-locals are defined as those who live more than a thousand metres from the square/centre and the data is aggregated to the eighteen places. The first analysis explores the correlation between the share of non-locals and spatial integration at different radii (i.e. the maximum value of integration at different radii).

The result shows that strongest correlation is found between the share of non-locals and integration at the middle range, with the strongest correlation at radius 14 (R=0.544). It is only at radius 14 that the correlation is significant. Since the two regional centres in earlier analysis have been found to be outliers since their performance has been proved to be highly influenced by the land use, the analysis is repeated with a sample of only sixteen areas (with Skärholmen and Farsta excluded). This analysis shows that the correlation between the share of non-locals and integration is stronger and several of the values now turn out to be significant, namely the range of tested values from radius 8 to radius 30. The strongest correlation (R=0.737) is found at radius 10 (see table 5:7). An interpretation of these results is that integration at radius 10 has a special significance for the inflow of non-locals to a place. Even though the sample of squares might be small (N=16) the results indicates that higher integration values, at mid-scale radii, means that it is likely to have a larger share of non-locals. Hence, it is indicated that how an area is embedded in its immediate spatial context has great significance for how well integrated or embedded a neighbourhood is in the greater urban context.

<table>
<thead>
<tr>
<th>Correlation (R) between share of non-locals and spatial integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>R6     R8      R9    R10     R12     R14     R16    R30</td>
</tr>
<tr>
<td>N=18            0.179   0.236   0.375  0.307   0.290   0.496   0.353 -0.025</td>
</tr>
<tr>
<td>N=16            0.497   0.611   0.680  0.737   0.675   0.540   0.558  0.520</td>
</tr>
</tbody>
</table>

Table 5:7. Correlation between inflow of non-locals and integration at different radii (significant values in bold text).
The next analysis examines whether there is a correlation between the share of non-locals and betweenness values at different metric radii. In an analysis of a sample of eighteen areas, the only significant value is found at a radius of 2 000 metres. As in the previous example, a test is conducted where Skärholmen and Farsta are excluded. This analysis, however, turns out to show no significant values, the values decreased (the opposite of what was found in the correlation analysis of integration).

\[
\begin{array}{cccccc}
R500 & R1000 & R2000 & R3000 & R5000 \\
N=18 & -0.190 & 0.049 & \textbf{0.503} & 0.389 & 0.272 \\
N=16 & -0.277 & -0.048 & 0.266 & 0.176 & 0.165 \\
\end{array}
\]

Table 5.8. Correlation between inflow of non-locals and betweenness at different radii, max values at the square or centre (significant values in bold text).

To conclude, a strong correlation is found between inflow of non-locals and integration values, especially at the middle range, while a weaker correlation was found between inflow and betweenness (as N=16). In addition, strongly programmed land uses (e.g. shopping centres) were argued to affect the inflow of non-locals to a degree that overrides the configurational influence.

Correlation: inflow and integration interface

Hiller (1996, 2009b), Peponis et al. (1997) and Al Gatham (2012) write about the importance of an integration interface of the local and global context. Therefore yet another test is conducted. The analysis of the integration interface is carried out first: a buffer of 500 metres captures the context of the area and local integration is correlated with global integra-
tion (as done in for example Hillier & Hanson 1984; Hillier 1996). The result illustrates large differences within the sample, but where Östberghöjden differs the most and proves to have very weak correlation between integration at different scales (e.g. between radius of 6 and 30 axial turns). Then there is a group of four areas with intermediate overlapping: Västertorp, Gamla Östberga, Bagarmossen and Skarpnäck. The strongest correlation is found in the two inner city areas together with Gubbängen, Hammarby Sjöstad and Hammarbyhöjden (figure 5:42-3). The established integration interface for each area is then correlated with the share of non-locals and the result illustrates a significant correlation of $R=0.573$ (radius 2 and 30) and $R=0.577$ (radius 6 and 30). Again the two regional centres Farsta and Skärholmen are excluded since their performance is repeatedly distinct from the other areas. The correlation with the sample of sixteen areas increased in this second analysis to $R=0.753$ (radius 2 and 30) and $R=0.778$ (radius 6 and 30). The correlation between inflow and integration interface thus proved to be even stronger compared with analysis of integration at different scales (when a singular radius was analysed). One conclusion from this is that even though integration at radius of 10 axial turns (or in fact radii at the middle range) is important for the potential to attract non-residents, the overlapping of scales or the integration interface, seems to be even more influential.

**Table 5:9. Correlation: the share of non-locals and spatial measurements (significant values in bold text).**

<table>
<thead>
<tr>
<th>Integration</th>
<th>Integration</th>
<th>Log Choice</th>
<th>Log Segm.Ang.Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>radius 2 and 30</td>
<td>radius 6 and 30</td>
<td>500 and 2000</td>
<td>500 and 2000</td>
</tr>
<tr>
<td>N=18</td>
<td>0.573</td>
<td>0.577</td>
<td>-0.203</td>
</tr>
<tr>
<td>N=16</td>
<td>0.753</td>
<td>0.778</td>
<td>-0.427</td>
</tr>
</tbody>
</table>

**Correlation (R) between the share of non-locals and betweenness**

**Figure 5:64. Correlation between the share of non-locals and integration interface.**
This result is in line with what Gatam (2012) showed, however the configurative measurements Gatam found to correlate strongly in Bahrain, choice values (similar to betweenees) and segment angular integration, did not turn out to be strong (nor significant) in the Stockholm case.\footnote{Normalised values of choice (NACH) were calculated according to the formula in Hillier et al. 2012, but values for Stockholm did not prove to be reliable.}

The analysis has proved that areas that have a strong correlation between local and the global integration are likely to acquire a higher share of non-locals. This has consequences not only for the potential for an exchange with other parts of the city, but is also suggested to have consequences for what resources potentially may be provided locally in a neighbourhood and potentially be part of the residents’ everyday routines. Areas that turn out to have favourable spatial conditions in this respect are thus Södra Station and Nytorget, the two inner city areas. Intermediate potential is found in Gubbängen, Hammarby Sjöstad, Farsta, Björkhagen and Hammarbyhöjden. Finally, a low potential for an exchange with other parts of the city and for attracting other kinds of urban resources, is, according to this reasoning found in Aspudden, Mälarhöjden, Skärholmen, Bredäng, Västertorp, Hökarängen, Skarpnäck, Östbergahöjden, Bagarmossen and Gamla Östberga.

What is important to emphasise is that areas with similar architectural appearances or of similar ‘types’ according to Stockholms Byggnadsordning, e.g. ‘tunnelbanestad’/‘subway city’, the neighbourhoods do not necessarily perform in a similar way. Even if neighbourhoods share many aesthetic characteristics and individual buildings’ designs are similar, the street network is designed in different ways and the way the architects arranged the buildings in relation to the streets differs from one area to the other. It is argued that this make neighbourhoods perform in different ways and thus from an architectural perspective, these neighbourhoods are relatively different. Moreover, the programming of an area (e.g. land use) has been illustrated to have an important effect on the inflow of non-locals, e.g. shopping centres or train stations, that especially attract non-locals.

**Correlation: inflow and observed intensity**

The hypothesis that will be tested is that the share of non-locals increases as the intensity increases, i.e. that inflow increases as places become more crowded. Therefore, observed movement flows, as well as observed momentary intensity, is correlated with the share of non-locals at each place.
The result demonstrates a strong correlation between the share of non-locals and the pedestrian flow defined as mean value ($R=0.817$), median value ($R=0.767$) and maximum value ($R=0.789$).

**Correlation: pedestrian flow and share of non-locals**

![Graph of pedestrian flow and share of non-locals](image)

*Figure 5.65. Correlation: pedestrian flow and share of non-locals (aggregated on neighbourhood level).*

The same test is carried out comparing intensity in the form of observed momentary intensity at the squares/centres with the share of non-locals amongst those co-present. The results show that in this case there is also a strong correlation between these variables, with the mean value being ($R=0.831$), the median value ($R=0.818$) and the maximum value ($R=0.801$) (all values being significant).

**Correlation: momentary intensity and share of non-locals**

![Graph of momentary intensity and share of non-locals](image)

*Figure 5.66. There is a strong correlation between momentary intensity and the share of non-locals.*

This means that the neighborhood squares/centres that are sparsely populated in the south of Stockholm are expected to have few non-residents coming to these neighbourhoods.

**Correlation: inflow and population density**

The analysis comparing population density (i.e. accessible population from each square/centre) and inflow is conducted to test the hypothesis that a higher share of non-locals corresponds to the density found at the square/centre’s location. It is test to determine whether the accessible
working population (assumed to include non-locals to a large degree)\textsuperscript{27} is related to higher levels of inflow from other neighbourhoods, which is suggested to increase the potential for an exchange between people from different parts of the city.

The results show that the correlation between the share of non-locals and the number of people who work close to the square/centre (within 500 metres) is stronger ($R=0.529$) than the same analysis including both those who work and those who live within 500 metres from the square/centre ($R=0.409$). It is also significant to note that if correlation is analysed between the inflow of non-locals and the residential population only, the correlation turns out to be even weaker, namely $R=0.311$ at 500 metres and 0.312 at 800 metres. The strong correlation between the share of non-locals and the accessible working population is not a surprise since a large share of the people who work in an area often live in other parts of the city. In addition, it is likely that those who work in an area also spend time in public spaces at that site: for example going to and from work, doing errands, going out for lunch and as well as this, many workplaces attract customers, visitors and deliveries that originate beyond the local neighbourhood.

Drawing from these results, it can be seen that the density of work places found locally has a significant impact on the potential for a larger share of non-locals being co-present in a public space and thus has importance for the character of urban life. It is demonstrated that population density corresponds to a higher share of non-locals and it correlates to certain configurational properties. To some extent, these two features reveal what kind of co-present situation may emerge: some areas have the potential to reach a higher intensity and thereby facilitate a mix of locals and non-locals, while other areas have the potential to support a population dominated by locals in public spaces and a crowd of lower intensity, which in turn has an impact on where segregation may – or may not – get blurred. In the diagram below, density (i.e. accessible total population) is combined with the degree of overlapping scales (radius 2 and 30) for each neighbourhood square/centre. The two inner city areas are found to differ from the other areas both in respect of overlapping scales and in terms of accessible population. Regarding the population density, the squares/centres in the outer city turn out to be relatively equal in this respect, while it is important to emphasise that larger differences are identified when the integration interface is compared. Given the situation where

\textsuperscript{27} This is a simplified assumption and needs to be verified. I will return to this in the study of accessible workplaces.
population density is rather evenly distributed across Stockholm’s south (in the outer city) it becomes more relevant to study the neighbourhoods’ configurational differences. High population density and high spatial centrality appear to induce a high inflow of non-locals, while at intervals with lower population density this parameter appears to be a less reliable indicator of the possible mix of locals and non-locals. This also leads to variations in character of public life.

**Figure 5.67.** Population density (measured as accessible working and residential population within 1,000 metres) and integration interface (overlapping scales) for the areas studied in Stockholm’s south.

<table>
<thead>
<tr>
<th>Location</th>
<th>Local Access</th>
<th>Global Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skärholmen</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>Väster Torp</td>
<td>0.30</td>
<td>0.40</td>
</tr>
<tr>
<td>Aspudden</td>
<td>0.50</td>
<td>0.60</td>
</tr>
<tr>
<td>Rågsved</td>
<td>0.70</td>
<td>0.80</td>
</tr>
<tr>
<td>Hökarängen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Östberga</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gubbängen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hammarby Sjöstad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farsta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hammarbyhöjden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malarhöjden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspudden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skärholmen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rågsved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bredäng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hovmantorp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Östberga højden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lagomossen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gamla Östberga</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary: co-presence in public space**

The study of co-presence in the public space at neighbourhood squares/centres, has produced valuable social data that makes synthesis with the spatial data possible. The results show that spatial form influences the patterns of co-presence and that it has an impact on variations in the intensity and in the constitution of co-presence. It has been demonstrated that certain spatial properties are related to the potential for both co-presence and co-absence. It can be argued that the configurational properties are highly influential on what urban resources may be afforded locally. This opens up the possibility of comparing neighbourhoods in terms of what living conditions are provided for the residents ‘just around the corner’ and what resources may potentially come within easy access. The following results are especially important from an urban design perspective.

*First,* one conclusion from this empirical study that needs to be emphasised is that everyday practices have proved to be highly routine and that people tend to remain true to their habits, implying that the patterns of co-presence that are created at squares/centres appear to be relatively
stable. This illustrates not only that it is possible to largely predict the urban resources that are available locally, but also that such accessibility to urban resources defines, to a large extent, what life chances are afforded locally across the city.

Second, the main configurational findings are that the integration interface and integration at the middle-range radii are found to be significant for the inflow of non-locals to a neighbourhood. It is, however, also found that powerful attractors (e.g. shopping centres, train stations) to some degree override the configurative conditions. In addition to this, intensity is strongly correlated with the share of non-locals in public space, hence, intensity – the size of co-presence – appears to be a strong indicator for diversity that in turn has an effect on the potential for exchange between people from different neighbourhoods. Urbanity – needing a certain concentration of people as well as a certain diversity of people – can therefore be said to be favoured in places that are spatially integrated and where an integration interface is found. This means that the way in which a neighbourhood is embedded in its spatial context and how it is configuratively organised internally, has great significance for what character the co-present situation will take. The configurational properties demonstrated to be of significance have proved to be diametrically different in the outer city compared to the inner city, but, at the same time, the differences between places in the outer city are also significant.

Third, the co-presence analysis revealed that the social area of reach a specific square/centre has, to a large degree, coincides with the spatial area of reach. This phenomenon turned out to be stronger for those areas positioned in the high-integration-stretches. Other places turned out to have social areas of reach that more strongly depend on the location of public transportation (e.g. the subway line). Areas positioned where integration values are low and that are configuratively more deeply positioned – a kind of spatial exclusion – are also reflected in the social area of reach. Public spaces in such areas are characterised by low intensity and are dominated by local residents and this will, of course, affect the character of the public life: not only is an exchange with other neighbourhoods poorly facilitated locally, in many cases these places can be said to provide a poor social arena for even the local population.

Fourth, the information about length of visits and visit frequencies, combined with nuanced information, increases the understanding of what kind of arenas the different squares/centres proved to be; for example ‘quick-visit-places’ or ‘stay-for-a-while-places’. This character may be combined with what purposes people are there for or the possible mix of purposes. Low-intensity use in combination with the behaviour of
people staying only for a very short time indicates that many of the studied places in the outer city are characterised by co-absence rather than co-presence, which most likely has a negative effect on the public life that may emerge; the preconditions for various social processes appearing unfavourable. Many places within the studied sample in the outer city were found to facilitate ‘single-purpose’ or ‘few-purpose’ activities, rather than ‘multi-purpose’ activities and it was found that this, to a large extent, can be explained by the configurational properties. Thus, many areas did not provide rich opportunities for repeated access by non-locals from ‘just around the corner’. Within this discussion it is important to emphasise that areas with a similar architectural appearance (e.g. a subway city) do not necessarily have similar social performance.

Finally, this analysis has revealed the kinds of social arenas that are created in different locations across the city and has proved that spatial configuration influences the patterns of co-presence. Drawing from the sample in the Stockholm study, it is possible to conclude that a higher inflow of non-locals contributes to an increased intensity and to an increased diversity. Such places acquire favourable conditions for social processes and the emergence of social networks that have a societal impact that reaches beyond the specific ‘meeting’ or the pleasures of serendipity.

Figure 5:68. Places in the south of Stockholm with potential for high intensity and diversity (left) and places with potential for low intensity and diversity (right).
Workplace accessibility\textsuperscript{28}

Introduction
An outbreak of violence hit several districts in Stockholm in May 2013; cars were set on fire and public spaces vandalised. What is of great concern is that similar riots have occurred on several occasions in recent years both in the Stockholm region and elsewhere, including Södertälje (2005), Malmö (2008), Gothenburg (2009) and Uppsala (2009). All these events bear similarities to the riots in the Paris suburbs, afterwards described as ‘a social call of distress’,\textsuperscript{29} that reignited the debate on the consequences of social segregation (Zenou et al. 2006; Swedish Television News 22/5/2013).

In Sweden the underlying causes of such riots are often discussed in relation to increasing societal polarisation and exclusion, even though the violent outbreaks may be trigged by more immediate incidents. Uneven employment patterns and income distribution have been identified in particular as highly problematic; these phenomena have been described as compromising manifestations of urban segregation in Sweden’s welfare state. The trend is that young people and newcomers, especially, face considerable difficulties in the labour market. Many young people in these areas are neither employed nor enrolled in educational institutions. Sweden belongs to the group of countries where unemployment rates are higher among immigrants than among the native born population (Hårsman 2006). In some neighbourhoods the situation appears to have become more or less permanent. Moreover, in the European Union (EU) the situation is also extremely problematic: more than six million young people are without a job; in the debate they have been described as ‘the lost generation’.

Despite the fact that the issue of segregation is highly complex in nature, this particular study focuses on the role of the built environment in matters related to chances of success in the labour market and on what architecture and urban design might add to this discussion. Within the space syntax field it has been argued that a spatial mechanism is involved in the creation of areas of poverty and that physical separation from the city’s economic life implies a lack of opportunity for the economically

\textsuperscript{28} A version of this text is published as a paper in Proceedings of the 9th International Space Syntax Conference in Seoul 2013 (Legeby 2013).

