THE PRODUCTION
OF KNOWLEDGE
IN ARCHITECTURE BY PHD RESEARCH
IN THE NORDIC COUNTRIES

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CONTENTS

5  FOREWORD
Anne Elisabeth Toft and Magnus Rönn

9  INTRODUCTION
Anne Elisabeth Toft and Magnus Rönn

25 DEVELOPMENTS TOWARDS FIELD-SPECIFIC RESEARCH IN ARCHITECTURE
AND DESIGN: ON DOCTORAL STUDIES IN SCANDINAVIA SINCE THE 1970s
Halina Dunin-Woyseth and Fredrik Nilsson

49 HISTORY OF ARCHITECTURE: THINKING BEYOND THE PRESENT
Johan Linton

73 EVERYDAY URBAN LIFE AT NEIGHBOURHOOD CENTRES:
URBAN DESIGN AND CO-PRESENCE
Ann Legeby

101 OPEN RESEARCH: SHARING RESEARCH FORMATS AND CHALLENGES
Marie Markman

125 RELATIONAL ARCHITECTURE: EDUCATION, RESEARCH, TRANSFORMATION
Henrik Reeh

151 ARCHITECTURE EDUCATION IN NORWAY IN THE NINETEENTH CENTURY:
FROM FRANCE WITH LOVE
Mathilde Sprovin

165 LOST GROUNDS: ARCHITECTURAL KNOWLEDGE PRODUCTION
AS CRISIS MANAGEMENT
Ola Svenle

175 CLOUD MACHINERY AND MEMORY THEATRES:
A SPATIAL APPROXIMATION OF THE DIGITAL CLOUD
Natalie Koerner
197 Changing Perspectives on Stormwater Management in Norway
Elisabeth Sjödahl

215 The Sustainable City in Norway: The Quest for Urban Densification
Fabio Hernandez-Palacio

245 Urban Micro-Morphology as a Framework to Assess Physical
Public-Private Interfaces at Street Level
Anja Standal

269 Observer, Expert, or Activist: Changing Roles
In Design Research Project
Katja Maununaho

289 Dwellscape: The Contemporary Dwelling Interior
As a Continuous Domestic Landscape
Nicholas Thomas Lee

313 Neighbourhood Planning and Housing for the Aging Population:
A Case Study
Ira Verma

329 Healthy Housing Enacted: A Qualitative Approach
To Indoor Environment
Turid Borgestrand Øien

355 Making a Case for Urban Timber Housing
– By Research, Teaching and Design
Ute Groba

389 Situated Knowledge Production: Urban Biopsis, Frameworks of
Perception, and Critical Spatial Practices
Espen Lunde Nielsen

411 On Urban Hard Surfaces
Elin Tanding Sørensen

443 Contributors

451 Peer reviewers
EVERYDAY URBAN LIFE AT NEIGHBOURHOOD CENTRES: URBAN DESIGN AND CO-PRESENCE

Ann Legeby

ABSTRACT
Urban segregation and increasing polarization in the metropolitan areas in Sweden is considered a major societal problem. Several municipal and national initiatives have been launched to ameliorate residential segregation and to improve the living conditions in socio-economically disfavoured neighbourhoods, but so far they have been only marginally effective. In fact, urban polarization and segregation have been increasing rather than held back. However, urban segregation can also be studied through everyday urban life in public space, where people are brought to interact in different ways with others. Public spaces – streets, squares, and parks – are used in everyday practices and become important social arenas; and public spaces are subject to different uses and meanings.

It has been demonstrated that access to resources varies greatly within the city, influenced to a high extent by urban morphology, and this results in unequal living conditions. As such inequalities are affecting social groups with fewer resources, it becomes especially problematic, thus reproducing and establishing segregation patterns. This research explores and investigates the role of urban design and urban form in relation to urban segregation. It looks beyond residential segregation and seeks to develop descriptions and understandings that acknowledge urban form and configurative properties, with the aim of being relevant from an architectural and urban-design perspective. The objective has been to increase the understanding of how urban form relates to the segregation phenomenon; how urban layouts, through their spatial arrangement and organization, create affordances and limitations; and how urban design can be used to counteract segregation and provide cities with more equal living conditions.