\textsuperscript{29} Socialt nödrop, a phrase coined and used by the French research leader Gilles Kepel (Atkueilt, news programme on Swedish Television, 2013-05-22).
marginalised to integrate into society (Vaughan 2005, 2007). Space has been found to have explanatory power over both the persistence and the formation of deprived areas (Vaughan et al. 2005). In studies of immigrant neighbourhoods, a location close to economically active parts of a city has been found to favour integration into a new society (Vaughan 2005).

The aim of this study is to examine the prerequisites for successfully negotiating the labour market that are believed to be influenced by spatial configuration and are therefore relevant to study from an urban design perspective. Two aspects have been identified as critical to one’s chances of obtaining a job that also appear to be influenced by spatial configuration. First, geographical access to workplaces (Goubillon et al. 2005; Åslund et al. 2009; Zenou et al. 2006). Second, co-presence stands out as a key factor in capturing aspects of segregation as they emerge in public space (Franzén 2009; Legeby & Marcus 2011). Co-present people, it has been argued, influence and form the public culture (Zukin 1995), which is related to a person’s potential to obtain valuable information and knowledge that may improve his or her chances of finding a job (Granovetter 1973, 1983). In addition, the intensity (how many) and the constitution (the mix) of co-present people is argued to have an impact on various contextual effects (Sennett 1992; Grannis 1998; Strömblad 2001).

Neighbourhoods with few economically active people are especially relevant to this discussion. Advanced spatial analysis, in this case, involving space syntax analysis and the Place Syntax Tool, is applied and the study focuses alternately on the local and global levels. This study establishes the variation in geographical access to workplaces in different parts of the city. Furthermore, the resources that can be found locally illustrating what is available ‘just around the corner’ are described. The configurational morphological approach applied implies that analyses are carried out on the street scale; this is necessary in order to respond to questions regarding precisely how spatial configuration plays a part in people’s potential to take advantage of the resources found in the city.

The importance of access to urban resources

Access to jobs

In a 2009 article Åslund et al. studied the impact of job proximity on individual employment and earnings among refugees arriving in Sweden and found that those living in areas with poor job access were adversely affected in terms of employment and earnings. It was found that doubling the number of jobs in the location where they settled would be associated with an increased employment probability of 2.9 percentage points about ten years later, arguably a considerable effect, given that
employment among refugees was 43% when the study was undertaken (Åslund et al. 2009).

Several studies of unequal labour market outcomes for majority and minority groups have found that residential segregation is an important factor (Åslund et al. 2009). Such analyses are based in part on the Spatial Mismatch Hypothesis first formulated by Kain (1968), which states that by residing in segregated areas in the USA that are distant from and poorly connected to major centres of employment growth, black workers face strong geographic barriers to finding and keeping well-paid jobs. Kain argued that a major source of such adverse labour-market outcomes was to be found in the spatial disconnection between inner-city ghettos, where minorities resided and the suburbs, where low-skilled jobs were decentralised (Gobillon et al. 2005). An important difference between the American and Swedish (or European) situations is that in Sweden ethnic minorities predominantly live in the suburbs, whereas many jobs are found in the city centre, but it has been argued that the model can nevertheless be easily reinterpreted for Swedish cities (Åslund et al. 2009, 393). What makes the Swedish study especially relevant is that the refugees studied (1990–1999) did not choose their places of residence, but had instead been assigned by the government to neighbourhoods with different degrees of geographic job accessibility. These results show first that those placed in a location surrounded by few jobs had difficulties finding work even after several years and second that immigrants have lower access to jobs than native residents – even though this cannot fully explain the vast employment gap between immigrant and native workers, according to the authors (Åslund et al. 2009, 391–392).

In order to understand the relevance of these findings from an urban design perspective, the following points need to be highlighted. The variables used to measure job access are the number of jobs within five kilometres of an individual’s residence, in combination with the number of working-age people (i.e. those eighteen to sixty-four years old). The geographical analysis is conducted using a ‘floating catchment area’, but the density is first aggregated at the square-kilometre level; then a five-kilometre circle is superimposed over this patchwork and values are summed and represented by the most central square in the grid (Åslund et al. 2009). The method used in this investigation uses instead the Place Syntax Tool (Ståhle et al. 2005) to study access to jobs, suggesting that urban form and configuration can be taken into account with higher precision; such a method I propose is more informative from an urban design point of view. The differences between the geographical analysis described earlier and the Place Syntax Analysis that need to be noted, are
first: with the Place Syntax Tool, data is less aggregated and saved at the address-point level; second, access is analysed through the street network, not as a straight-line distance. In the case of Stockholm this is significant due to its spatial configuration (i.e., the city has no concentric centrality) and owing to natural (topography and bodies of water) and artificial barriers (railways, etc.). What in fact is analysed is the (absolute) number of jobs accessible from each address point within a certain radius of walking distance through the street network.

**Access to resources through co-present people**

Apart from the importance of geographical access to jobs as discussed earlier, it has also been argued that local affordances are highly significant to various social processes and to a given resident’s chances of obtaining a job. All three metropolitan areas in Sweden, Stockholm, Gothenburg and Malmö, are characterised by strong residential segregation and it has been argued that this adversely affects those living in areas where the majority of the population is socio-economically disadvantaged (SOU 2005:29). However, people are influenced not only by other people living in the same area; the inflow of non-locals and their status also affects the composition of people participating in urban life and may be part of various social processes. This aspect of urban segregation, namely to what extent the city is segregated according to its use of public space, is vital in terms of the resources that are made available locally (Legeby 2010a; Marcus & Legeby 2012).

Zukin (1995) argued that public culture is socially constructed on the micro-level. This implies that co-presence in public space – more specifically, its constitution and composition – is an important factor determining what will be subject for negotiations and will have importance for what resources are made available locally across the city. In this context Sennett (1992) has contended that the street (and street life) is important in forming the unwritten rules of society and Olsson (1998) asserted that the interplay that occurs in public space is important for understanding ‘the other’. Grannis (1998) emphasised the significance of who it is that shares public space, pointing out that the (tertiary) street network affects the potential for neighbourly interaction not only among close neighbours but also between people who live farther apart as a result of face-to-face interactions in the street. Changes in the street structure that connect spatially segregated areas are likely to lead to neighbourly relations along such streets and that such micro-level phenomena produce macro-level outcomes (Grannis 1998, 1560). According to Zukin, the question of who can occupy public space and so define an image of the
city, is open-ended (Zukin 1995, 11), but she also expresses concern for the increased privatisation of public spaces, that although in many cases the privatisation is intended to make the spaces more secure, it nonetheless results in them being less free and less socially heterogenic which, from a perspective of finding or changing jobs (beside other perspectives), may be disadvantageous (Zukin 1995, 38-47). Such ‘pacification by cappuccino’ (Zukin 1995, 28) implies that spaces become less ‘public’ or ‘allowable’ than what they at first appear to be and it is likely that such social distinction is limiting how resources and opportunities are made available across the city.

In the tasks of finding and searching for jobs, employment agencies, newspapers and the Internet are crucial, as are networks of close friends and family. Yet Granovetter (1973) has found that so-called weak ties also affect one’s chances of acquiring a job. Non-residents provide information, knowledge and opportunities that are different from those found locally and this appears to be especially important for areas characterised by exclusion. Such information, it has been argued, has a significant effect on one’s life chances; to be confined to ‘provincial news and views’ might disadvantage one’s opportunities in the labour market or decrease the likelihood that people will organise political movements (Granovetter 1983). This finding indicates that the mix of people found on a particular street can have considerable consequences. Strömblad (2001) discussed the resulting social situation as one that has ‘contextual effects.’ Similar to Zukin’s argument that public culture is formed by those who participate in the negotiations, the idea here is to highlight also a kind of reverse effect, that people are influenced to some extent by their social environment (Strömblad 2001, 156).

In space syntax theory, co-presence is seen as an important social resource and the potential to develop social networks and different social solidarities has been said to pass through the relation of spatial configuration and co-presence (Hillier 1996). It has even been argued that an important social function of a city is to structure co-presence among people from different social categories, and that the effects of urban design are pervasive and insistent and by nature never absent (Hanson & Hillier 1987). Combining these ideas, then, I suggest here that co-presence, its constitution and its intensity, should be seen as a key factor in studies that aim to understand which resources are available in various locales, resources that this study suggests are also relevant to job opportunities.
Configuration and co-presence: the underpinning of job opportunities

In order to explore possible inequalities between different neighbourhoods in relation to residents’ chances in the labour market, the following set of analyses is proposed. On the one hand are the analyses that reflect conditions that may be globally influenced: access to jobs, configurational properties (integration) and the distance in minutes needed to travel to the inner city. On the other hand are the analyses that reflect the affordances found in the area: the number of local workplaces, the inflow of non-locals into public spaces and the extent to which neighbourhood centres or squares are crowded. This section starts, however, with a short description of the labour market in Stockholm.

Unemployment and workplaces in Stockholm
The city of Stockholm has in total 572,965 (2010) workplaces (Stadsledningskontoret 2012) and 76% of Stockholm’s inhabitants have a job (i.e. 417,762 people of those between twenty and sixty-four years old). The distribution of men and women is roughly even, but the comparatively low employment rate among people with a foreign background, which amounts to 57%, is noteworthy. Further, across the city large differences can be found: in some districts 84% have a job, while in others only 65% do. These figures illustrate polarisation in the city that is of great concern (Stadsledningskontoret 2012).

Unemployment increased significantly after the financial crisis hit and in 2010 Stockholm had an unemployment rate of 3.6% for people between ages eighteen and sixty-four (USK/Waaranperä 2010). The unemployment rate is higher in the south of Stockholm (4.2%) than in the north. However, in total, 24% of those aged twenty to sixty-four do not work, but instead are either registered as unemployed or belong to another subcategory: students, early retirees or ‘others’. The group ‘others’ amounts to more than one-tenth of Stockholm’s population. Again, differences become evident as neighbourhoods are compared; in some neighbourhoods about 40% of the inhabitants between twenty and twenty-five years old neither work nor study.

The prevailing situation in the eighteen places studied is illustrated in the table below. The sample represents various socio-economic profiles. For example, the square in Mälarhöjden is located in an area where the

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30 The unemployment rate was 2.3% in October 2008.
32 That is, the situation in the base area, where the centre or square is located.
unemployment rate is 0.7%, while the area close to Skärholmen centre has an unemployment rate of 8.8%, places that are only three subway stops and about four kilometres apart. The median income level ranges between 120,413 SEK and 388,161 SEK within the sample. There has been an increase in economic segregation in Stockholm: a larger share of citizens live in areas with high income while at the same time the share living in areas with extremely low and very low income levels has remained largely unchanged (USK/Melin 2006). Similar findings have been reported by the Organisation for Economic Co-operation and Development (OECD): relative income poverty has increased from 5.3% in 2004 to 9.1% in 2010, a much faster increase than that recorded in most other OECD countries (OECD 2013).

<table>
<thead>
<tr>
<th>Square/Centre</th>
<th>Unemployed (%)</th>
<th>Social index (1-5)</th>
<th>Median income (SEK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mälarhöjden</td>
<td>0.72</td>
<td>5</td>
<td>271 813</td>
</tr>
<tr>
<td>H. Sjöstad</td>
<td>1.63</td>
<td>5</td>
<td>388 161</td>
</tr>
<tr>
<td>Nytorget</td>
<td>2.42</td>
<td>4</td>
<td>268 528</td>
</tr>
<tr>
<td>Aspudden</td>
<td>2.50</td>
<td>3</td>
<td>296 760</td>
</tr>
<tr>
<td>Hammarbyhöjden</td>
<td>2.76</td>
<td>3</td>
<td>227 096</td>
</tr>
<tr>
<td>Södra station</td>
<td>2.83</td>
<td>3</td>
<td>255 564</td>
</tr>
<tr>
<td>Björkhagen</td>
<td>3.71</td>
<td>4</td>
<td>209 588</td>
</tr>
<tr>
<td>Gubbängen</td>
<td>3.87</td>
<td>3</td>
<td>189 012</td>
</tr>
<tr>
<td>Skarpnäck</td>
<td>3.90</td>
<td>3</td>
<td>226 313</td>
</tr>
<tr>
<td>Västertorp</td>
<td>4.30</td>
<td>2</td>
<td>197 667</td>
</tr>
<tr>
<td>Bagarmossen</td>
<td>4.75</td>
<td>2</td>
<td>195 538</td>
</tr>
<tr>
<td>Hökarängen</td>
<td>5.53</td>
<td>2</td>
<td>120 413</td>
</tr>
<tr>
<td>Östberghöjden</td>
<td>5.75</td>
<td>2</td>
<td>153 995</td>
</tr>
<tr>
<td>G:a Östberga</td>
<td>5.75</td>
<td>2</td>
<td>213 475</td>
</tr>
<tr>
<td>Farsta</td>
<td>5.86</td>
<td>3</td>
<td>210 569</td>
</tr>
<tr>
<td>Rågsved</td>
<td>7.52</td>
<td>2</td>
<td>145 272</td>
</tr>
<tr>
<td>Bredäng</td>
<td>7.80</td>
<td>1</td>
<td>173 382</td>
</tr>
<tr>
<td>Skärholmen</td>
<td>8.75</td>
<td>1</td>
<td>131 248</td>
</tr>
</tbody>
</table>

Table 5:10. Unemployment, social index (USK/Melin 2006) and income levels for base areas.
The map of unemployment shows that low levels are found in the inner city. There is, however, no strict concentric pattern to the outer city; islands of high unemployment are also found at rather short distances from the city centre. In the south of Stockholm, high unemployment is found towards the municipal border and in addition, there is a kind of wedge dividing the westernmost stretch from the central and eastern part of Stockholm’s southern areas. To some extent, this pattern coincides with a wedge of spatial segregation, a wedge that reaches very close to the central part of the city. In line with the reasoning of Hillier (2009b), it is likely that this wedge of segregation is creating long distances from this background network to any part of the foreground network, distances that are likely to have an adverse effect on economic activities and are unfavourable for people’s chances of obtaining a job.

**High access to jobs in the inner city**

From the analysis that illustrates local access, that is, jobs within 1 000 metres, it is evident that the concentration of jobs is highest in the central part of Stockholm. In the southern part of Stockholm, the concentration of jobs more or less follows the pattern of spatial integration and coincides rather well with the distribution of integration, stretching out straight to the south and to the west (see arrows). In addition, in the north of Stockholm, it is possible to see that the patterns of integration and job access exhibit similarities that also correspond to the municipality’s ad-
ministrative boundary. Locally high variations in access most likely have a great influence on the character of public life, as well as a local influence in terms of which resources are available ‘just around the corner’ for those living there. Thus, it appears that the way access to jobs is distributed is influenced both by the distribution of workplaces and by the distribution of space. This means that the configurational properties of an area’s urban layout can either inhibit or support access to workplaces.

An interdependency of configuration, movement and attraction has been demonstrated in earlier research (Hillier et al. 1993; Hillier 1996).

The analysis of access to jobs as the radius is increased to 3000 metres shows that the pattern takes on a more concentric shape. In the south the reddish colours reach farther towards the south than in other directions, corresponding to the ways that spatial integration is distributed. It is also revealed that the concentration of job access within this radius of 3000 metres is considerably lower for many of the studied places, amounting to higher levels of unemployment in, for instance, Skärholmen, Rågsved, Farsta, Skarpnäck and Bagarmossen. At the same time, certain places are identified where access to jobs is low but unemployment is also low – for example, Mälarparken and Aspudden. In these places the income levels are also higher. In light of the results of earlier research (Åslund 2009) in which high access to job was found to have a beneficial effect on newcomers’ chances of obtaining a job and on their earnings, it is possible that different groups are differently dependent on potentials related to a local place. This would concur with what Hanson found when studying the transformation of urban layouts and the extent to which different (socio-economic) groups are dependent on public life and local affordances (Hanson 2000), as well as with what Vaughan found when studying places where economically marginalised groups live (Vaughan et al. 2005; Vaughan 2007).

The results also show that at the local level, the larger centres at Skärholmen and Farsta exhibit relatively high access to workplaces, but increasing the radius places these areas in a context with very few workplaces. That the distance to areas with high job concentrations is rather far appears to have a significant effect. This finding illustrates how dependent the local outcome is on conditions in the surroundings. Access to jobs locally is hence not only influenced by the actual workplaces within the district, but is also clearly highly dependent on the distribution of jobs at large. This calls for a wider approach than that which is often applied in so-called area-based anti-segregation initiatives. It needs to be acknowledged that the local situation is heavily influenced by the urban context: its land use and the extent to which its various parts are spatially
Figure 5:70. Maps illustrating access to jobs within 1 000 and 3 000 metres.
Travel time to the inner city
The distance from each square/centre to the city centre (T-centralen), here measured as travel time using public transportation (Storstockholms Localtrafik 2013), was analysed because a large proportion of the jobs in the region are found in the city centre and many people are dependent on public transport.³³ Better access to the city core implies better access to jobs in the region. Furthermore, the metric distance indicates the potential for using other modes of transportation, such as walking or cycling.

Only about one-third of those who have a job and who live in the south of Stockholm also work in that part of the city (28%).³⁴ As much

³³ The number of cars per one hundred inhabitants in Stockholm is thirty-seven and 46% of the people who work in Stockholm commute from other municipalities.
as 37% work in the inner city and only 5% work in the western part of Stockholm. How many commute to work is unknown, but the share that uses public transport on a weekly basis among those who live in the south of Stockholm amounts to just over 70% of the population, which is higher than in the western part of Stockholm, but lower than in the inner city (USK 2009, 34).

The analysis of distance and travel time on public transport between the city centre and a specific neighbourhood is revealing not only in terms of access to the city centre, but also in that it says something about how accessible that neighbourhood is from other parts of the city, about that neighbourhood’s potential to attract job opportunities. Most of the places studied are next to the subway (or the tram), while, for example, Östbergahöjden and Gamla Östberga are located between the two south-bound lines and are served only by buses. Areas situated at great distances from the city centre with long travel times on public transportation, are areas characterised by high unemployment, e.g. Skärholmen, Farsta and Rågsved. The difference in travel time in relation to other neighbourhoods is, however, small. What need to be highlighted are the comparatively unfavourable conditions found in Östbergahöjden: in spite of its relatively short distance to the city centre (i.e., similar to that of Gamla Östberga and Björkhagen), the travel time on public transportation is significantly greater. This relatively poor level of public transportation service appears to negatively affect the area’s job situation, given that Östbergahöjden is home to high unemployment rates and to relatively few local jobs. This is an example of an area where the residents are most likely highly dependent on the resources that are available locally; if these turn out to be poor, then the need for good access to other parts of the city increases.

![Distance to central station: minutes and metres](image)

*Figure 5:72. Distance to the city centre on public transportation and metric distance.*
What is available ‘just around the corner’?

From the analysis of access to work places from different squares, we now return to look more closely at the squares and centres and how they function as arenas: acquiring and thus providing different potentials and opportunities through those who are co-present. Drawing on the ideas that urban culture is created locally by those who have the ability to participate in public life (Zukin 1995) and that social processes and urban networks are influenced by the co-present situation, we now recall the analysis of the conditions that different centres or squares in the south of Stockholm acquired and are argued to have importance from this specific perspective. The local conditions, that is, what is accessible ‘just around the corner’, are highlighted through the following factors: the intensity of co-presence in public space, the inflow of nonlocals and access to local jobs (within 500 metres).

In analysis presented above it was found that the inflow of non-locals and intensity were strongly related and, moreover, a large variation within the sample was found. Some centres were characterised by extremely low intensity; during some periods only a few people passed through and rarely was there a crowd. The inflow of non-locals (those living more than 1 000 metres from the square or centre) ranged from about 20% of those co-present to 80%. The two inner-city places were among those with higher inflow, yet the highest fraction of non-locals was found in Farsta and Skärholmen. These centres were planned as centres for commercial, public and cultural services; thus, their programmed land use has attracted numerous non-residents, making these two places exceptional within the sample.

Turning to the number of working places found locally (within 500 metres), analysis shows that this varies significantly. The population of workers in each area may contribute to local public life (primarily during the daytime) and these people are the ones, in addition to the residents, who will use the local services found in these places. Södra Station stands out within this sample because it has a very high concentration of workplaces. Not even Nytorget, only 1 300 metres from Södra Station, came close to achieving the same level. A follow-up analysis would perhaps need to exclude inner city squares/centres in order to disclose the nuances between the places in the outer city. However, that the differences between the inner and the outer city are so significant is in itself highly relevant.

To make comparison easier and to illustrate the conditions found at the eighteen locations, the results are represented in a spider diagram including seven parameters. Configuration is here defined as global integration.
(radius 30). The number of workplaces locally is those found within 500 metres and, in addition, the intensity and the inflow of co-presence are noted. The social index and the unemployment rate are also added to the diagram to illustrate the status of the area from a statistical perspective. Travel time to the inner city is included as well. The measures are transferred to indices: either an index that illustrates a neighbourhood’s situation in relation to the other neighbourhoods within the sample\(^ {35} \) while some values are used directly and have not been normalised.\(^ {36} \) From this overview it is possible to see that in areas where unemployment rates are high, the social index is low; this was expected. Many of these areas are also characterised by restricted access to workplaces locally, arguably influencing the character of urban life in these neighbourhoods. However, low access to jobs is also found in some places with a high social index, for example, Mälarmhöjden, Hammarby Sjöstad and Björkhagen, where the inflow of non-locals and the intensity of public life is rather low. Taken together, the measurements indicate that these areas are isolated from the rest of the city. If the integration value is taken into consideration, it is possible to see that Mälarmhöjden in this respect is among the most isolated areas and similar isolation is found in areas with low social indices: Östbergahöjden, Rågsved and Västertorp. Spatial properties may thus contribute to an isolation of both affluent and more vulnerable areas, making both areas’ residents less accessible from the city as a whole and limiting their residents’ access to other parts of the city.

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\(^ {35} \) A normalisation is made based on the values within the sample: global integration, access to jobs, travel time to the central station and intensity.\(^ {1} \) Ömrådesfakta, Söderort: http://www.statistik.sweco.se/tabellverktyg/tv.aspx?projekt=omradesfakta&omrade=21.

\(^ {36} \) Values that from the beginning are given as shares or fractions: the inflow of non-locals, unemployment and the social index.
Figure 5: Job related conditions illustrated for the eighteen squares and centres.
Summary: co-presence and access to workplaces

The results show that many areas characterised by high unemployment rates and low income levels are disadvantaged in terms of their configurational properties that, in turn, influence other factors such as access to jobs and local access to non-residents. This results in a limited day-time population which leads to a very low intensity public life. In combination, this means both that these areas afford few resources ‘just around the corner’ and that access to resources (in this case, access to jobs) on a citywide level is lower than in many other areas; this is of especially great concern for people with few resources. Such findings contribute to the discussion about the role of urban form for issues related to the unequal distribution and access to important urban resources. The analysis has demonstrated that a spatial mechanism is involved in creating an unfortunate separation of certain neighbourhoods from job opportunities in various ways. Such configurational properties are suggested to have a negative effect for integration processes as well as reproduce segregation patterns and to play an important role in the formation of excluded areas. The following results are especially relevant from an urban design perspective.

First, the difference between the two inner-city areas and the areas found in the outer city is noteworthy and needs to be highlighted. Not only is this concerned with access to jobs, but the other aspects analysed have proved highly beneficial for residents’ opportunities in the labour market: unemployment is low, integration is high and the inflow of non-locals and the intensity of the public life appear to be favourable. In addition, access to other parts of the city and region is very good via public transport. Outer city areas do not even come close to the situation found in the inner city. This illustrates an important inequality, an inequality that even with comprehensive interventions is difficult to correct.

Second, significant differences have been demonstrated in terms of what is available locally in different places: the areas exhibit very different conditions and therefore diverse potential and challenges. These differences are heavily influenced by the conditions in the surroundings. Hence, to some extent, local changes will have local outcomes, but also remote interventions can have a strong impact on a local level. Conversely, this implies that disadvantageous conditions identified in an area can be countered only to a certain degree by local interventions; in many cases, the limiting factors might instead be found in the surroundings. This important interdependence of the local and the global, between an area and its immediate surroundings, is akin to what Hillier has argued:
“Places are not local things. They are moments in large-scale things, the large-scale things we call cities. Places do not make cities. It is cities that make places.” (Hillier 1996, 151)

With this insight, too strong a belief in so-called area-based initiatives may be questioned. It is suggested that a higher awareness of how local places are positioned in the city and how they relate to neighbouring areas, is crucial for identifying what kind of interventions will be effective and to what extent they may change a local situation.

Third, it has been demonstrated that some of the characteristics found in areas with a low social index are also found in more affluent areas, those with the highest social index. However, in the well-off areas it is likely that the residents are less dependent on what is available ‘just around the corner’. When such spatial affordances are found in affluent areas, they do not have the same effect on the residents or users as they would in areas whose populations have fewer resources or are economically marginalised. However, the spatial isolation of both groups may negatively affect society at large, as the properties of the urban layout do not make either the area accessible or its residents available to others.

Fourth, in two of the areas characterised by high unemployment (Östbergahöjden and Rågsved), it is of great concern that all five aspects said to affect residents’ chances in the labour market have proved unfavourable: few local jobs, low global integration, low intensity in public life, few non-locals and, at least in Östbergahöjden, a remarkably long travel time to the inner city in relation to the metric distance. According to what has been demonstrated in this study and earlier ones (Legeby 2010b; Legeby & Marcus 2011), four of these aspects are highly influenced by the urban layout’s configuration; that is an argument for including urban design interventions in anti-segregation initiatives – yet such work needs to be based on adequate spatial analysis.

Finally, a more speculative reflection is that it is not Stockholm’s natural barriers alone (e.g. bodies of water and steep terrain) that have contributed to the great differences found between the inner city and the outer city, holding the inner city back from expanding into the south. To a large extent the configurational properties appear to inhibit the sharing of resources across the city, even as they also constitute a constraint on the inner city’s expansion. Spatial integration does not reach very far out (the stretch to the south is an exception), meaning that the spatial distribution of space is limited and thus spatial centrality is not distributed from the inner city to the outer city as efficiently as it is in many other cities (Hillier 2010). This means that urban resources of different kinds are not
efficiently distributed across the city *through* space, a fact that is extremely relevant when discussing the social dimension of urban design.

To sum up, the precise spatial descriptions used capture important implications of urban configuration for matters related to opportunities in the labour market. This study illustrates that life in the least-favoured neighbourhoods may be dramatically different from life in the most-favoured neighbourhoods and that difference, especially for newcomers and young people, may bear significant implications for residents’ futures. Methods and analyses aimed at capturing the ways that urban design influences such inequalities have been explored here, demonstrating that the configurational properties of urban layouts play an important role in determining which spatial affordances are created locally. This trend calls for greater awareness of urban design’s role and its social consequences.
Co-presence in schools

Introduction
Before the beginning of 1990s, school children in Stockholm and in Sweden in general went to schools near to where they lived. As the freedom of choice policy was implemented in the beginning of the 1990s, the system of how to choose schools in Sweden was radically changed and it became possible to choose – or at least apply to – any school within the municipality, both to municipal and to independent (private) schools (Skolverket 2003, Bunar & Kallstenius 2007). Hereafter, schools could have pupils from many different neighbourhoods and the constitution of pupils with respect to socio-economic background etc. did not necessarily mirror the constitution that was found among the residential population in the area where the school was located, as it did before. This change has made it relevant to study whether the location and the accessibility of schools might influence whether there will be a mix of locals and non-locals among the pupils; to what extent schools attract pupils from few or several other neighbourhoods.

The focus of this study is upon how spatial form relates to the constitution of co-present pupils in schools. The aim is twofold: first, to explore if there are configurational properties that might have an impact on the inflow on non-locals to a school, i.e. the constitution of co-presence at schools and second, to investigate whether the inflow of non-locals to a school has similarities with the inflow of non-locals to the neighbourhood centre/square in the same area. Hence, the study will not directly respond to the question whether the freedom of choice policy has led to increased segregation or increased integration, rather, it will focus on how spatial form may influence the mix of local residents and non-local residents at a school. The study includes 33 schools in eighteen neighbourhoods in the south of Stockholm.

A large part of the suburban landscape in the south of Stockholm originates from the expansion that took place between 1940 and 1970. The larger part of this development was based on urban design ideas such as the ‘neighbourhood unit planning model’ with the pronounced intention of encouraging local relations more than outwardly orientated relations (e.g. relations with neighbouring areas or the city as a whole). Since schools were initially planned to serve the local neighbourhood unit, it is
far from obvious that urban form and urban structures will support the wider transformation that the schools are pressured to achieve. Due to the fact that the freedom of choice policy is both complex and controversial, a background is given as an introduction to this study.

**Background: the freedom of choice policy**

It has been heavily debated what consequences the free choice of school might have for the issue of segregation: will it result in increased segregation or integration among individuals with different backgrounds? Will it lead to increased segregation or integration between districts or neighbourhoods? What happens with those schools to which very few pupils apply, either because they are located in an unfavourable location or because they lack a good reputation? What happens with the schools in so-called socially vulnerable areas if a majority of the pupils choose other schools? Studying schools as a public space is argued to have high relevance for the discussion of urban segregation and urban design, since comprehensive schooling as a result of this policy regarding free choice of school has transformed Swedish schools from having a typically local catchment area to institutions that operate at larger geographical scales, at the city scale and as such has implications for urban segregation.

The education policy regarding the freedom of choice was launched and implemented between 1991 and 1995 (Kallstenius 2010). At the same time (1991) the responsibility for schools was transferred from state to municipal level. Since the beginning of the 1990s, the changes have been rapid, especially in the metropolitan areas and the number of independent schools has increased dramatically. In Stockholm this development was most likely supported by the increase of children of school age: the total population increased from 670 000 in 1990 to 850 000 in 2010 and the number of children under 15 years increased by about 40%, from 98 000 in 1990 to 137 000 in 2010 (Statistisk årsbok 2012, 114).

The changes to the Swedish school may be described in both positive and negative terms. On the one hand positive outcomes are defined as increased individual freedom, greater variety and profiling. On the other hand, the negative outcomes discussed are schools of lesser equality, higher differentiation and increased differences regarding quality (Skolverket 2003, 14). Whether this leads to increased segregation or to integration is heavily debated (see for example Skolverket 2003 and Kallstenius 2010).

Two parallel conceptions of the consequences of the policy are found; first there is the conception that it leads to an increased segregation (see for example Bunar 2001, SOU 2000:39, SOU 2001:57) and second, there is the conception that the increased possibility to choose can, to some ex-
tent, counteract the socio-economic and ethnic residential segregation as parents and pupils are given the opportunity to apply to schools that are located in other neighbourhoods (Skolverket 1996). The National Board of Education (Skolverket) stresses that the conclusions from national and international research are far from unambiguous. The latter conception was, however, one of the main arguments for launching this policy (Skolverket 1996), an argument that is also common in an international research context according to Kallstenius (2010), who refers to Archbald 2004, Tooley 1997, Young & Clinchy 1992. Kallstenius contends that both conceptions to some extent are true:

“The freedom of choice policy has led to an increased segregation due to the fact that different groups in society make use of the possibility to choose in different ways. However, the interviews […] with parents and students demonstrate that the possibility to choose school can also simultaneously be a way for individual students to escape the negative consequences of residential and school segregation.” (Kallstenius 2010, 235).

The debate appears to hover between foregrounding the individual’s perspective or rather specific individual’s perspective and the societal perspective. The individual’s perspective emphasises how individuals benefit from having the ability to choose and travel to another school (that is better, more suitable or simply different from the local one), while the effects on a societal level emphasise the long-term and system effects which, according to the literature, seem to be much more complicated to evaluate and establish. One needs to remember that the number of schools that in reality may be chosen is limited, which relies on what options are within (reasonable) geographical access, the number of pupils that are accepted at different schools and that popular schools may place people in a queue system and in some cases even in a lottery system. When trying to relate this to urban segregation, some questions arise; how is a neighbourhood affected if many of the local pupils choose to go to other areas? How are schools with a high inflow from other districts affected; does it lead to a more or less diverse school? To what extent is a school’s attraction related to the neighbourhood as such or to the residents’ socio-economic profile? It is not far-fetched to suggest that the effects of a high inflow from other neighbourhoods will be different in a so-called socially segregated neighbourhood compared with the effects on a neighbourhood with a mixed or wealthy population. Kallstenius does not present an unambiguous conclusion and instead she suggests that the impact of the policy falls very differently upon different groups in society:
“[…] the freedom of choice policy can presumably result in a higher degree of integration for those individuals who use the system strategically in order to avoid those everyday obstacles inherent in residential segregation, but it also simultaneously risks increasing segregation at the level of the schools and in society at large.” (Kallstenius 2010, 236).

In a study by Skolverket it was found that parents in general appreciated that there was a freedom of choice. Highly-educated parents reported that they were better informed of their options than the less-educated were. The majority of the parents reported that they made an active choice to get to a specific school rather than an active choice to avoid the default school (Skolverket 2003, 77). However, in the end it appears to be difficult to separate one kind of choice from the other; choosing a school other than the geographically closest is more or less the same as actively avoiding the local school. Primarily, the highly-educated parents were those found to benefit from the policy (Skolverket 2003, 132). Earlier research has established that in 2005 17% of the pupils (in comprehensive schools) preferred an independent school to a municipal school and that was twice as many compared to the end of the 1990s (Kallstenius 2010, 15).

Consequences for segregation

In reports from the National Agency for Education, the effects the policy has on segregation is one of the main concerns. One aim of the policy was, in fact, to revitalise the school system by increasing competition to lead to pedagogical and organisational renewal. Possible negative effects pointed out are segregation, differences in quality and increased discrepancies between different municipalities in Sweden (Skolverket 2003, Chapters 4, 5 and 6).

Historically, a strong idea within Swedish educational politics was to create ‘a school for everyone’ implicating a solution to the segregation problem. The school is seen as a meeting place – or an arena – for children with different social and ethnic backgrounds who may share different experiences, values and views of life (Skolverket 2003, 124). This is supposed to lead to increased understanding, respect and tolerance between pupils from different backgrounds: thus, the idea that the school has a role as an institution for societal socialisation is clear. Turning back to the free choice policy, it has other foundations, namely the credence of positive effects of the market system as well as a stronger focus on an adaption to the individual and it has been discussed whether these are conflicting interests or not (Skolverket 2003). However, it needs to be highlighted that segregation in this context refers mainly to the following three types of segregation; ethnic, socio-economic and segregation related to educational
achievements and results (Skolverket 2003, 127). It has been argued that the policy has a different effect in metropolitan areas than in smaller cities or sparsely-populated regions due to differences in available options. The negative effects - such as increased segregation and differences in quality - appear more clearly in metropolitan areas which are seen as a threat to the equality within the school system (Skolverket 2003, 132).