KEYWORDS
Social arena, urban form, urban segregation, inequality
INTRODUCTION

The Swedish history of massive post-war housing expansion has left a legacy of notoriously segregated suburbs. However, the situation is more complex with some suburbs suffering social problems much more than others. In the first phase of the PhD, methods and approaches studying urban segregation were discussed and partly questioned. Alternative methods were tested and argued to increase the understanding of segregation, which has a more direct relevance from an urban design perspective. In the second phase of the PhD, the case of Stockholm was used to illustrate how public spaces, such as streets, parks, and squares, can become an important arena for interplay between incomers and local inhabitants, and how the conditions for such arenas to emerge differs from neighbourhood to neighbourhood in different parts of the city. The research focuses upon the role that spatial configuration plays in shaping the potential for social interaction. In particular, detailed analysis suggests that the design and configurational layout of public spaces holds certain affordances influencing their ability to provide an arena for day-to-day interaction and to potentially prevent social exclusion. Urban form is found to play a critical role in facilitating such social processes, and increased knowledge about this issue is important when addressing social sustainability within urban design.

In this research, presented in a licentiate thesis and in a doctoral thesis and in other publications, it has been argued that there is a lack of methods for investigating and measuring urban segregation, taking into account aspects more specifically relevant to architecture and urban design: urban form and spatial configuration and how this in turn creates conditions for citizens to use the city in their everyday life. Urban design is argued to strongly influence what living conditions may be found in different parts of the city. Increased knowledge about variations in living conditions, and how this may be identified, analysed, and described, can be related to concepts like “just cities” and to the striving to reach more equal living conditions as a means of counteracting urban segregation. An important challenge is to decode and increase knowledge of how cities can be designed to facilitate access to various urban resources, both material (i.e. workplaces, public transportation, playgrounds, education, recreation areas, etc.) and immaterial (i.e. other people representing different social categories, etc.). Here this has been addressed by exploring how spatial form and the organization of space – resulting in connections, relations, and boundaries – will create affordances and limitations of what kind of processes are likely to take place. 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.

**ANALYTICAL METHODS INFLUENCE THE DESCRIPTIONS OF NEIGHBOURHOODS**

This research aims to contribute to and nuance the debate on urban segregation by highlighting the role and the impact of the built environment. The understanding is dominated by descriptions foregrounding residential segregation, a well-established field, especially in Sweden. Residential segregation is defined as differences according to, for example, demographic, ethnical, or economic segregation in different parts of the city based on where people live. There are methodological difficulties in doing this that have to do with defining relevant areas, but also with difficulties in defining relevant categories. The result may vary depending on how large the geographical units studied are or as a result of where administrative boarders are found. In the licentiate thesis, a critique is developed discussing the relevance of such descriptions from an urban design perspective; the geographical units do not acknowledge urban form, nor is the context, the surroundings of each geographical unit, allowed to influence the result. Depending on the size of the area studied, as well as on how the categories are defined, the understanding of segregation may vary dramatically. Moreover, such an approach does not

![Figure 1. An analysis showing residents with foreign background where the results vary depending on what method is chosen; the first (light grey) is a geographical analysis studying the situation within a certain unit, and the second (dark grey) is closer to a perceived situation based on accessibility to people living in the proximity; here, the situation is analysed within three turns from each building through the street network ('floating boundaries' rather than fixed).](image)
describe the constitution of people, groups, or categories that are contributing to local urban life by being in the local area, for instance in public space. Also, non-residents are most often taking part in forming local public culture, negotiating societal norms and attitudes, or developing different social solidarities and social ties.

Hovsjö is a spatially segregated neighbourhood which is partly confirmed by the result showing very little difference between the two methods. In Geneta, the results from the two different methods show larger differences (57 per cent compared with 45 per cent); in this case, it is because Geneta is more spatially integrated with its neighbouring areas that have a different composition of residents, which is allowed to affect the result. From an urban design perspective, this is useful information and it increases the understanding of whether changes in the built environment may have an impact or not.

SEGREGATION BEYOND RESIDENTIAL SEGREGATION

Urban segregation is not limited to housing; rather, there is also a spatial separation of individuals and groups as a result of how we use the city in everyday life. Segregation can also be understood as a separation of people or the separation of different groups or social categories in society as we use the city. Such an aspect is not explored to the same extent, but from an urban design perspective it is highly relevant to develop such an understanding. To what extent do we share urban public space? Which groups or social categories may share streets, neighbourhoods, and public arenas in different parts of the city? How does urban form and the organization of space influence opportunities and limitations regarding what lives can be lived in different parts of the city?