Kallstenius (2010) has studied segregation and social mixing at schools in the inner-city of Stockholm concentrating on the ethnic aspect and two categories are discussed: those with a Swedish background and those with non-Swedish backgrounds. The pupils with foreign backgrounds are those who primarily commute to inner city schools from Stockholm's southern suburbs. Kallstenius notes that even if pupils from different neighbourhoods (from wealthy or less wealthy areas) go to the same school, the social or symbolic distance remains (Kallstenius 2010, 220). Kallstenius identifies several reasons for children and parents who have immigrated to Sweden (and/or have a low socio-economic status) to not choose so called high-status schools; this is partly due to practical reasons such as insufficient knowledge and information and mobility and partly due to social and symbolic reasons such as a feeling of exclusion or not belonging to that type of environment (Kallstenius 2010, 207-222, 229-232). In spite of this, thousands of children who live in so-called segregated or deprived areas in Stockholm do choose independent and municipal schools outside their own district (Bunar & Kallstenius 2006, 2007). In cases where the school is in a wealthier area with a larger proportion of pupils with a Swedish background, the new school presents not only a shift of geographical environment but also a change of social environment. Kallstenius argues that many consciously choose an inner city school in order to escape the stigmatised and so-called segregated neighbourhoods they live in (Kallstenius 2010, 227-229). It is important to remember for this study that the inner city schools appear to have a spatial advantage compared with schools in the outer city; most of them are easily accessible by public transport etc. How this differs among the schools in the outer city needs to be demonstrated.

Schools in Stockholm
In Stockholm there are 265 nine-year comprehensive schools (2010), including both municipal and independent/private schools and in total there are about 67 000 pupils (USK/Sweco Eurofutures). In Stockholm, about a third of the comprehensive schools are independent/private. There is a tendency for most schools to promote themselves as having a certain strength, linguistic, mathematic or religious, a tendency slightly more profound among independent schools than municipal schools (Kallstenius...
2010; www.stockholm.se). In 1998, 55% of the pupils in comprehensive school in Stockholm went to a school within their own neighbourhood. Seven years later this share had decreased to 50% (USK 2007; Kallstenius 2010, 15). One part of the flow of pupils is from districts with comparably weaker socio-economic profiles and with a larger part of the population having foreign backgrounds, to more wealthy districts that have populations dominated by a population with a Swedish background (Bunar & Kallstenius 2007; Kallstenius 2010).

Schools and the neighbourhood unit
The planning and building of schools has been an important planning parameter in the urban development of Stockholm (as for metropolitan areas in general in Sweden). The General Plan from 1952 cleared the way for an urban expansion after the Second World War and with the plan largely following the neighbourhood unit planning ideals where schools were given particular significance (Legeby 2010b, Franzen & Sandstedt 1993). The public school, as an institution and as a physical building, was given a very central role in these neighbourhoods and often the size of the neighbourhood unit was indeed determined by the catchment area of a school, along with other time-bound norms that were politically and economically grounded (Franzen & Sandstedt 1993).

The Swedish neighbourhood unit model was consistent with ideas of subdividing the city into areas with different functions and different land uses (according to zoning principles). Many of the suburbs built after the Second World War were intended for housing and to primarily suit families with children.

Other typically complementary features that support the residential area, are the planned local centre and the open spaces (parks, recreation spaces etc.). The design of these layouts, often with buildings organised in groups with a strong inward interrelationship paired with a clear outward demarcation, were also rooted in social debate. However, this relationship between the social entity and the physical design may be described as theoretically vague and ill-founded (for a longer discussion see Franzen & Sandstedt 1993). The intention was that these neighbourhoods should function as socially independent enclaves and, in line with such thinking, the schools were also seen as a highly local concern and amenity. Clearly, the freedom of choice policy now challenges this; what potential do different neighbourhoods have to attract pupils from other neighbourhoods depending on their configurational properties, population density or accessibility etc.? And, if the schools get an inflow from other neighbourhoods, will that also have an effect from a segregation perspective? Will such an inflow counteract the effects of residential segregation by bring-
ing non-local people to this neighbourhood, gaining personal experience of the area and its inhabitants? In order to respond to these questions, an analysis is conducted into the inflows to schools located in different neighbourhoods. Thereafter, a mapping of the spatial related properties and potentials will be made, including population density, spatial integration, access to track-/rail bound traffic (subway or tram) and distance from the inner city.

Co-presence at schools in the south of Stockholm

Defining segregation and diversity

It is important to highlight that the conception of segregation within the school discourse/field is directly related to the level of homogeneity and heterogeneity in respect of ethnicity and/or achievements/results (e.g. Skolverket 2003; Kallstenius 2010). This will not be unfolded in detail in this study due to a different focus (and such detailed data has not been made available). From the perspective of urban segregation, and for the overarching aim of this research study about urban segregation and urban form, it is argued to be rewarding to focus more directly on the potential for an exchange between neighbourhoods. In this particular study the level of inflow will be analysed together with the number of other neighbourhoods represented. This captures the mix at the schools according to where pupils live and gives an indication as to what exchange may take place between residents from different parts of the city. The assumption is that it is not only the profile of a certain school that attracts non-locals, but also the location of the school, its accessibility and the local conditions in terms of population density etc.

The school sample

In total, 33 comprehensive schools close to the 18 squares or centres that are studied in the parallel analysis are included in this empirical analysis.\(^{37}\) The number of pupils at the schools varies between 24 and 1 122. Most of the schools are located close to a subway station, 19 of the schools are closer than 500 metres. Östberghöjden is far from a subway station and the closest tram station is about one kilometre away, but the area is served by busses. The schools in Hammarby Sjöstad are located close to the tram but at a greater distance from the subway system. There are large variations in terms of accessible residential populations: twenty of the schools have fewer than 10 000 residents within one kilometre at walking dis-

\(^{37}\) In the study, schools with fewer pupils than 15 people and schools that are highly specialised are excluded.
tance, two of the schools (in Mälarhöjden) have fewer than 5000 people within one kilometre. As a comparison of population density variation, the two schools located at Södermalm (in the inner city) have as many as 40000 residents living within a kilometre’s walk.

Figure 5:74. The schools studied in the south of Stockholm.

Figure 5:75. Share of locals (within the neighbourhood and within the district).
<table>
<thead>
<tr>
<th>School</th>
<th>Neighbourhood</th>
<th>No. of pupils</th>
<th>Minimum distance to subway</th>
<th>Accessible residents: 1 km</th>
<th>Accessible residents: 2 km</th>
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<td>Österberg</td>
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</tbody>
</table>

Table 5:11. The selection of schools: number of pupils, distance to subway/tram and accessible residential population.

Constitution of pupils according to home address

The constitution of pupils at the schools according to where they live is studied through the following analyses: first, establishing the share of pupils from the local neighbourhood at each school; second, establishing the share living within the local (administrative) district; third, establishing the number of neighbourhoods that are represented (that is: the number of neighbourhoods represented if the school would have 100 pupils) and fourth, calculating a diversity index (Simpson index) for each school illustrating both the richness and the evenness (or equitability).

The first analysis showed that in general there was higher inflow of non-residents to independent schools than to municipal schools (see
Within the studied sample, the share of pupils who live within the local neighbourhood ranged between 0% (one of the schools at Södermalm) and 97% (Östbergaskolan). Among the municipal schools, the lowest share of local residents was 47% (Björkhagens skola and Lillholmasskolan in Skärholmen). From the second analysis it was found that about a third of the schools within the sample could be characterised as ‘local’ since 90% of the pupils in these schools lived in the same district as the school.

The third analysis established how many neighbourhoods were represented within a school. It was revealed that independent schools differed from the municipal schools in this respect. To make comparison easier, this representation was illustrated with a value of how many neighbourhoods would be represented if the school had 100 pupils. The result from this analysis showed that schools representing more than 10 neighbourhoods per 100 pupils were all independent schools. Schools with the highest value were a special school at Södermalm (Distra), a religious school in Hammarbyhöjden (a Christian School) and a music school in Hammarby Sjöstad (Kulturama). These were all independent schools. Two of the schools were located close to a subway station, while the one in Hammarby Sjöstad was close to the tram, but not close to the subway.

The fourth analysis was carried out in order to describe the diversity among the co-present pupils according to where they lived. The diversity was defined according to the Simpson Index, introduced by Edward H. Simpson in 1949 and commonly used within the biological field (Talen 2008, 65). The Simpson index is argued to reflect both the richness, that is how many categories that exist in an area, in this case how many neighbourhoods that are represented at the school, and the evenness or equitability, in this case how pupils are distributed among those neighbourhoods. As richness and evenness increase, the diversity increases. It could be said that the index measures the probability that two individuals randomly selected from a sample (e.g. from a school) will belong to the same category (e.g. live in the same neighbourhood). The lower value (closer to 0) means that there is a high diversity while higher values (closer to 1) mean that diversity is low.

The Simpson Index used here is: \[ D = \frac{\sum n(n-1)}{N(N-1)} \], where \( n \) is the total number within one category, i.e., from one specific neighbourhood and \( N \) is the total number of pupils at the school.
<table>
<thead>
<tr>
<th>School</th>
<th>Neighbourhood</th>
<th>Municipal (M)</th>
<th>Independent (I)</th>
<th>Share from the neighbourhood</th>
<th>Share from the district</th>
<th>Share from the Neighbourhoods per 100 pupils</th>
<th>Simpsons Index</th>
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<tr>
<td>Aspuddens skola</td>
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<td>77</td>
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</table>

Table 5:12. The mix of locals and non-locals at the schools.

The analysis revealed that the lowest diversity was found at Östbergaskolan, Brotorpsskolan (Bagarmossen) and Snösättraskolan (Rågsved). Östberga and Bagarmossen were not located very far from the city centre yet were spatially segregated in the urban system. Rågsved was both far from the inner city and spatially segregated. At the same time it was possible to find schools in spatially segregated areas that were diverse according to this aspect, for example one of the schools in Mälarhöjden (an independent Montessori school) and an independent school in Hökarängen (Martin school, a Waldorf school). The highest diversity according to where the pupils live was found at the Christian School in Hammarbyhöjden (0.04), the Music school in Hammarby Sjöstad (0.02) and in the
special school Distra at Södermalm (0.04). But also the English school in Gubbängen was found to have pupils from many different neighbourhoods (0.08) (located in a relatively highly integrated position). From the figure that shows both the Simpson Index and spatial integration, it was illustrated that quite a few of the schools with low diversity were located in spatially segregated positions.

**Comparing inflow at squares with inflow at schools**

How different is the constitution at schools compared to what is found at the neighbourhood square/centre in terms of mix of locals and non-locals? A comparison between schools and squares/centres indicated that there was no simple correspondence to be found. Especially since different schools located in the same area turned out to have rather different levels of inflow of non-locals. Only a few neighbourhoods proved to have similar shares of local population at the schools as at the square/centre; for example Östbergahöjden, Västertorp and Rågsved. What these neighbourhoods had in common was that the inflow of non-locals was very limited. In areas with both municipal and independent schools it was found more often that the municipal schools had a value closer to that which was found at the square/centre compared to the independent schools in, for example, Mälardalen, Hökarängen, Hammarbyhöjden, Gubbängen, Björkhagen, Bagarmossen and Aspudden.

Two neighbourhoods that had high inflows of non-locals to the square/centre were Farsta and Skärholmen. Farsta, that was relatively spatially segregated on the global level, had schools with a very high share of pupils from
the local neighbourhood. Also in Skärholmen three out of four schools had a rather local character, especially when referring to the share living within the administrative district. In previous analysis the configurational properties were not found to support an inflow of non-locals to either Farsta or Skärholmen. However, since these two squares are programmed as large shopping centres, they turned out to have a high inflow of non-locals to the squares/centres. This means that the configurational properties corresponded better with the outcome at the schools than at the square/centre in these two neighbourhoods. This indicates that the shopping centre as an attractor does not seem to have the same influence on the constitution at schools as at the square/centre; having the result that the schools in these areas remain rather local.

<table>
<thead>
<tr>
<th>School</th>
<th>Neighbourhood</th>
<th>Share from the neighbourhood</th>
<th>Share from the district</th>
<th>Share of locals at the Square/Centre</th>
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<td></td>
<td></td>
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<td></td>
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<td>Björkhagen I 20 82 63</td>
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<td>Bredängsskolan</td>
<td>Bredäng M 85 92 56</td>
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<td>Farstaängsskolan</td>
<td>Farsta I 82 92 23</td>
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<tr>
<td>Eng. skolan i Enskede</td>
<td>Gubbängen I 13 54 57</td>
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<td>Hammarbysskolan</td>
<td>Hammarbyhöjden M 74 89 64</td>
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<td>Målarhöjden I 1 66 60</td>
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<td>Målarhöjdens skola</td>
<td>Målarhöjden M 84 94 60</td>
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<td>Vittra Sjöstad</td>
<td>Hammarby Sjästad I 35 53 64</td>
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<td>Skarpnäck I 55 83 71</td>
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<td>Tornadoskolan</td>
<td>Skarpnäck I 87 89 71</td>
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<td>Tätorpskolan</td>
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<td>Ekholmsskolan</td>
<td>Skärholmen M 73 93 17</td>
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<td>Lillholmskolan</td>
<td>Skärholmen M 47 96 17</td>
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<tr>
<td>Västerholmskollans Frisk.</td>
<td>Skärholmen I 71 97 17</td>
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<tr>
<td>Katarina Södra skola</td>
<td>Nytorget M 58 91 39</td>
<td></td>
<td></td>
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<tr>
<td>Distra resurskola Bågens</td>
<td>S.Stationsområdet I 0 17 41</td>
<td></td>
<td></td>
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<tr>
<td>Västertorpskolan</td>
<td>Västertorp M 75 86 72</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ostbergaskolan</td>
<td>Östberga M 97 98 81</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5:13. Inflow of non-locals.
Correlation: inflow and configurational properties

The results indicate that the spatial component might have an influence on the inflow of non-locals to a school. It has been suggested that the three areas of Östberga, Västertorp and Rågsved do not have spatial properties that are beneficial for a high inflow of non-locals, nor to the schools or the squares/centres. The integration map showed that global integration was low in these areas. A correlation analysis was made between the number of neighbourhoods represented per 100 pupils and integration values at different radii at the schools (N=33). The result identified a weak correlation (although significant) between the number of neighbourhoods represented and spatial integration at radius of 10 and at radius of 30 axial turns (the values were not significant at a local level, e.g. at radius 2 and 6). Since previous results indicated a considerable difference between municipal schools and independent schools, the analysis was made with a selection of the municipal schools (N=18). Now, as expected in light of the earlier results in this study, the correlation increased and the highest correlation was found at radius 6 (R=0.606). For radius 10 the correlation increased to 0.482 compared with the whole sample and for radius 30 it increased to 0.510 (radius 2 was found not to be significant in this analysis either). Thus, the result indicates that schools that are integrated spatially tend to have more neighbourhoods represented at the school.

| Correlation (R): Neighbourhoods represented & integration/population density |
|-----------------------------|-----|-----|-----|----|-----|
| R6  | R10 | R30 | Res. 1 km | Res. 2 km |
| N=33 | -   | 0.384 | 0.347 | 0.494 | 0.527 |
| N=18 (municipal schools) | 0.606 | 0.482 | 0.510 | 0.658 | 0.669 |

Table 5:4. Correlation between number of neighbourhoods per 100 pupils, the maximum integration values at the school and population density.

A correlation was also found between the number of neighbourhoods represented and the accessible population, both within 1 and 2 kilometres. The values again increased as the municipal schools were selected: R=0.658 for accessible residential population within 1 kilometre and slightly stronger for the accessible population within 2 kilometres, R=0.669. This means that local population density as well as that within a school’s further context is influencing how many neighbourhoods are likely to be represented.
Summary: co-presence at schools

Arguably, the constitution at schools is found to be relevant to the study since, compared to other public spaces, those who are co-present at schools share space in a much more routinised way than, for example, is the case at the neighbourhood square/centre. Pupils (and personnel) often go to the same school for several years, attending every day, week after week, with schools therefore providing an important arena for various social processes that most likely is rather different in many aspects from the social arena provided at the neighbourhood’s square/centre. The following findings are especially relevant to highlight.

First, the freedom of choice policy implied that many schools increased their catchment area. However, the majority of the schools were found to be regarded as local institutions or arenas since they still had a rather local catchment area, especially if pupils who live in the same administrative district as the school are defined as ‘locals’. The fact that there were large variations in their constitution of co-presence as schools in the same neighbourhood are compared is important to highlight: even though schools are located in the same neighbourhood they do not need to have similar spatial properties but still some factors related to the location are likely to be shared. Municipal schools did not acquire similar characteristics as independent schools in respect of the inflow of pupils from other neighbourhoods: municipal schools had in general less inflow of non-locals than the independent schools, even if located in the same neighbourhood.

Second, it was found that the share of non-locals at schools differs from the share of non-locals found at the neighbourhood square/centre in the same neighbourhoods. Thus, these public spaces turned out to function as different kinds of social arenas found in a neighbourhood, implying that both these public spaces are of interest to study in order to understand urban segregation from a wider perspective than the strict residential perspective. Not least, increased knowledge about what kind of social arenas different neighbourhoods can have contributes to an understanding of what opportunities different neighbourhoods afford their residents in terms of exchanges with people from other neighbourhoods or other parts of the city.

Third, a finding highly relevant for urban design and architecture was that the number of neighbourhoods represented at a school proved to correlate with spatial integration, denoting a kind of geographical diversity according to where people live. Moreover, the results showed that this correlation was stronger when only the municipal schools were selected, in comparison to the whole sample. In addition to this, a correlation was also found between the number of neighbourhoods represented and the accessible residential
population within both one two kilometres. Again this correlation was stronger once independent schools were excluded from the analysis.

Fourth, this study does not reveal if a higher diversity of where a school’s pupils live counteracts social segregation patterns or if it actually intensifies them. Clearly, a higher inflow of non-locals could mean that residential segregation patterns are becoming blurred. However, since it is primarily the independent and specialised schools that are attracting a large number of non-locals, this could mean that pupils with similar backgrounds or interests, for example religious, linguistic or cultural interests, attend the same school and this may imply that such schools in many aspects turn out to be rather homogeneous. In relation to this it is important to emphasise that schools in spatially segregated neighbourhoods did not have high diversity and nor did these neighbourhoods have a large share of non-locals at their neighbourhood squares/centres: for example Östbergahöjden, Rågsved and Västertorp. Two of these areas, Östbergahöjden and Rågsved, are also found to be residentially segregated according to Swedish/foreign background and these neighbourhoods are pointed out as ‘socially vulnerable’ according to a social index (City of Stockholm 2006).

In summary, comparing pupil constitution at schools with configurational properties has revealed some correspondences even though it is likely that other factors, that are not included in this study, also have a strong impact on the outcome. Still, in neighbourhoods that were spatially segregated, it appeared as if it was rather unlikely that non-locals were attracted and this was also possibly linked to the situation at the squares/centres; in these areas the spatial properties were not found to support an inflow of non-locals to the square/centre and nor did the municipal schools attract non-locals, meaning that the co-present ‘situation’ was likely to be profoundly local. As social arenas they therefore provide poor opportunities for exchange with people from other parts of the city. Such low inflows of non-locals to schools and squares/centres are argued to reinforce the effect of exclusion that may occur as a result of residential segregation. Taken together, this calls for greater awareness of a neighbourhood’s spatial properties when trying to increase the understanding for what kind of social arena schools may potentially become or when discussing the possible effects of the freedom of choice policy.
Co-presence in libraries

Introduction
The aim of the library study is to investigate to what extent neighbourhood libraries facilitate an opportunity for locals to share space and whether they act as a space for encounters between locals and non-locals. What kind of meeting place or social arena is the library and for whom? What are the characteristics of libraries in comparison with other spaces in the area? A questionnaire is used to gather information about the co-present people in the libraries including information about, for example, the visitors’ home addresses in order to understand to what extent there is an inflow of non-locals to the library and to the area. The results regarding constitution of co-present people will be compared with the results from the neighbourhood squares/centres where these libraries are located.

Public libraries in Sweden have no entrance fees and there are no fees for using the Internet, to borrow books or use the services available. Libraries may be seen as public spaces with a comparatively low entry requirement or threshold for people to visit. It is possible for anyone to more or less just drop in for a few minutes (for example returning books) or to stay a whole day at the library, for example reading newspapers, studying, searching various databases or participating in all sorts of activities (for example theatre, showing films or lectures). Swedish libraries also have a public function to provide information about society in general, not necessarily limited to literature and culture. For example there is support for those wanting to start their own business and there a strongly held notion that all people are welcome to participate or make use of the services offered.

The five libraries studied are located in Aspudden, Bredäng, Skärholmen, Bagarmossen and Farsta. Most libraries are open from 11 or 12 in the morning and close between 5 and 7 in the evening on weekdays. The five libraries in the study are all open on Saturdays and Farsta and Skärholmen are also open on Sundays. The investigation of co-presence at the libraries is carried out in a similar way to the study of co-presence at the squares/centres and within the same time period (May 2011). Apart from information about where people live, the questionnaire also captures information about why people come to the libraries, how often and how long they stay etc. In total the study includes 150 informants.
Libraries as a social arena

In comparison to the squares and centres, there are more rules to follow in a library that, in a way, make these spaces less public than open urban spaces such as squares/centres. The discussion about possible mixes of people held in relation to public spaces is found to be just as relevant for libraries. How a space performs from a social perspective and what kind of arena or meeting place it might be, may be better understood if the constitution of co-presence is revealed. The intensity at the libraries has not been studied at these five, instead there was a focus upon the constitution in respect of where people live, the age groups represented and the purposes of people’s visits.

It is likely that in comparison with the squares/centres the libraries will have a larger share of ‘stayers’ than ‘movers’ which, according to Koch, is equivalent with a higher degree of ‘shared purposes’ (Koch 2007, 276-293). It is perhaps odd to talk about ‘movers’ in a library but those who only visit for a very short period (e.g. returning books) may be described as ‘movers’, while a person intending to stay for a while may be described as a ‘stayer’. Moreover, it is likely that the intensity at the libraries will be lower than in the public space outside of the library. These two aspects can be related to degrees of ‘publicness’. Koch (2007, 293) suggests that a higher share of movers in combination with more people (higher intensity) results in a situation that has a public character, while a higher share of stayers (statics) in combination with fewer people result in a situation with a private character (see figure 5:77). ‘Private’ in this context does not refer to ownership, rather, it is private in the sense of what practices are allowed or performed at a library.
To some extent this also relates to the discussions of how different mixes produce the different situations such as Hillier’s on the relation between global and local movement or Jacob’s mix of strangers and local inhabitants. By studying and unfolding the constitution of those who are present in a library, it feeds into the discussion regarding what kind of social arena the library might be and how this may be different from the square/centre where they are located. As a social arena, libraries are argued to be characterised by ‘shared purposes’ to a higher extent than the squares/centres. This has to do with the fact that visiting a library is very much a social practice (see Koch 2004, 140-146); even sitting in a library reading a book may be defined as a contextualised and a social activity.

The libraries’ spatial context
The five libraries within the sample had different conditions in terms of population density, how many people live and work closeby. The accessible residential population within the immediate surroundings (here defined as within a one kilometre walk) was between about 8000 and 14000 people. As the radius was increased to two kilometres, it was possible to reveal how densely populated the further context of the neighbourhoods were. For example, Bredäng had 19 481 people living within two kilometres while Aspudden had as many as 40 770 within two kilometres. The variation was even larger when it came to the accessible working population, reflected in the accessible total population (including residential and working populations) that ranged between about 23 000 and 65 000 people (see table 5:15). Hence, Aspudden was the library that stood out from the sample in terms of access to residential and working population.

<table>
<thead>
<tr>
<th>Public library</th>
<th>Accessible residents within 1 km</th>
<th>Accessible residents within 2 km</th>
<th>Accessible residents &amp; working p. within 1 km</th>
<th>Accessible residents &amp; working p. within 2 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagarmossen</td>
<td>10 974</td>
<td>26 569</td>
<td>11 979</td>
<td>31 638</td>
</tr>
<tr>
<td>Aspudden</td>
<td>14 199</td>
<td>40 770</td>
<td>17 021</td>
<td>64 725</td>
</tr>
<tr>
<td>Bredäng</td>
<td>9 290</td>
<td>19 481</td>
<td>10 308</td>
<td>23 015</td>
</tr>
<tr>
<td>Farsta</td>
<td>10 689</td>
<td>24 013</td>
<td>13 326</td>
<td>32 144</td>
</tr>
<tr>
<td>Skärholmen</td>
<td>8 053</td>
<td>21 601</td>
<td>11 188</td>
<td>27 203</td>
</tr>
</tbody>
</table>

Table 5:15. Accessible residential population.
There were also differences regarding distances to neighbouring libraries (providing an alternative or resulting in a competitive situation). The closest libraries from Skärholmen were the ones in Bredäng (about 3 kilometres away) and Fruängen (about 4 kilometres away). Bredäng and Fruängen libraries were about 2.8 kilometres apart. From the library in Aspudden it just 1 kilometre to the library in Midsommarkransen, 2 kilometres to the library in Gröndal and 2.5 kilometres to the library at Hornstull on Södermalm. Aspudden, Bredäng and Skärholmen were located along the same subway line. The library in Bagarmossen has three other libraries within three kilometres. The distance from there to Skarpnäck was 1.5 kilometres, 2 kilometres to Björkhagen and about 3 kilometres to Enskededalen. The library at Farsta was about 2 kilometres from Skönsta library and about 2.5 kilometres from Gubbängen library.

When it comes to the configurational properties, the libraries have rather different properties when studying the contextual configuration. On the global level, Aspudden library was found to be located on a street with both a high integration value and a high betweenness value; Aspudden differed significantly in this respect compared to the other libraries. Bredäng library was rather segregated on the global level and there were no segments close to the library with high betweenness values. High betweenness values were found in the proximity of Skärholmen library and integration values were slightly higher in Skärholmen than in Bredäng, but not as high as in Aspudden. In Bagarmossen, the library was found to be located where integration values were at an intermediate level. The configurational context of Farsta library was characterised by segregation at the global level with the segments with high betweenness values not passing directly by the library. On the local level, the configurative conditions around the five libraries were more similar than at the global level. It is worth noting that Bredäng was located away from the neighbourhood’s high centrality core.

Co-presence character

Visitors and purpose

Within the sample, the library in Bredäng had the youngest audience, with the seven to fifteen age group dominating. At the other libraries the twenty-five to forty-four age group, as well as the forty-six and sixty-four group were well represented. At Farsta, elderly people were also well represented. Looking at gender, three of the libraries had an equal share of male and female visitors, while there were more women at both Bredäng and Bagarmossen libraries.

The purpose for visiting varied among the libraries: in Bredäng a large share of the visitors came to use the Internet, while in the other librari-
Figure 5.79. Global integration, radius 50, (coloured lines) and segments with high betweenness values, radius of 3,000 metres, (greyscale) for the five libraries.
ies borrowing books was a common purpose. Skärholmen library was the library where several different purposes were reported. Regarding length of stay, Bagarmossen and Farsta were not attracting people who stayed very long; most of the respondents reported that they stayed half an hour or less, meaning a dominance of ‘movers’. Also, in Aspudden and in Bredäng, people tended to stay for a short time and it was only at the library in Skärholmen that people stayed for a longer time with many reporting that they stayed either 1-2 hours or even 3-4 hours. Looking at frequency, a large share – about half the visitors – were frequent visitors, from once a week to daily visits. Bredäng and Skärholmen had the highest frequencies among its visitors. Bagarmossen had the lowest and here as many as about 35% reported that they visit once a month. The extent to which people recognise others at the libraries was rather similar at four of the libraries, around 20% (including those reporting ‘most’ and ‘many’). Bredäng stood out however in this respect: more than 60% of the respondents reported that they recognised others at the library.

**Mode of transportation**

Most respondents reported walking as their mode of transport at all five libraries; only in Skärholmen was there a larger share that used the subway. Bagarmossen had the highest share of people who cycled. It is worth noting that in Bredäng no one reported that they had cycled to the library even though the visitors are young and live in close proximity to the library. In Aspudden and Bagarmossen none reported that they had used the bus, car or tram. Cars were used to a very limited extent; a few of those visiting the libraries in Farsta and Skärholmen came by car.

**The mix of locals and non-locals**

The result from the questionnaire showed that Farsta and Skärholmen had an audience both from the local area and from more distant places. Thus, these libraries constitute an arena where the local population has the opportunity to easily encounter non-locals, although the share was not as high as in the square/centre outside the libraries. At Aspudden about 50% of the visitors lived very close to the library (within 660 metres). Bagarmossen and Bredäng libraries on the contrary were found to have predominantly local visitors and thus formed local social arenas. The 0.75 percentile of distance to visitors’ home addresses revealed that most visitors lived very close to the library; 75% within 977 metres of Bagarmossen library and 75% within 1 204 metres of Bredäng library.

When comparing the co-presence situation at the library with what was found outside the building, at the square/centre, it was possible to note that only Aspudden library had a share of non-locals that was higher
in the library than at the public space outside of it. This may be linked to the fact that Aspudden library is located where global spatial centrality is high and that it has a higher population density both locally and in its context in comparison to other areas. In Bagarmossen, the share of non-locals was more or less the same in the library as on the square. In Skärholmen and Farsta the share of non-locals was lower in the library than on the squares, but it still amounted to 67% and 59% respectively. Conversely, the situation at the library in Bredäng strongly differed from the situation on the square: the library had a comparatively more local character with only 23% non-locals while the square had 44% non-locals.

<table>
<thead>
<tr>
<th>Public library</th>
<th>Share of locals/non-locals (%)</th>
<th>Distance: home address (m) non-locals: &gt; 1 km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagarmossen</td>
<td>locals: within 1 km 7, non-locals: &gt; 1 km 23, non-locals: within 1.5 km 17</td>
<td>645 977 24</td>
</tr>
<tr>
<td>Aspudden</td>
<td>locals: 55, non-locals: &gt; 1 km 45, non-locals: within 1.5 km 36</td>
<td>659 3,918 31</td>
</tr>
<tr>
<td>Bredäng</td>
<td>locals: 77, non-locals: &gt; 1 km 23, non-locals: within 1.5 km 13</td>
<td>627 1,204 44</td>
</tr>
<tr>
<td>Farsta</td>
<td>locals: 41, non-locals: &gt; 1 km 59, non-locals: within 1.5 km 51</td>
<td>1,532 4,031 77</td>
</tr>
<tr>
<td>Skärholmen</td>
<td>locals: 33, non-locals: &gt; 1 km 67, non-locals: within 1.5 km 63</td>
<td>2,607 6,593 83</td>
</tr>
</tbody>
</table>

Table 5:16. The share of locals and non-locals among co-present visitors and the distance to the home addresses of co-present people.

Figure 5:80. A comparison between the share of non-locals at the square and at the library.

Figure 5:81. Metric distance to visitors’ home addresses.
The social catchment area of the libraries reflected to a high degree the location of the subway line in Skärholmen and Farsta. In this sense the libraries’ social catchment areas diverged from the squares'/centres’ catchment areas. The analysis also revealed that Bagarmossen and Bredäng in particular had geographically limited spatial areas of reach. Drawing from this, the Bredäng library appears to provide the neighbourhood with a different kind of social arena than that found at the square; perhaps a complementary social arena. In addition to this, it is likely that people who visit the library go there for somewhat similar purposes to a higher extent than is found at the square. This means that those who are co-present at the library are more likely to share purpose (if referring to Koch 2007) or share mode (if referring to Collins 2004) compared to those who are at the square/centre just outside of the library.

Figure 5:82. Social area of reach for the five libraries.
Summary: co-presence at libraries

Libraries as public spaces are studied since these are seen as public spaces with comparatively low thresholds for people to visit. Moreover, libraries are argued to have a higher degree of ‘shared purpose’ among those co-present compared to the square/centre. Within the somewhat limited sample, it was revealed that some libraries functioned as local arenas, while others provided opportunities for locals and non-locals to encounter each other and to share space. The following findings are seen as especially relevant.

First, the social catchment area of the libraries was found to diverge from the social catchment area of the adjacent square/centre in four cases out of five. These libraries, Bagarmossen being the exception, are argued to provide a space for encounters that differs to what is found at the square/centre where the libraries are located, indicating that there is a variety of meeting places even though more kinds of public spaces ought to be included if this aspect is to be thoroughly explored. Moreover, the social catchment area for the libraries in Skärholmen and Farsta delineate and overlap with how the subway line is located, which becomes clear since both these libraries have rather high inflows of non-locals. It is partly explained by the fact that the configurative properties are not supporting an inflow of non-locals to the area, in combination with the fact that these areas have low population densities (both locally and contextually). This results in a higher dependency on, for example, subway communication but also other modes of transportation, for example the car.

Second, three out of five of the libraries studied provide the potential for locals and non-locals to meet. The libraries found in Bredäng and Bagarmossen primarily constitute a social arena for the local population. The one in Bredäng is found to be a meeting place for young people as they visit frequently and stay quite long on each visit. This is also indicated by the large degree of crowd familiarity found in Bredäng. The library in Aspudden is the only one in the sample that has a higher share of non-locals in its library than at the square. This is suggested to be the result of high population density, both locally and within its further context, in combination with high integration values, also making it accessible for many non-locals.

Third, the distribution between ‘stayers’ and ‘movers’ most likely has an impact on what kind of social arena the libraries turn out to be. Even if both Bredäng and Bagarmossen have large shares of locals, there is an important difference. In Bagarmossen the majority of the visitors are ‘movers’ and the lack of ‘stayers’ implies that, most likely, the library
provides a poorer social arena for the residents in the neighbourhood in comparison to, for example, Bredäng.

To sum up, even though the sample in this study was limited to only five libraries, it illustrates that this kind of institution may provide a different type of social arena to what is found at the square/centre or in the schools. It is indicated that both population density and spatial configuration influence the constitution of co-present people at the libraries: a higher density in an area’s further context and a higher integration seem to be beneficial for the inflow of non-locals. At the same time it is found that when configurational conditions are poorer, the catchment area tends to be either limited or follows the location of the subway system more closely and/or is more dependent on other modes of transportation such as cars. However, that there is a mix of locals and non-locals at some of the libraries is in itself important to emphasise. The neighbourhood library is often described as primarily a local arena, providing local residents with a meeting place. This study has, however, illustrated that neighbourhood libraries – at least in some cases – can also function as social arenas, providing opportunities for local residents to encounter non-locals, places where non-locals can contribute to the social life of a place where they do not live themselves.
5.4 What’s found around the corner?