Social processes that create awareness of “the other” and of other people’s life conditions, as well as facilitate an inclusive negotiation of norms and attitudes, may affect integration, social cohesion, and sense of belonging. Such processes largely take place outside of peoples’ homes; for example, in public space, at workplaces, schools, or at libraries – places often characterized by a mix of locals and strangers, as thoroughly discussed by Jane Jacobs. Here it is argued that urban space influences to what extent there may be a mix of people and an exchange between neighbourhoods, social groups, etc., but this is not studied to the same degree as the residential segregation phenomenon. How this plays out in urban environments and what patterns of co-presence will emerge in different parts of the city is to a large extent a
result of how we structure and form our cities, what spatial relations are created between neighbourhoods, between buildings, all together influencing the relations between people.

This research starts from an understanding that segregation is about separation – a separation of people and groups or a separation of activities and functions. And as Mats Franzén argues:

![Diagram](image)

Figure 2. Streets in a city create relations between different parts of the city and between buildings, which has very direct consequences for the relations between people. Source: The author 2010.
... 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.14

Such an understanding of the spatial role makes room for addressing urban segregation from a perspective beyond residential segregation, and it becomes possible to acknowledge the spatial implications for what affordances and limitations are created locally and how urban form influences this in different neighbourhoods.

Urban design establishes an urban landscape of affordances and possibilities with long-term effects. Differences in access to various urban resources tend to reinforce and reproduce segregation, especially if there is a situation of unequal living conditions. Franzén argues that an unequal access to resources is especially problematic as individuals or social groups with fewer resources are not given the same possibilities and opportunities that the city offers as others.15 This means that cities characterized by unequal living conditions confirm a hierarchal difference between groups; it creates outsiders and insiders. In order to increase the understanding of how urban design may be used to counteract segregation, it is important to establish such inequalities, to identify how urban form influences access to various amenities, and to identify how urban form enables different social groups to share public space in everyday practices. Sharon Zukin argues that public spaces are important sites for negotiating public culture.16 If social groups are strongly separated, and different norms and attitudes are being practiced, this increases the risk for a development of “parallel societies” or very different social codes and behaviour in different parts of the city. Zukin emphasizes the importance of a public space that various social groups can share:

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.17

If the configurative properties of space separate different social groups from each other in space, not only from a residential perspective but also from
a perspective of how we use the city, it limits the possibilities for different
groups to be included in the ongoing negotiation which takes places in our
day-to-day practices that form societal norms and attitudes.18 Zukin points
out that this means that being in public space also means “being in society”.

AN APPROACH TO FOREGROUNDING URBAN FORM
AND URBAN DESIGN
The research develops approaches and methods for analysing and establishing
to what extent people are favoured or disfavoured by urban form. It addresses
questions like: To what extent are people in segregated areas prevented access
to Swedish society through their everyday life experiences? What configurative
properties are typically separating different groups? What configurative
properties are typically allowing an inflow of non-residents in a neighbour-
hood? How can the characteristics of urban life at different public spaces be
described, and how can correspondences to urban form be established?

There is a shift in focus from a discussion framed in terms of residential seg-
regation to segregation in public space that acknowledges the segregating
effect that urban layouts may have on people’s chances to share urban space
and also to share everyday practices that, on a very fundamental level, are
influencing the social processes important for creating and reproducing “so-
ciety”.

Many of the prevailing approaches within the urban segregation field, pri-
marily studies of residential segregation, have proved to be weak in increas-
ing the understanding of the role of urban form as well as weak in develop-
ing knowledge that could contribute to the field of architecture and urban
design. One reason for this is simply that urban design has rarely been the
question at hand within segregation research; instead, there has been a strong
focus on describing residential segregation phenomena, segregation process-
es, revealing moving patterns, or contributing to discussion on housing pol-
icy. In order to reach beyond such discourse, a shift in focus is proposed,
from residential segregation to segregation of urban public space, so as to
investigate what consequences segregation and fragmentation in urban space
may have. This means that instead of highlighting residential segregation and
housing, public space and spatial relations are used as a starting point for
studying what this implies for people while using the city. The difference may
be illustrated through the following example: residential segregation research
is based on an analysis of the constitution of people according to where they
live. Different geographical areas are compared as single entities or units, and compared with the city at large. This approach is instead specifically looking at the constitution of people as we use the city – 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. Most importantly, the aim is to identify how urban configuration creates affordances and limitations and how urban configuration influences co-present situations in terms of its intensity and its constitution (e.g. the relation between locals and non-locals).

STRUCTURE OF THE RESEARCH WORK
In the first phase of this research project, the city of Södertälje was the object of empirical analysis. During the second phase, there was a stronger focus upon co-presence. The southern part of Stockholm city was the object of an empirical analysis, since this part of the city is found to have a large variety in terms of urban layout. This phase included a rich empirical study mapping people co-present at squares in the south of Stockholm using a questionnaire. In total, eighteen places were selected for in-depth study in Stockholm. The two main studies included, first, a spatial analysis of the urban system and, second, a social analysis of co-presence in neighbourhood squares and centres. In addition to this, three complementary studies were carried out that looked more specifically at other arenas that are important for the development of social processes, namely those related to work, schools, and culture, which in this study was exemplified by libraries.

SPACE: NOT A NEUTRAL BACKGROUND
CO-PRESENCE AND URBAN LIFE
The social performance of different urban layouts becomes legible from their everyday patterns of use and everyday patterns of movement. Within space syntax theory, “co-presence” is seen as an important social resource. The potential to develop social networks and different social solidarities is argued to pass through the relationship of spatial configuration and co-presence. Julienne 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 claims that co-presence is a precondition for face-to-face human social interaction without in any way determining what takes place. 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; urban space should not be seen as a neutral background. Urban space influences the potential for building different solidarities and influences the potential for building spatial and/or transspatial solidarities.23 This means that urban design, and the configurative properties of urban space, 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.24

Co-presence that appears in streets, squares, and other easily accessible public spaces, where very few people are prevented from using the urban spaces, may be described as a kind of generic co-presence. Co-presence found in more strongly programmed places, such as workplaces, schools, and libraries, may be described as a specific co-presence. The stronger the selection and exclusion of non-invited groups, the more specific the character of co-presence turns out to be.

Hanson has studied social outcomes in different urban layouts that have undergone morphological changes in London and found that different design ideas are related to specific preconditions for sociability.25 The analyses indicate that modernistic urban layouts (typically housing estates) have isolated people from each other, both on the neighbour level and on the neighbourhood level. A paradox according to Hanson is that the conditions for urban life and interaction with neighbours turn out to be considerably poorer in those areas where the social ambitions have governed the design ideas.26

Hillier and Vaughan argue that spatial form needs to be understood as a contributing factor in forming patterns of segregation and integration in cities.27 It is found that the urban street network, in and of itself, is a key determinant for movement flows and hence affects co-presence in space.28 Furthermore, it is emphasized that this is intuitively clear, mathematically necessary, and empirically demonstrable and a key to understanding cities as socially meaningful patterns of relative integration and segregation.29
AFFORDANCES AND EQUAL LIVING CONDITIONS

This study explores how urban layouts differ regarding accessibility both to other people and to amenities. What is made accessible in different neighbourhoods – urban resources in terms of other people, service, transportation, or cultural facilities – could be described as “affordances”. The concept of affordances is a term coined by James Gibson.30 Gibson suggests that affordance describes what the environment affords animals or humans in terms of shelter, water, tools, et cetera.31 According to Gibson, affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. Affordance in an urban context could be said to describe how the urban form with its structure influences what affordances are created locally; what urban resources are made accessible in different neighbourhoods, for example public transportation, parks, public space, urban life, education, health care, commercial services, or cultural facilities. Such descriptions may be used to increase the understanding of what the built form provides its users, but it is also relevant to discuss who benefits from different types of affordances depending on what resources different people or groups have.

The empirical data enables a correspondence analysis between the social outcomes on the one hand, and the spatial properties and characteristics on the other hand. By increasing the understanding of such correspondences, it is possible to address the inequalities in living conditions from a perspective relevant for urban design and architecture. It is often highlighted that all citizens benefit from collective resources, however in general, disfavoured groups benefit more than privileged groups from having access to various amenities. This means that neighbourhoods providing poor living conditions affect people with fewer resources more than others.