The empirical study has demonstrated that spatial configuration is, in different ways, influencing everyday practices and thus creates patterns of co-presence. Moreover, spatial form is also found to have an impact on the intensity and the constitution of co-presence in public space. However, other factors are also found to influence the co-present situation, for example, in areas with strong attractors such as a train station or a shopping centre, this kind of programming tends to override the configurational influence.

The way in which access to different urban resources is distributed across the city is a possible to link to the discussion on unequal living conditions and life chances. It has been shown that urban form can create closeness and high access within an urban system, but that urban form can also create distance to certain resources and between neighbourhoods and between people depending on how it is configured. What has been found to have significant importance is that all neighbourhoods and places are highly dependent not only on the immediate local environment, but, more importantly, on what is found in the surrounding context. How a local area is spatially related to this surrounding context is of utmost importance. Increased knowledge of the role of urban form for social processes is also argued to increase the understanding of how the spatial relates to the social.

In the diagrams below some key variables for each neighbourhood are presented. The diagrams illustrate the extent to which those spatial properties found to have importance for matters related to urban segregation and that are simultaneously highly influenced by urban form, are made available in the eighteen neighbourhoods studied, a kind of spatial signature. In addition, distance and travel time to the inner city is noted as well as inflow of non-locals and intensity in public space. In a way, this illustrates what affordances different neighbourhoods have. The aspects shown are integration (radius 30 and 10), betweenness (radius 2000 metres), integration interface, accessible day and night population (the inner city places are given a maximum value and the scale is put to highlight differences in the outer city), walking distance to the city core, travel time to the city core with public transportation as well as inflow of non-locals and intensity at the neighbourhood square/centre.
Figure 5.83. Comparison between places in the south of Stockholm.
6. Discussion and conclusions

All these men with baby strollers!
A common reaction from tourists visiting Stockholm is that they are surprised to see so many men – fathers and grandfathers – walking the streets of Stockholm with a baby stroller. You see them use public transportation, visit cafés with their children and play in the parks etc. For people living in Stockholm, this is hardly something that attracts much attention, at least not any longer. It has become a normal feature of street life. So what consequences can this have for society at large that we share space and become aware of our fellow citizens; their behaviours and their identity? One result of these men with strollers being ‘visible’ in public space is that people are gradually getting used to it; it is becoming accepted and is seen as ‘normal’. Most likely people are constantly influenced on a personal level by what is seen in public space and by those with whom they share public space, both consciously or unconsciously. The fathers’ and grandfathers’ presence in public space (initially possible through decisions made at a macro level) not only leads to an acceptance of such phenomenon being a natural part of street life, it also signals a wide range of other things concerning attitudes and values in society, for example things that have to do with equality between men and women, shared responsibility for bringing up children or who is on parental leave. These negotiations in public space can either be characterised by acceptance or by conflict. Thus negotiations and (non-violent) conflicts about behaviour, norms and values appear to be highly important for societal change and part of such negotiations take place in public space as we carry out our everyday activities. Not only is it possible to understand a lot about Swedish society just by interpreting and ‘reading’ life on the street, more importantly it also creates an opportunity to contribute to the formation of public culture just by sharing space with other citizens. In this sense, this is an example of how negotiations in public space have a wider influence on society at large: these fathers/grandfathers gradually influence public culture at a micro level and from a longer-term perspective, this may change how we see ‘fathers’ and ‘grandfathers’ in society. Other people have to relate to this group in some way or another and reflect upon it. As space is shared, public culture is negotiated and formed. As Zukin points out, being in public space also means ‘being in society’ (Zukin 1995).
Patterns of co-presence

The main concern for this thesis is to arrive at a deeper understanding of the critical role urban form plays for co-presence in public space and in extension and more specifically social segregation in public space. In this way, urban form has been found to have key importance for social segregation. This increased knowledge and understanding of the close relationship between urban form and social segregation via co-presence is argued to have great implications for the practices of urban design and architecture as well as for segregation issue, something that will be further discussed in this chapter. The following steps have been taken within this research project.

- The conceptualisation of segregation has been broadened and the main focus has been upon the role of the built environment. Residential segregation is a field that is rather well investigated. But when it comes to understand why residential segregation is problematic for social processes, the field is less well explored. For such explanations, this thesis has turned to social theories emphasising the importance of co-presence and the importance of sharing space for social processes (e.g. Goffman 1963, Giddens 1984, Collins 2004). Within these theories, co-presence plays a decisive role in the formation of any social process and hence provides strong theoretical support for its sociological relevance.

- However, these theories are weak when it comes to explaining where co-presence occurs and the focus therefore returned to the field of urban design and architecture. With support from the architectural theory of space syntax that aims to study the space-society relationship from the viewpoint of space, empirical evidence was provided for correlations between urban form – as it is shaped by urban design and architecture – and the creation of co-presence and for variations in its intensity and constitution. Furthermore, the things people may have access to ‘just around the corner’ in terms of human resources or other urban amenities are suggested to be highly relevant to elaborate.

- The variations found in terms of access to various resources when comparing urban neighbourhoods are argued to enrich the discussion on social exclusion, unequal living conditions and the awareness of ‘the other’. An important aim has been to demonstrate that segregation is not only a social problem but also a spatial problem.

Below is a brief overview of the main findings from the empirical studies. These findings are then discussed from the viewpoint of seven themes and conclusions are presented. The themes have been selected because they are argued to have significant relevance for urban design and urban segregation.
The main findings

Segregation in public space: spatial analysis
The configurational analysis of Stockholm showed that spatial centrality has an asymmetric distribution, meaning that the city is not concentric in this respect. Areas directly towards the south of the inner city were much more integrated on a global scale than, for example, areas to the southwest of the inner city. Moreover, the ‘weave’ of high centrality was expressed differently across the city; in some parts, the network was dense and small-scale while in other parts, the texture was much looser and less dense. Based on the empirical findings, it was argued that neighbourhoods in the ‘loose’ locations were spatially more isolated from the city as a whole, implying that access to urban resources was limited and inhabitants were afforded less resources and services in their local environment. What needs to be highlighted is that resources found within these areas – both in terms of people and various amenities – are limited in the extent to which they are available to people living in other parts of the city in a reciprocal manner.

When the ‘betweenness’ analysis was superimposed upon the integration analysis – an analysis made because different kinds of centrality have different social implications – some of the squares and centres that were included in the sample were found to have high values according to both these measurements on the global scale while other squares/centres were identified where at least one of these measures was relatively low. This indicates whether inter-accessibility through the neighbourhoods was facilitated by the urban layout. It can therefore be argued that the third of the squares/centres located where there was high centrality according to both measurements form part of the ‘foreground network’ (Hillier 2009b). One third had high values for at least one of the centrality measurements. Furthermore, about a third of the squares/centres in Stockholm’s south were located where there was neither high integration nor high betweenness values. These squares/centres can be said to be positioned within the background network which, according to Hillier, means that liveliness and economic activity are poorly supported by spatial properties (Hillier et al. 2010). This lack of liveliness was confirmed by the Stockholm study because many of the squares/centres were found to be low intensity spaces and had a limited inflow of non-locals.

39 That is: integration radius of 30 and betweenness radius of 3000 metres.
The neighbourhoods’ ‘embeddedness’ in their contexts was also analysed according to pervasive centrality, the spatial area of reach (i.e. how large a context was reached within a certain number of turns from the square) and the integration interface (i.e. the correlation of integration on the local and the global scale). In Stockholm’s south, substantial differences were found as neighbourhoods were compared. The most distinguished difference was found between the squares/centres in the inner city and those in the outer city. However, as the squares/centres in the outer city were compared, it was possible to see that they had very different degrees of spatial embeddedness. From the analysis of the spatial area of reach, it was revealed that even areas geographically close turned out to be at very different depths from one another within the urban system. Areas with a significantly limited spatial area of reach are generally poorly embedded in their wider context. The fact that the neighbourhoods were poorly spatially integrated within their wider context implies that more effort is required by non-locals to visit and lower density in terms of accessible population compared with neighbourhoods that were better integrated spatially in their surroundings. It also limits what resources the inhabitants from these areas have access to within regular walking distance. This highlights the importance of the context which means that, even if neighbourhoods as units are built during the same era and share architectural and other attributes, they do not need to perform in a similar way since they may be differently embedded within their surroundings and they may be located in different configurational positions in the city as a whole.

Taken together, a segregation of public space, a limited spatial reach and an uneven distribution of spatial centrality – a city characterised by discontinuity – appears to discourage exchange between neighbourhoods and access to urban resources across the city. This has high relevance for the segregation debate: if a majority of the neighbourhoods have such properties, this means that the urban layout encourages a separation of those who cluster together residentially which, in turn, tends to generate separation of social groups and social differences. Moreover, the likelihood that there will be an unequal access to urban resources is significant. This spatial analysis is specifically about capturing the spatial conditions and potential which is an important point in itself in this context. This can be described as the spatial capital (Marcus 2010) which constitutes the basis for resulting land use, activities, distribution and constitution of co-presences, accessibility of amenities and other people, etc. Depending on variation within the spatial capital of the built environment across the city, different parts will have certain spatial characteristics that influ-
ence the extent to which urban form may support (or obstruct) various activities and uses. However, in the analysis presented below, social data is included and reveals the extent to which such correspondences can be established empirically.

**Co-presence in neighbourhood squares**

When co-presence was studied at eighteen neighbourhood squares and centres in the Stockholm’s south, significant variations within the sample were established in terms of intensity, how crowded the public space was and its constitution, taken to be the mix of locals and non-locals. Many of the neighbourhoods’ squares/centres, places assumed to be important local meeting places, were found to only poorly support or encourage social processes. This means that the repertoire or diversity of social arenas these neighbourhoods offer is rather limited: there may be many different kinds of low intensity spaces with few non-locals. However the variety of more high-intensity spaces where non-locals may also be found is not present in several of the neighbourhoods studied in Stockholm’s south.

The share of non-locals in the studied squares/centres ranged between about 20%-80% within the sample. The higher levels were found in the two inner city squares and the squares/centres with large shopping facilities while the lower shares were found in Östbergahöjden and Gamla Östberga, neighbourhoods characterised by comparatively lower income levels and lower employment rates. Studying the distance from the squares/centres to where the visitors lived, it was revealed that as many as half of the studied squares had 75% of their visitors living within a two kilometre radius. Studying the direction in which people live in relation to the square, a correspondence was found between the spatial area of reach and the social area of reach (i.e. the visitors’ home addresses). The correspondence was stronger in those places positioned in locations of high centrality than at places located in spatially segregated structures. Places weakly integrated within the urban system (e.g. deep in the system) had either a very limited social area of reach or a pattern that followed the location and the direction of the subway.

When the share of non-locals was compared with configurational properties – an investigation conducted in order to disclose social consequences of urban form – it was found that two configurative characteristics correlated strongly with the share of non-locals; namely integration at the mid-scale level and integration interface. Moreover, the size of the spatial area of reach was found to be of importance. These findings indicate that the extent to which an area is embedded within its spatial context will influence the share of non-locals in a square or centre. This
means that the spatial context of neighbourhoods has great significance for how a neighbourhood performs which places emphasis on the importance of considering the further context of a neighbourhood in order to understand what role the built environment has for social processes.

The questionnaire documented what reason the visitors gave for being in the squares/centres. Most squares were found to facilitate ‘single-purpose projects’ where one specific purpose dominated. Places where two purposes were equally represented (in this sample, ‘living’ was paired with ‘shopping’) can be characterised as ‘few-purpose project’ places. Only two of the places were characterised by ‘multi-purpose projects’, namely the two inner city places. In addition to this, observations of intensity proved to correlate strongly with the share of non-locals. However, the correlation between the spatial properties and intensity as well as inflow of non-locals was found to be weaker in those places where an important attracting factor was found, like a train station or a shopping centre.

In order to record diversity among co-present people, the median income level where people had their home addresses was used (i.e. in that administrative area, the so-called ‘base area’). It was found that high inflows of non-locals in a place corresponded with a higher diversity in terms of median income levels. The two larger shopping centres in particular attracted people living in areas where the median income level differed greatly.

Accordingly, drawing on the results of the sample including eighteen squares/centres, a higher share of non-locals was found to be connected to diversity in public space and a higher share of non-locals was found to correspond to increased intensity which, in turn, was found to be related to certain configurational properties, more specifically: the integration interface and the spatial embeddedness (captured through integration at the mid-scale level and/or spatial area of reach). In addition, a few specific attracting factors (e.g. shopping centres) were found to have significant influence.

**Access to work places**

Analysing aspects with relevance to opportunities in the labour market, it was revealed that many areas characterised by high unemployment rates and low income levels were disadvantaged in terms of physical access to jobs access to non-residents locally and had a limited daytime population (i.e. working population or work places). The analysis identified that urban form played a role in creating this situation, especially the separation or the distance created between some neighbourhoods and resources found in their wider context.
The two inner city areas differed considerably compared with the outer city in this respect. This concerned access to jobs as well as other aspects beneficial to residents’ chances in the labour market; these areas were found to have high employment rates, high spatial integration, an inflow of non-locals and an intensity of public life that appeared to be favourable. In addition, significant access was provided to other parts of the city as well as to the region as a whole via public transportation. Compared with this situation, many neighbourhoods in the outer city were found to have diametrically different spatial conditions. Many of the places proved to be poorly spatially integrated, had limited spatial catchment areas and a poor integration interface and were thus weakly embedded in their surroundings. What is of greatest concern is when such conditions are found in neighbourhoods characterised by exclusion is home to those people who depend the most on what is available locally; people who depend on having easy access to urban amenities and resources in their everyday lives (Hanson 2000).

The empirical study showed that what is afforded locally in a neighbourhood was highly influenced and dependent on what was found in an area’s wider context and when the analysis addressed a broader context than the local neighbourhood alone, the differences appeared more clearly, for example access to work places. This means that local spatial affordances are largely decided by and influenced by the further context of a place. This is an important finding as it points to the fact that, when working in areas characterised by exclusion, efficient initiatives are those best made where local interventions are combined with interventions in the area’s wider context.

Co-presence at schools
Public spaces for education are potentially important arenas for integration processes in society. The empirical study focused upon the extent to which there was a mix of non-locals and local pupils at compulsory schools in Stockholm’s south. This made it possible to explore possible correlations between urban form and the inflow of non-locals to schools but also to compare the constitution of people at the schools with what is found in the neighbourhood’s square or centre. When the school reform of free choice was launched, schools transformed from being local institutions into being available for the larger city and thus the extent to which non-locals are attracted to a school may be influenced by how spatially accessible the school is.

The result showed that independent schools in general had a larger share of non-locals than municipal schools. Moreover, schools in the
same neighbourhood had a rather different pupil constitution. However, as the selection was made to include municipal schools only, a correlation was found between the number of neighbourhoods represented at a school among its pupils and spatial integration as well as population density (within one and two kilometres). One thing argued to be of great concern was that some neighbourhoods characterised by exclusion and identified as ‘socially vulnerable’ were found not only to have a low inflow of non-locals to the neighbourhood’s square/centre but also to the local school/schools. This means that neither of these spaces are likely to blur the patterns of residential segregation or provide sufficient arenas for social processes that can potentially bridge social groups or social difference.

Co-presence at libraries
Libraries are often seen as important meeting places in neighbourhoods. The study of libraries aimed to establish what kind of social arena they represent, based on what mix there was among the co-present people, for example according to where people lived. The result showed that the visitors at the libraries tended to be more local in comparison to the neighbourhood’s square/centre (Aspudden being the exception). Comparing the social catchment areas of libraries with the those of the squares/centres, it was found that non-locals visiting the libraries lived along the subway line to a larger extent than those non-locals visiting the square/centre, for example in Skärholmen and in Farsta. However, two of the libraries clearly had a profoundly local character and one in addition to this also had an audience dominated by young people. Moreover, the time people spend at a library has importance for what kind of arena it potentially may be; the relationship between so-called ‘stayers’ and ‘movers’ is important. A library dominated by ‘movers’ can be described as supporting social processes only to a limited extent while a library with a larger portion of ‘stayers’ offers more possibilities for interaction and other social processes. When the length and frequencies of visits were studied, it was found that the composition of people and their purposes in most libraries were likely to support social processes amongst the visitors, while one library appeared to support such social activities only poorly since visits were very short and more seldom reoccurring. It was found that most libraries offer high potential for integrating processes between locals and non-locals but that it is not a given in any library.
Theme 1: Linking the spatial and the social

In this thesis, public space was identified as the most critical place for the development of urban social networks and as such, argued to be an important arena with significance for integration processes in society at large. By being in public space, people are able to be part of and participate in various societal processes which highlights the importance of co-presence as such. According to Zukin (1995), public culture is being negotiated by those who participate in it, actively or non-actively. To share space with our fellow citizens gives us insight into other people’s life conditions, awareness is gained of differences and similarities and the unwritten rules of society are formed. Being in public space thus means negotiating norms, behaviours and identities etc. that, in the long run, may leave an imprint on society at large (Zukin 1995). Hence, micro level processes are argued to have an effect on the macro level. A prerequisite for exploring the role of the built environment in social segregation was to identify social and spatial theories that can respond to this. The theories chosen are argued to support the approach of the research project and are found to be complementary. More specifically, micro-sociology theories explain why co-presence has importance for social processes (e.g. Goffman 1963, Giddens 1984 and Collins 2004) and from an architecture and urban design perspective, one relevant issue to address is how built form, as it structures and shapes urban space, may have an impact on where in the city co-present situations are likely to develop. Again we can draw on social theory and find that the patterns of co-presence in an urban environment are commonly the result of our everyday practices. According to Giddens (1984), such practices are routinised to a large degree. This is also acknowledged by Hägerstrand (2009) who saw that the trajectories of individuals to a large extent followed similar daily procedures. Therefore, how these trajectories may overlap or be superimposed – completely or in certain sequences – cannot be characterised as completely random. This insight leads us to focus on the places where such everyday activities occur, namely the built environment and urban public space. The extent to which public spaces across the city provide arenas for micro level processes, some of which may help overcome social differences, is argued to have great importance for social processes and for possibilities of accessing resources which are crucial aspects for counteracting segregation. Taken together, this identifies co-presence as a key aspect to study. However, the social theories do not explain where such patterns of co-presence may occur in urban space – this is especially
true when working with interventions that intend to affect and depend on emergence of co-presence situations. To this end, we need to draw on spatial theory that can explain where patterns of co-presence are likely to be created and reveal in what way the built environment plays a role in these issues. Such knowledge is argued to be found in the spatial theory of space syntax (Hillier & Hanson 1984, Hillier 2009a). This means that by linking these theories, we can better understand where co-presence will be created in a city and at the same time explain why this ‘where’ is important from a societal perspective and more specifically from a social segregation perspective. The Stockholm study contributes empirical evidence confirming that everyday life activities at the studied places in Stockholm’s south are highly routinised, that spatial configuration has a significant impact on the patterns of co-presence and that strong attracting forces (e.g. large shopping centres) can override the configurational influence.