METHODS

The empirical study took an experience-oriented spatial approach. The method used involved combining four different analyses: configurative analysis, analysis of social data, observations, and a questionnaire at eighteen different squares in the south of Stockholm. Configurative analysis explored centrality and periphery through integration and betweenness analysis, as well as overlapping integration cores and the spatial catchment area. Analysis of social data included the respective socio-economic status of residents and visitors (represented by the neighbourhood they live in). The analysis of social data was also combined with the spatial model of greater Stockholm; based on this information, the accessible residents, the working population, and the access to various resources were analysed, information that contributes to
identification of living conditions in various neighbourhoods in different parts of the city. The method applied enabled the results to be described on a very detailed scale, with many of the analyses made from a specific street or address. Observations were carried out at eighteen squares to identify and describe the characteristics at each place. The method for capturing the intensity of co-presence in public spaces was based on direct observations of the everyday practices in the squares and centres. Intensity could be established in several different ways, and here two types of intensity observations were carried out: observations of pedestrian flows and counting co-present people (capturing a kind of momentary intensity).

Questionnaires were used to study eighteen squares (2,224 informants) and five libraries (150 informants). This was carried out 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). The questionnaire included questions about where people live, how often they visit the place, the purpose of the visit, and whether they came by foot, bike, public transportation, as well as how they perceive public space, et cetera. The information from the questionnaire about where co-present people lived was used to map a kind of social catchment area for each square.

In the final stage, the results from the different analyses were explored in an integrated way with the aim of identifying possible correspondences between spatial and configurative properties: on the one hand, the life at the squares in terms of intensity in public space, and on the other hand, to what degree non-locals were a part of local urban life.

RESULTS
The study of co-presence in public space is argued to reveal patterns of urban segregation as expressed in public space. The analysis will be used to increase the understanding of how urban layouts affect affordances and, more specifically, how spatial configuration of the urban layouts affects the intensity of co-presence on the one hand and the constitution of co-presence on the other. In this article, the constitution of co-present people, the mix of locals and non-locals, and the intensity including the social catchment areas of each square will be highlighted. Moreover, how this is found to relate to the organization of space and configurative properties will be presented. A comparison
between the squares in terms of some of the living conditions will be shown in order to illustrate both how affordances may be analysed and described, but also as an illustration of inequalities since neighbourhoods in the south of Stockholm are compared.

CHARACTERISTIC OF CO-PRESENCE AT SQUARES: WHAT KIND OF SOCIAL ARENA?
A central question for this research is to increase the understanding of what kind of social arena the local square may be in different neighbourhoods. The

Figure 3. The home addresses of co-present people (black point) in relation to the square (red point). Source: The author 2013.
square or neighbourhood centre is an important place in neighbourhoods for various kinds of social processes, including processes that are about seeing others and being seen, negotiating public culture, learning and forming social codes, norms, and attitudes, developing an awareness of other peoples’ living conditions, acknowledging “the other”, building social networks (founded on both strong and weak ties), and so forth. The kind of urban life that may potentially emerge is highly dependent on co-presence, its constitution and its intensity, but also on other aspects that this study of urban life tries to capture. Therefore, the method developed in this research is looking

Figure 4. The metric distance (above) and the axial step distance (below) to visitors’ home address from each square. Source: The author 2013.
at the home address of the visitors, their age and gender, how long visitors tend to stay, how often they visit, and if they recognize other people at the square. From an urban design perspective, it is also of interest to identify what mode of transportation visitors have used to get to the square; and in the questionnaire there are also questions about the general preference for their sojourn: daytime or in the evenings.

SOCIAL CATCHMENT AREA
One of the questions in the questionnaire was about the home address of people who visited the squares. By plotting them on a map, it is possible to define a kind of social catchment area of each square. The maps reveal that these catchment areas differ considerably between the squares. The most limited catchment area is found for the square in Östberghöjden, Östberga torg, but also Hammarby Sjöstad has a rather limited social catchment area. Squares that attract people from a larger geographical area are, for example, Skärholmstorget and Farsta torg. At these two squares, there are large shopping malls.

It is also possible to analyse and compare the distance between the visitors’ homes and the squares. In the diagram below, the 25th, 50th, and 75th percentiles are illustrated for each square. It is found that many of the studied squares are dominated by people who live in the proximity. For about half of the squares, the 75th percentile is at 2,000 metres or below, and at 10 turns or below. If looking at the share of co-present people who live within a walking distance of one 1 kilometre from the square, it is found that squares having a large share of non-locals are Skärholmen, Farsta, Nytorget, and Södra station, while squares with a high share of local residents are Östberga and Gamla Östberga. Figure 4 illustrates distances to visitors’ home from each square.

LENGTH OF STAY AND VISIT FREQUENCY
Another aspect characterizing urban life is how long people generally stay at the squares. Some squares and places are dominated by people just passing by on their way to other things, while other squares are places for longer stays and perhaps multiple purposes. This is a highly relevant aspect to identify so as to better understand what kind of social arena the public space may be, and it gives an indication of the pace and character at the square. About half of the studied squares have a mix of shorter and longer visits, either those passing by or staying less than half an hour combined with longer visits. Then there is one category characterized by short visits or people just passing by.
These people just passing by are only to a limited extent contributing to the urban life at these places. The third category is dominated by visitors that stay one to two hours, for example, Skärholmen and Farsta, which have the large shopping malls. At these squares, it is also found that the intensity and co-presence is very much concentrated on the centre, hence the urban life at these places has very little impact on the rest of the neighbourhood. The squares perform typically as nodes rather than as lines or fields.36

The frequency of visits is an indication of routines and habits; the extent at which everyday practices are routinized and repeated has importance for negotiating public culture. The majority of the squares, as many as fifteen, are dominated by people coming there on a daily basis. This means that those who are there can rather strongly develop habits and norms; it is likely that they will not be questioned by people who only come there more rarely. It is also possible to see that at the squares that are more spatially segregated there is a high degree of familiarity; the informants report that they recognize “most” or “many” of the other co-present people. The three squares that diverge from this are Farsta and Skärholmen, as well as the inner-city square Nytorget. At these squares, it is more likely that there will be higher diversity in this respect; people who come on a daily basis mix with people who visit more rarely.

**PURPOSE OF VISIT**

Asking why people had come to the square helps to understand the diversity of activities that may take place there, and it partly illustrates what kind of social arena the square potentially could be. It also reveals whether the squares encourage or provide single or multipurpose use. Different characteristics emerged as the informants’ answers were studied, here categorized in three main types:

- Squares dominated by residents, and at most of these squares shopping is the main purpose for coming to the square, with other purposes reported but not to the same degree.
- Squares dominated by non-locals who had come primarily to do shopping, who are neither living nor working in the neighbourhood, with other purposes not reported to the same degree.
- Squares with a mix of people living and working in the area, with multiple uses reported (shopping is less dominant than in the other two categories).
CORRESPONDENCE BETWEEN INTENSITY AND NON-LOCALS

What kind of social processes may take place at a local square or centre is also influenced by the intensity at the place. Several of the studied squares are rather quiet, having very few people co-present at the same time, and that is limiting their potential to function as an arena for social interaction, limiting both focused and unfocused interaction. Intensity has in this study been

Figure 5. Intensity of urban life corresponds with the share of non-locals.
captured by observations of pedestrian flow and through so-called snapshots, a counting of simultaneously co-present people at these places (momentary intensity). A finding in this study is that intensity and the inflow of non-locals corresponds strongly. In Figure 5, intensity is shown together with the share of non-locals (i.e. those who live more than 1,000 metres from the square) in the same diagram. Places with low intensity and a low inflow of non-locals are found in the lower left part, while places with high intensity and a high share of non-locals are found in the upper right part.