**Theme 2: A mix of locals and nonlocals**

A problem with the neighbourhood unit planning (and similar urban models) highlighted by the study is the underlying assumption that a local community was believed to be favoured by the exclusion of ‘strangers’ or non-locals (Sidenbladh 1948). Studying how the neighbourhood unit was described in the 1940s and 1950s, it appears as there was a conflict between the local community on the one hand and on the other hand, community at a city level. A precondition for the local community developing in the neighbourhood unit was believed to be that the number of people was limited and that ‘strangers’ (i.e. non-locals) were excluded (The General Plan 1952, 118). Thus, this can be described as a conception built on ‘territorial theories’, based on the assumption that there is a correspondence between spatial zones and social solidarities (discussed in Hanson & Hillier 1987). Such correspondence strongly contradicts ideas presented by Jacobs: that urban life is about living with and among strangers (Jacobs 1961, 143-238) and that the local neighbourhood or community is favoured by having diffuse boundaries with other parts of the city (Jacobs 1961, 120). At a conceptual level, this can also be said to be contradictory to what is identified as problematic within urban segregation today, namely that there is a lack of interplay between (residentially segregated) neighbourhoods – interplay of such kind that can
bridge social groups and social differences. A critical question is then: which public spaces will those living in a residential segregated city have access to? And to what extent does the city provide public spaces where people from different backgrounds and social groups are allowed and encouraged to share space in their everyday life? This is a key aspect of the ‘divided’ or the ‘segregated’ city that has been far less explored than the residential aspect.

One finding from the Stockholm study and the Södertälje study was that many public spaces – even the neighbourhood squares or centres that one could expect to be high-intensity spaces – did not facilitate an arena where the local population could encounter or simply share space with non-locals. The spatial properties identified at these places were found to play a role in creating such a situation; urban form was found to encourage quietness on behalf of circulation and separating activities and the urban layouts did not enable or facilitate inter-accessibility. From a social segregation perspective, it is of great concern that access to urban space (that on the one hand can create a concentration of people and on the other can hold a mix of social groups or a mix of residents and strangers) is provided in such a limited extent in the outer city. This is found to be especially critical and unfavourable for so-called secondary relationships or weak ties and is argued to have great importance for the urban segregation matter. The reason for focusing on secondary relationships in this discussion was because urban layouts were found to support secondary relationships or weak ties poorly, even though it needs to be emphasised that this does not imply that primary relations are unimportant.

Granovetter (1973, 1983) argued the strength of weak ties, suggesting that weak ties are important for bridging social differences. Weak ties were found to have great importance for how information and knowledge can circulate in society (Granovetter 1973; Putman 2000). In this thesis, it has been argued that such ties or links have great potential not only to bridge social differences but also to allow information and opportunities to circulate outside (or between) sub communities or networks built on primary relationships. Granovetter argued that weak ties were vital for an individual’s integration into modern society (Granovetter 1983, 203). Likewise, based on observations, Jacobs emphasised the importance of such relationships – hop-skip links as she calls them – for producing and reproducing social networks that, for example, are important for the emergence of self-government functions. Again, this is an observation indicating that the local community is not inhibited by having an inflow of non-locals; rather the opposite, primary and secondary relationships can co-exist and are reproduced in the same space which is contradictory.
to territorial theories. This is argued to have an impact on how cities and
neighbourhoods are perceived where there is antagonism between the
primary and secondary relationships which, in this thesis, is suggested
to be not only an unfortunate assumption but in many cases also untrue.

There are, however, other ways of understanding how social relations
work in relation to an urban environment and how urban form can sup-
port social networks. Jacobs suggested that successful street-neighbour-
hood networks were better facilitated where neighbourhoods had diffuse
boundaries. The extent to which a neighbourhood has diffuse boundaries
has been empirically captured by analysing spatial integration, the spatial
reach of an area as well as the integration interface by studying how the
reach of areas connects or does not connect to other areas and whether
integration patterns distinctly match neighbourhood boundaries or move
across them. Jacobs’ view links in with ideas about area-sation that is re-
levant in this context and according to Hillier (2009a), keeping ‘strangers’
out of an area or inhibiting transactions with non-locals by establishing
stronger physical demarcations or boundaries will not strengthen the
identity of an area. Hillier suggests the opposite, that an area-sation is
supported by an urban form that allows and enables inter-accessibility
and creates a balance between foreground and background networks. It
needs to be emphasised, however, that ‘identity’ as such is not necessarily
limited to areas that exclude non-locals; rather it seems that who shares
space and what intensity this co-presence situation will take affects the
character of the identity or the public culture if referring to Zukin that, in
the long run, may have an impact at a macro-level. It is a matter of what
cultures may exist simultaneously. Arguably, identities and solidarities in
villages and certain neighbourhoods can be very strong but perhaps a di-
versity of identities is not encouraged/fostered: such communities are closely
related to a certain physical space while areas with diffuse boundaries
allow a multitude of identities and solidarities simultaneously and these
identities also relate to different physical areas (compare with Jacobs 1961,
120; Hanson & Hillier 1987 (‘spatial and transpatial solidarities’); Koch
2007 (‘compatible categories’).

The Stockholm study contributes empirical evidence that a higher in-
flow of non-locals corresponds to higher intensity as well as to increased
diversity. More importantly, inflow of non-locals was found to correspond
to certain specific configurational properties such as spatial integration,
integration interface as well as geographically large areas of reach; con-
figurational properties had consequences on both inter-accessibility and
on embeddedness. Many of the neighbourhoods in Stockholm’s south
proved to have configurational properties that neither encouraged non-
locals to enter public space (for example the neighbourhood’s square/centre) nor facilitated inter-accessibility with the result that both the intensity and the diversity of co-presence in public space turned out to be limited. This is assumed to inhibit the development of secondary relationships or so-called weak ties, which has a negative impact on people in society with fewer resources in particular.

**Theme 3: The importance of sharing space**

It is clear that within urban design and planning (at least in Sweden), satisfying so-called primary functions has been a high priority for a long time: for example, providing housing of a good standard, planning for efficient traffic flows (thinking in trips from A to B), providing schools, commercial services, public transportation and even recreational facilities. However, this discussion opposes the idea that other aspects said to be most critical from a social perspective (here referred to as secondary functions or secondary benefits) are neglected. Such secondary benefits, for example the informal and communicative benefits, can be described as unintentional or additional results while carrying out what was intended and according to Koch et al. are very difficult to put into a ‘traditional’ architectural programme (Koch et al. 2012).

This thesis has advertised a non-glamorous understanding of urban life or urbanity as an unintended by-product of a number of frequently and rather anonymous encounters based on how the city is used for our everyday activities. Such routinised intended and unintended encounters, the result of everyday practice, are argued to produce and reproduce a social interplay that has importance for integration processes in society (Olsson 2005). The result of ignoring important social consequences has been highlighted by Franzén (2003a), arguing that the realisation of modern urban design ideas implied (among other things) that everyday life was rationalised and that an undesired and unpredicted consequence of such rationalised everyday life was that many occasional, accidental and unintended actions were lost (Franzén 2003a, 40). Hence, the public life that was taken more or less for granted previously was lost. It was exactly this that Jacobs (1961) documented in observations of the transformation of urban life. So, the extent to which urban layouts can provide conditions with the potential to create secondary benefits appears to be highly crucial (besides satisfying the primary functions); for example, providing
a potential visible to others, encountering both neighbours and ‘strangers’, encountering others doing different things or a potential for being exposed to ‘otherness’.

The everyday activities that create such encounters have been argued to be highly routinised (Giddens 1984; Hägerstrand 2009, 204-205; Hiller & Hanson 1984). The empirical findings from Stockholm and Södertälje confirmed the routinised character of how public space was used. From an urban design perspective, this is highly relevant since public space to a certain degree is found to arrange and direct these daily activities. Depending on what kinds of activities and behaviours are favoured or inhibited by urban form, public space will provide different affordances across the city, influencing what kind of social arena they are and what kind of social solidarities are encouraged. This means that the extent to which people are allowed to share space and such unintended encounters come about or the extent to which the trajectories of people with different purposes overlap can be influenced by urban design and architecture. The empirical analysis has more explicitly illustrated which spatial properties proved to be important for creating these unintended encounters and social processes that potentially bridge social difference and social groups. The preconditions for public life will be illustrated here from the aspects of co-presence intensity and constitution of co-presence.

The performance of urban layouts is argued to influence the character of urban life by creating variations of its intensity and its constitution and this will, in turn, have an impact on what kind of social arenas will potentially be created. Partly this is the result of what activities are encouraged or inhibited in public space and who will have access to public space. Intensity can be seen as the result of movement and/or as a result of staying. Within space syntax, strong empirical evidence has been found establishing that distribution of movement correlates with spatial integration (Hillier et al. 1993; Hillier & Iida 2005). In the Stockholm study, it was also established that intensity corresponded with the inflow of non-locals and with diversity. It can be argued that intensity is dependent on the inflow of non-residents since the ‘crowdedness’ the local population can produce has its limits. Looking at population density in Stockholm, it is already at this level indicating that high intensity in public space is difficult to accomplish in the outer city of Stockholm, especially in areas with low population densities. The inflow of non-locals – creating variations in constitutions of co-presence – was found to correspond with spatial properties and was related to how spatially integrated an area was in the urban system; its embeddedness and its inter-accessibility. Moreover, inflow of non-locals was found to correspond strongly to accessible work-
ing places locally, so if the preconditions were favourable for establishing work places, this also increased the number of non-locals in public space. However, it is important to highlight that the configurational properties can be outweighed by strong attractions. This was, for example, found to be the case in the neighbourhoods where the larger shopping centres were located, in Skärholmen and in Farsta.

Constitution can also be discussed from the perspective of single versus multi-purpose projects (Koch 2007). This is argued to be closely linked to what Jacobs (1961) emphasised as important for liveliness in the city, namely that people are in the same place for different purposes (note the difference of individual project and the result of the collective). The empirical analysis found two places that could be described as facilitating multi-purpose projects (according to how respondents reported), namely the two inner city places. The high accessibility to people and the spatial configuration found at these places makes them very different compared to the neighbourhoods in the outer city. However, it is important to emphasise that the squares/centres in the outer city did not perform in a uniform way. Quite conversely, as these areas were compared between themselves, large differences in their spatial affordance were found, for example according to their embeddedness and the level of inter-accessibility. In terms of population density (i.e. accessible people), the neighbourhoods turned out to be more similar. It can be noted that, even though the large shopping centres were found to produce high intensity and attract non-locals, they were still largely producing so-called single-purpose spaces and people came there to do similar things (i.e. shopping in this case). One conclusion from this is that an increase in diversity, both according to a mix of locals and non-locals and according to their purpose in coming here, means that the secondary benefits are favoured (Koch et al. 2012). To have an impact, however, such unintended encounters need to be facilitated throughout the city to a larger degree than today and not only be concentrated in the inner city areas and in a handful of places in the outer city. To be clear: this public life that is argued to be beneficial for social processes – and may potentially counteract social segregation – does not necessarily take on the character of a public life with seductively crowded streets filled with people drinking coffee and street musicians. Rather, the aim is to provide social arenas in public space that can easily become part of peoples’ everyday lives and where social processes may take place that can bridge social differences. The character they may take can and will vary considerably and the ‘crowded-open-air-café-street’ is only one example. Nowadays, one can sense an unfortunate confusion of the means and ends in this respect within many planning and urban
discourses; achieving this kind of urban life character is often said to be the ultimate end in itself, while it is arguably better seen as a means of achieving certain social aims.

The lesson to learnt from this is that urban design practice needs to acknowledge so-called secondary benefits in addition to the primary benefits to a larger degree in order to achieve social ends (can be compared with the findings in Koch 2007; Koch et al. 2012; Choi 2011). Accordingly, for the segregation issue, it is critical that urban layouts enable people to simply share public space and moreover, since urbanity is said to depend on a certain concentration of people as well as a certain diversity among those who share space, it is essential that urban design can create at least some public spaces in each neighbourhood that provide favourable conditions for such an intensity and mix.

Theme 4: Urban models and ideas about society

Interpreting the results from the empirical analysis, one can reflect upon how neighbourhoods perform in relation to what was the initial intention; to what extent are these consequences, today deemed to be problematic from a social viewpoint, in fact an initially intended and desired effect? Urban design and urban planning ideas have always been coloured by ideas about what kind of society is desired. Many urban models have been influenced by ideas of how to facilitate and encourage a sense of community; in a way, the aim was to create the ‘social city’ (Deland 2008). The political agenda of today speaks of integration and cohesion. However, without knowledge and understanding of the role of urban form in social processes, it is a risk to apply urban models that only repeat old patterns and structures that shift architectural appearances but create very little change from a performative perspective.

The building of the welfare society included aims of increased equality and standards. This was believed to be achievable through a rationalisation of the city and a rationalisation of the activities in the city. The ‘components’ or ‘attributes’ found to be of importance were treated separately and more or less optimised one by one. The aim was for the city to facilitate living, working, education, transportation, recreation etc. One consequence of such a zoning concept was that the separation of land uses as well as activities increased and spaces for different uses were separated, for example housing was separated from working and vehicle traffic was
separated from pedestrians. In a sense, this implied that single-purpose projects were favoured on behalf of multi-purpose projects and what is perhaps even more important, it implied that people with different purposes were meant to be separated spatially and not share the same space. Urban layouts were not designed to facilitate different purposes to any large extent rather, as Sidenbladh pointed out: the neighbourhood unit should provide a place for ‘rest’ and not for ‘movement’ (Sidenbladh 1948, 116). Thus, there were many ‘attributes’ of a city but not those ‘attributes’ that could ‘do the job’ of creating a city. In addition to this, it was a pronounced aim to support the local community. Strong local communities were seen as an alternative to the urban life characterised by anonymity and a lack of control. Thus, the size of the area was limited and non-locals were not encouraged to cross into other areas. The influence of territorial theories is evident: there is a belief in the correspondence between social solidarities and the spatial zone. This implies also that primary relationships were seen as being more important to foster than secondary relationships. Meeting ‘the other’ was not something one was supposed to do in the local neighbourhood; such encounters were facilitated elsewhere, for example in the city centre.

To conclude, the diagrams and models developed within the framework of the neighbourhood unit and their forerunners not only had a great influence on how new areas were designed; here it is argued that these simplified models also had a great impact on how we think of the neighbourhood and the city and how cities work from a social and economic perspective. Even today, according to Hiller, most urban models have very little to do with how cities and neighbourhoods perform in reality and descriptions are not internally derived from the city in itself, but from the study of its urban form and composition. Quite conversely, such descriptions are more the kind that are ‘externally’ imposed descriptions (Hillier 2009, KO1:1). The complexity that Jacobs observed seems to have been overlooked: “[…] cities happened to be problems in organized complexity.” (Jacobs 1961). As Hanson conclude:

“[… there is a danger that, with the test of time, some of today’s radical new designs might be judged to have ‘got it wrong’ once again, and that would be a disaster not only for the people who have to live there but also for architectural theory.” (Hanson 2000, 97).

Thus, the challenge is to gain insight into this complexity and to understand the ‘work’ urban layouts do more deeply. The empirical results point to the fact that the spatial isolation and zoning originally believed to favour community and found in many urban models (e.g. the neighbour-
hood unit concept that still is highly influential today) have not proved to be beneficial for urban social networks or for processes that can potentially bridge social differences. This means that the correspondence idea may be questioned which, among other things, has consequences for what urban models can be argued to counteract segregation and exclusion and be socially more sustainable: instead of building units that are configuratively segregated and with limited areas of reach, this calls for urban models that encourage inter-accessibility are characterised by high integration levels, are creating an integration interface and are well embedded within their urban context.

Theme 5: Symbolic and performative aspects

Simplified urban models and concepts are descriptions that obviously capture something about cities but it is important to bear in mind that many other aspects are overlooked. Such contradictions between what architecture symbolises or represents and how it performs will be discussed here, drawing on Venturi & Brown (1968) and the empirical findings.

Venturi & Brown (1968) argued that contradictions between what the architecture symbolises and how it functions were common before modernism (1999, 33); they argued that ‘false’ façades signalled significance and were used in order to increase the quality of the street but that character was not necessarily reflected in the interior. Venturi & Brown refer among other things to the rediscovering and renaissance of the Italian piazza in the 1940s and infer that architects then did not understand the complexity of the fact that the piazza is not a piazza without its city, in the same way as the Strip in Las Vegas would not be the Strip without Las Vegas (1999, 34). Farsta got one of these piazzas – the shape of the square is a replica – but obviously does not have the same context as its model found in Verona, Italy. Venturi & Brown infer that there is often more to see and understand if you know what to look for. Perhaps this is why we now have so many ‘city-like’ developments that fail to actually become or perform as ‘cities’; even though many attributes from the ‘traditional’ city were copied, they still failed to create what are seen as urban qualities. Most likely, this is explained by the fact that those specific attributes found in the ‘traditional’ city that influences how a built environment performs or functions were not copied. There is a risk that simplified descriptions by
necessity fail to capture, for example, the orderly complexity that Jacobs described (1961) or the orderly complexity that facilitates an interaction between economic and social factors as emphasised by Hillier (2009b). It is argued that one has to see through what is architectural appearance and what are performative aspects and moreover to look beyond the primary benefits and acknowledge also the secondary benefits (Koch et al. 2012) that, from a social perspective, are perhaps most important and appear to have importance for urbanity.

To exemplify that appearances are deceptive, we can turn to empirical findings. The principal urban structures for the urban expansion in Stockholm’s south were planned and laid out during the 1940s and 1950s. Neighbourhoods were constructed along the subway line in order to facilitate good access between the suburb and inner city. The way the concept of ‘neighbourhood’ has been used in Sweden can more or less be put on par with a spatially well-defined geographical unit (early examples found in Markelius 1946; Sidenbladh 1948; General Plan for Stockholm 1952), but the critical question is: do these neighbourhood units perform in a way that excludes non-locals and inhibits ‘circulation’? Since co-presence, with a mix of locals and non-locals, is found to have great significance for bridging social distance, this was a relevant aspect to investigate. The answer to that question is either yes or no. The empirical study demonstrated that urban layouts planned according to similar concept and design ideas proved to have rather different configurative features, even though only a few had configurative properties that encourage inter-accessibility and a mix of locals and non-locals in public space. The differences found were not consistently related either to the geographical distance from the inner city or their architectural appearance. It was demonstrated that the performance was, to a large extent, dependent on the location of these units in the global context; those positioned close to stretches of high centrality performed differently from those located in more peripheral places (the influence of context will be further discussed below). Such complexity of centrality is suggested to be very difficult – if not unfeasible – to reveal without analysing neighbourhoods in their spatial context. In Södertälje, urban layouts proved to perform rather differently even if they were similar according to historical and architectural appearances (Legeby 2010b). One conclusion from this is that appearance is deceptive; neighbourhoods are not necessarily what they appear to be or rather, what they symbolise. This suggests that, when discussing the social aspects of our city, one should be careful not to assume that one or the other ‘type’ of area performs in a certain way. In Stockholm’s south, Skarpnäck is such an example that borrowed many
attributes from a so-called ‘traditional’ city. However, the attributes that have the ability to create a concentration of people (a mix of locals and non-locals) as well as facilitating inter-accessibility are missing so these attributes have not been borrowed. This results in a neighbourhood with many of the qualities strived for in the neighbourhood unit but with an architectural appearance that speaks the language of a ‘traditional’ city.

Consequently, to address the social segregation issue, it is crucial to understand and disclose urban layouts’ performative properties and the space syntax methods have proved to contribute models that very specifically reveal the performative side of architecture and urban design with a high precision level (a delimitation of the thesis is that it focuses upon observable, performative outcomes of movements and intensity and hence does not evaluate the symbolic values that also are important and should not be dismissed). Both the Södertälje study and the Stockholm study have illustrated the strength of the space syntax models and methods and have proved their ability to identify performative properties of urban layouts that are relevant to the segregation issue. Such insight is argued to contribute an important distinction between performative and representative aspects that is essential both for practice as well as for the debate.

**Theme 6: What’s found just around the corner?**

Vaughan et al. (2005) argued that some areas with certain spatial attributes made them more prone to poverty and that poverty persisted over time (Vaughan et al. 2005, 403). Unequal living conditions and unequal access to the labour markets are argued to prevent people from integrating in society and the segregation related to this is moreover believed to threaten democracy as well as economic growth (Integrationsverket 2004, 2007). The conditions created and influenced by architecture and urban design that may play a role in the creation or reproduction of excluded areas will here be discussed.

It has been suggested that what amenities or opportunities are found locally and become an important part of everyday life – at places within easy access from where we live – are critical for peoples’ chances in life. There is empirical evidence for that the spatial conditions differ largely both in Stockholm's south and in Södertälje as neighbourhoods are compared with regard to their facilities. In the Södertälje study, it was
demonstrated that access to a selection of urban amenities, for example public playgrounds, grocery stores and bus stops, differed largely within a neighbourhood and as neighbourhoods were compared and it was argued that such differences could often be characterised as an uneven and an unequal distribution of common resources. What is of great concern is when neighbourhoods characterised by social exclusion are found to have such disadvantageous conditions since it is likely that such spatial properties contribute to the reproduction and further social exclusion of these neighbourhoods. For example, a neighbourhood with poor conditions for attracting nonlocals has a weak potential to attract work places, which result in few non-residents taking part in everyday activities locally and this results in a lower intensity in public space and thus a limited diversity. This taken together means that opportunities found ‘just around the corner’ for those who live here are comparatively poor, which will have greater impact on the weakest and least powerful people in society. The same result was confirmed in the analysis of Stockholm’s south. It was demonstrated that the affordances created locally were not only created within that neighbourhood but also to a large degree were the result of its further spatial context. Typically this was exemplified in the study of access to work places which is argued to have an impact on peoples’ opportunities in the labour market. It was found that many areas characterised by high unemployment rates and low income levels were also disadvantaged in terms of access to jobs, access to non-residents in local public space and access to co-present people in public space as such. The difference, as neighbourhoods were compared, was striking. Partly this is explained by the fact that the access to urban resources is not only dependent on the distribution of these amenities or resources in space but one also need to be aware of the effects of the distribution of space.

When unfavourable spatial conditions are paired with a population which is poorly equipped from a socio-economical perspective, this is of great concern. However, people equipped with more resources will not necessarily be negatively affected in the same way. Hanson argued that disadvantageous spatial conditions most likely will not be equally negative for all people:

“[…] the consequences of the modernist urban genotype seem to have adversely affected everyone’s lives to some extent and some people have been affected more than others.” (Hanson 2000, 114).

This is suggested as a reason for how difficult it is to predict consequences of urban form because spatial affordance is only one of many factors that will influence the social consequences in the end. Nevertheless, through
the analysis of local amenities, the empirical study has demonstrated how unequal living conditions influenced and created by architecture and urban design can be identified and described. Since people with fewer resources are especially dependent on what is found in close proximity to where they live – i.e. ‘just around the corner’ – this illustrates how urban form plays an important role in the formation of neighbourhoods characterised by exclusion. Hence, segregation of public space is argued to reproduce residential segregation patterns.

Theme 7: The importance of the context

It has been discussed that areas afford very different living conditions and that this largely is influenced by the built environment and urban form. Neighbourhoods are found to be highly dependent on their further context and the resources found there and more importantly, the empirical result has illustrated that the extent to which the urban layout provides access to these amenities and resources has a great impact on what is provided locally, i.e. what opportunities will be available ‘just around the corner’ in a neighbourhood. In the thematic discussions above, the wider context of a neighbourhood has proved to be highly critical – beside the local structure – and this will be further developed. While in many fields this is common wisdom, it (often) turns out not to be so when it comes to discourse on urban form and, more surprisingly, the debates about social segregation; in both cases, the area-based approach still reigns. How come? A fundamental reason is that spatial structure is highly non-discursive and that we simply lack words to address this contextual variable. We are good at speaking about specific places and even neighbourhoods – the words abound and likewise when we speak about cities as a whole, but when it comes to the links and interactions between isolated elements and the overall view, we lack the language.

The empirical studies showed that the amenities found locally were a result of the combination of local and global conditions, hence a neighbourhood is to a large extent dependent on urban resources found in proximity to those found within the neighbourhood. Thus, neighbourhoods can be seen as communicating containers and depending on how well integrated areas are, this will have an effect on how resources may be shared across the city. This insight can contribute to the discussion on
how urban design can be used in order to counteract segregation but also to generate a more equal access to urban resources that can potentially decrease polarisation. Moreover, this implies that one needs to be careful with copying ‘good examples’ from one area to the other since, in spite of the fact that areas may have similar architectural appearances (e.g. neighbourhoods built as part of the Million Homes Programme), there is empirical evidence that this does not necessarily mean that they perform in a similar way socially. First, this challenges the strong focus upon ‘areas’ found for example within anti-segregation initiatives or in urban design practice. And second, an ignorance of interdependency – both at a conceptual level and in reality – is argued to be negative both for the understanding of the city’s social dimension and for possibilities of deriving benefits from the potential urban form can offer.

So-called area-based initiatives are often practised within anti-segregation initiatives addressing neighbourhoods that are characterised by low employment rates, high dependency on social allowances and few people qualified to upper secondary school level (Government 2012). With the insight that living conditions are heavily influenced by contextual structures, it is argued that an overly strong ‘area focus’ is unfortunate. There is a risk that the impact of the surroundings will be ignored and therefore not addressed. From an urban design perspective in particular, this will most certainly limit the options. It needs to be emphasised that this does not mean that the local conditions are unimportant; often a lot can be done with the local structure having an impact on people in this area. Yet properties that are related to an area’s embeddedness, properties found to be important in attracting non-locals and work places and properties that provide access to neighbouring areas need to be acknowledged and addressed. This is because the urban layout can have limiting effects at a local level, at a global level or even at both levels simultaneously. This means that remote interventions and modifications that are constantly taking place throughout the city may have remote effects that are difficult to predict without an understanding of the interrelations and the complexity of spatial urban systems, a kind of remote uncontrol (Brandberg 1998). The interdependence found between an area and its wider context has been emphasised by Hillier who argued that places are not local things and that it is not places that make cities but cities that make places (Hillier 1996, 151).

Accordingly, the strong focus upon so-called ‘excluded neighbourhoods’ and the limiting of interventions to these neighbourhoods only is unfortunate and needs to be questioned, especially from an urban design perspective. A higher awareness of how places are positioned in the city,
i.e. in the urban network and especially how they relate to neighbouring areas, is crucial for identifying what kind of physical interventions – both local and remote interventions – will have an intended effect and to what extent interventions at different levels have the potential to change the local affordances. Hence, not only is the internal spatial configuration within an area important as discussed above, the extent to which an area is spatially integrated with its immediate surroundings (i.e. the neighbouring areas in addition to the city as a whole) was found to be of decisive importance in the empirical study and had significant social consequences.

Closing words

To understand how urban design is influencing urban segregation, it is necessary to pay attention to how urban form influences social processes. In this research project, it has been demonstrated that segregation is not only a social problem but also a spatial problem and what we have learned is that configurative properties of urban space have important consequences for social processes in cities.

A city that reaches critical levels of spatial segregation, as seen in parts of the outer city of Stockholm’s south, cannot be said to be socially sustainable. Such an urban structure not only separates people according to where they live, it prevents people from sharing urban public space and it lowers efficiency when it comes to the distribution of urban resources. This demonstrates how urban design is a political instrument, whether there is an awareness of it or not. New knowledge of the kind presented here therefore aims to contribute to a more transparent application of urban design than seen today due to the current lack of understanding of its mechanisms and comprehensive consequences. Considering this, it appears impossible to continue to design ‘neighbourhood units’ or enclaves based on insufficient understanding of the mechanisms of urban form or not to consider the consequences highlighted above. Hence, the performance of urban layouts needs to be acknowledged to a larger extent and urban design and architecture need to provide public spaces with the ability to create secondary benefits beside their primary benefits.

The challenge in building cities that are less likely to be segregated is to design urban public space that supports socially integrating pro-
cesses much better and to a greater extent create places where there is a potential for primary and secondary relations to co-exist. Being able to share space and be co-present in public space has been said to be crucial for social processes and what is of importance in this context is that empirical results from the Stockholm study show that urban form has a critical impact not only on the creation of co-presence but also on creating variations in its intensity and constitution. It is argued that an urban structure that distributes centrality so that neighbourhoods and districts are reasonably connected to the city as a whole results in a built environment that affords greater potential for a mix of locals and non-locals in public space and provides spaces with a greater potential to mix activities of different purposes. In addition, such spatial properties are more efficient in distributing urban resources so that access is increased, allowing neighbourhoods to take advantage of their broader context to a greater extent and thus not be reduced to what is found locally alone. Urban layouts need to be designed to be spatially integrated to such extent and in such a way that neighbourhoods are not isolated at a spatial periphery or on segregated islands deep and far away from where spatial centrality is found; this is regardless of the socio-economic status of the neighbourhoods’ residents. This calls for urban models that provide public spaces where we can share space with both locals and non-locals as part of our everyday life to a greater degree since this harbours the potential to achieve social processes that can bridge social difference and social groups. Furthermore, this is argued to create a form of social robustness that is significant to how neighbourhoods can develop over time, both internally but also in relation to the city as a whole.

The findings of this study are argued to open up theoretical developments that address the social dimension of urban design with greater precision. Not least, this knowledge can influence public debate. The knowledge produced can further be used in urban design practice and in anti-segregation initiatives, identifying whether spatial interventions can make a contribution and if so, which physical interventions address the social ends in question, where the ultimate aim is an urban design that not only builds cities but societies too.
References

Aktuellt. 2013. Interview with Gilles Kepel in Swedish Television News
Aktuellt. May 22.
Al Ghatam, Wafa. 2012. Cultural movement patterns and social implications
in space of villages absorbed by cities in Bahrain. In Proceedings to the
8th International Space Syntax Symposium, edited by Margarita Greene, José
Reyes, and Andrea Castro. Santiago de Chile: PUC.
Babylon och Chicago till Fittja. In Den delade staden, edited by Lena
Arbetsdepartementet. 2012. Urbana utvecklingsområden: Statistisk uppföljning
utifrån sju indikatorer. Dnr A2012/4115/IU. Stockholm: Arbetsmarknads-
departementet.
Korpen.
Rediviva.
networks and the ethnic minorities. Labour Economics. 18, 48-56.
Boverket. 2010. Socialt uthålligt stadsbyggnade - en kunskapsöversikt. Karlskrona:
Boverket.
In Kultursociologiska texter, edited by Donald Broady and Mikael Palme.
Stockholm: B. Östlings bokförlag Symposion.
Bunar, Nihad. 2001. Skolan mitt i förorten – Fyra studier om skola, segregation,
Bunar, Nihad., and Jenny Kallstenius. 2007. Valfrihet, integration och segregation
International Space Syntax Symposium, Volume II, edited by Fredrico de


Erickson, Rebecca, J. 2007. Where the Ritual Is: Examinations of a
Microfoundational Mo(ve)ment. Contemporary Sociology, 36 (3): 209-211.
Lund: Arkiv.
Franzén, Mats. 1993. Rummets tvåra dialektik. In Urbanitetens omvandlingar:
kultur och identitet i den postindustriella staden, edited by Thomas Johansson and
Ove Sernheden, 49-63. Göteborg: Daidalos.
Urbanitetens omvandlingar, edited by Thomas Johansson and Ove
Sernhede, 33-47. Göteborg: Daidalos.
Franzén, Mats. 2003b. Rummets tvåra dialektik – notater till Henri
Lefebvre. In Urbanitetens omvandlingar, edited by Thomas Johansson and
Ove Sernhede, 49-64. Göteborg: Daidalos.
7th International Space Syntax Symposium, edited by Daniel Koch, Lars
Gibson, J. James. 1979. The ecological approach to visual perception. Boston,
Arkitektur, 11: 3-13.
Grannis, Rick. 1998. The Importance of Trivial Streets: Residential Streets and
Residential Segregation. American Journal of Sociology, 103 (6), 1530-1564.
Granovetter, Mark. 1983. The strength of weak ties: a network theory
Chichester: Wiley.
”offentligt” i det moderna samhället. Lund: Arkiv.
Projektet för utvärderingen av Storstadssatsningen. Huddinge: Södertörns
högskola.


Hillier, Bill. 2013. Credible mechanisms or spatial determinism. Cities. 34: 75-77.


OECD. 2013. Crisis squeezes income and puts pressure on inequality and poverty. OECD.


**Websites**

List of illustrations

Maps have initially been provided by Stockholm Stad and have subsequently been modified by the author. Photographs, illustrations, figures not given a source in the captions are by the author and are not included in the list below.


## Appendix

Questionnaire used in field studies.

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<td><strong>1.</strong> Kvinna</td>
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<td><strong>2.</strong> Ålder:</td>
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<td><strong>3.</strong> Hur kommer du hit?</td>
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<td><strong>4.</strong> Hur länge stannar du?</td>
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<td><strong>5.</strong> Hur ofta är du här?</td>
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<td><strong>6.</strong> Känner du igen de personer du ser här?</td>
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<td><strong>7.</strong> Vilken gatuadress bor du på?</td>
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<td><strong>8.</strong> Varför är du här? (Fler alternativ möjliga, numrera 1-5)</td>
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<td><strong>9.</strong> Vad tycker du om att vistas här dagtid?</td>
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<td><strong>10.</strong> Vad tycker du om att vistas här kvällstid?</td>
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