CORRESPONDENCE BETWEEN NON-LOCALS AND SPATIAL CONFIGURATION

The analysis of co-present people was compared with a number of different spatial and configurational properties with the aim to decode how different urban layouts create possibilities or limitations for urban life locally. Two of the squares were found to be outliers in many aspects, namely Farsta and Skärholmen, and these are the ones that have strong attractors, the shopping malls. These shopping malls attracts a lot of non-locals, but these neighbourhoods are weakly spatially integrated with the surroundings, resulting in the high intensity and the high number of non-local visitors clearly being concentrated on the square and mall, while the rest of the neighbourhood as such is only influenced by this inflow of people from other parts of Stockholm and the region to a limited extent. The result of the statistical analyses showed a strong correlation between a high inflow of non-locals and integration. Strong correlation is found at all scale levels tested (from the local level, radius 6, to the city level, radius 16), and strongest at the mid-scale level (radius 10). Earlier research has identified integration interfaces between the local and global properties as important for a mix of residents and non-residents, which is why this also was tested in this study. For Stockholm, this result can be confirmed, and it is found that integration interface – that is, the extent at which local and global integration values overlap – corresponds to the share of non-locals. The correlation between the share of non-locals and betweenness was much weaker, with only a strong and significant correlation at a radius of 2,000 metres (including all eighteen squares).

CORRESPONDENCE BETWEEN NON-LOCALS AND INTENSITY

It is also possible to see that the share of non-locals correlates strongly with the intensity of co-presence, both when intensity is measured as pedestrian flow and as momentary intensity. In order to understand how population density may affect the character of urban life, the share of non-locals is com-
pared with the number of accessible people within different distances, both residents and working people, with the latter assumed to include non-locals to a large degree but also to attract non-locals. The correlation analysis is stronger between the share of non-locals and access to the number of people who work close to the square (within a walking distance of 500 metres) than is the same analysis including both residents and working population even if this correlation still is strong. If access to residents only is analysed, then the correlation is much weaker. This result indicates that high access to workplaces from a certain square has a stronger influence on urban life, both in terms of intensity and the inflow of non-locals, than high access to residents.

Population density (measured as accessible residents and working population within 500 metres) analysed for Stockholm at large reveals large variations between different parts of the city. This kind of analysis is an example of and illustrates distribution through space, since both distribution of residents and working population in space are taken into account, as well as the distribution of space in itself. Hence, this kind of analysis illustrates a combined effect of land use and urban structure and configuration. In Figure 6, population density as accessible population is superimposed with betweenness at a radius of 2,000, two variables indicating that urban life may be characterized

![Accessible population within 1,000 m](image)

Figure 6. Accessible residential and working population within 1,000 metres from the centre.
by both high intensity and inflow of non-residents. Access to urban life with a mix of people has importance for what affordances are created locally in different neighbourhoods, what kind of social exchange may take place, and what kind of social relations and networks may develop.

Figure 7. Access to residential and working population within 500 metres superimposed with high betweenness values at 2,000 metres.42
AFFORDANCES AND UNEQUAL LIVING CONDITIONS

To what extent there is access to a mixed population in public space in a neighbourhood has been argued to be of high importance for what affordances are created locally. In this study, neighbourhoods that are less integrated spatially were found to have a lower inflow of non-locals, resulting in lower diversity – the two squares with large shopping malls being the exception. However, the affordances created locally are also dependent on access to other amenities locally. From a segregation perspective, this is important to identify since people with fewer resources are more dependent on what resources are accessible locally. The way that access to different urban resources is distributed across the city can be linked 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 through its configuration and organization also can create distance to certain resources. In this study, a few key variables that have been analysed

![Figure 8. Principle of variables analysed: access to the inner city, configuration, population density, and urban life.](image)
are argued to have high importance for what living conditions are created locally for its residents and users, variables that have great impact on what kind of activities this may establish in a neighbourhood. The spatial properties found to have importance for matters related to urban segregation are included; these properties could be said to give the areas a kind of spatial signature. In addition, population density, distance, and travel time to the inner city are noted, as well as inflow of non-locals and intensity in public space. All together there are nine variables included: four configurative properties, two measures identifying access to the inner city, two variables related to the character of the urban life found locally (intensity and constitution), and a measure for population density. The idea is to propose a method for analysing, comparing, and illustrating living conditions in order to identify inequalities, such as how users may be favoured or underprivileged by the affordances in their neighbourhoods.

The nine variables were analysed for each square. The measurements were then normalized in order to ease a comparison between the neighbourhoods. The diagrams may be read as follows: the more the different sectors are filled, the higher is the value found in the different neighbourhoods (at the square, the neighbourhood centre, or the main street). Few levels filled means disadvantageous conditions and many levels filled means favourable conditions. What the polar diagram illustrates is that the living conditions vary significantly, and it is revealed that many of the neighbourhoods having a population with fewer resources are also disfavoured in terms of access to urban resources locally.

DISCUSSION AND CONCLUSIONS
By comparing the results from the configurative analyses with the results from social analysis and the questionnaire, it has been possible to increase the understanding of what spatial and configurative properties correspond to different kinds of urban life. The empirical study has demonstrated that spatial configuration is, in different ways, influencing everyday practices and that it influences the patterns of co-presence. The spatial structure and the configurative properties affect not only the intensity of local public life but also the constitution, i.e. the mix of locals and non-locals that in turn correspond to diversity. Squares that are more spatially segregated tend to have a larger share of non-locals, lower intensity, and a limited mix of people who visit the square at different intervals. A conclusion based on these results is that the spatial properties in many neighbourhoods inhibit a mix
of people in public space. However, other factors are also found to influence the co-present situation, for example, areas having strong attractors such as a train station or a shopping mall; this kind of land use tends to override the configurational impact. Taken together, the character of the urban life is influencing the social processes: possibilities for seeing and being seen by others, for developing an understanding and an awareness of “the other”, for creating strong and weak ties that can build social networks, and it also results in various contextual effects.

Figure 9. A comparison of configurative properties and other conditions that influence urban life in nine neighbourhoods in the south of Stockholm; mapping of affordances.
Considering the way in which access to different urban resources is distributed across the city, it is possible to link to the discussion on unequal living conditions and “just cities”. It has been shown that urban form can create closeness and high access within an urban system, but also that urban form can create distance to certain resources and create distance between neighbourhoods and between people. Based on the findings, it is argued that the neighbourhoods and the squares are highly dependent not only on the configurative properties within the neighbourhood but, more importantly, on

Figure 10. A comparison of configurative properties and other conditions that influence urban life in nine neighbourhoods in the south of Stockholm; mapping of affordances.
what is found in the surroundings and to what degree each neighbourhood is *spatially integrated* with other neighbourhoods in the proximity.

The method used – combining configurative and spatial analysis with questionnaires and observations – made it possible to investigate correlations between very specific configurative properties of the different urban layouts with social outcomes. The social catchment area of each square compared with the characteristics of the urban layouts revealed strong correlations between, on the one hand, specific spatial properties and, on the other, intensity in urban life, as well as inflow of non-residents influencing the social catchment area of each square.

Results indicate that segregation of urban space, including restricted access to a range of resources – such as job opportunities and contact with other people – is a tangible feature of segregated neighbourhoods. These are insights that can inform the development of improved urban design practice as well as urban design policies and interventions.

The findings of this study are argued to open theoretical developments that address the social dimension of urban design with greater precision. Increased knowledge of the role of urban form for social processes is argued to increase the understanding of how the spatial relates to the social. The knowledge produced can further be used in urban design practice and in anti-segregation initiatives, identifying whether spatial interventions can contribute or not, and if so, which physical interventions might have an impact on how the city may be used and what affordances may be created. Such knowledge has the ability to support an urban design practice that builds not only cities but societies as well.
NOTES


4 Thomas Borén and Daniel Koch, Platser i praktiken och social hållbarhet (Stockholm: KTH, 2009); Sören Olsson, Det offentliga stadslivets förändringar (Göteborg: Centrum för byggnadskultur i västra Sverige, 1998); Sören Olsson, Marianne Ohlander, and Gerd Cruse Sondén, Lokala torg: liv, miljö och verksamheter på förortstorg (Göteborg: Institutionen för socialt arbete, Göteborgs Universitet, 2004).


8 Legeby, Urban Segregation and Urban Form.

9 Ibid., p. 67.


16 Zukin, The Culture of Cities.

17 Ibid., p. 11.

18 Ibid.


25 Hanson, “Urban Transformations”.

26 Ibid.

27 Hillier and Vaughan, “The City as One Thing”.


29 Hillier and Vaughan, “The City as One Thing”, p. 213.


31 Ibid.


35 Ibid., p. 244.


37 Goffman, Behavior in Public Places.

38 See Legeby, “Patterns of Co-Presence”, for details.


41 Legeby, “Patterns of Co-Presence”, p. 231.

42 Ibid., p. 234.

43 Fainstein, The Just City; Hanson, “Urban Transformations”.

44 An adjustment is made for the population density, because the two inner-city squares differ in a significant way from the squares in the outer city. Inner-city squares are given the highest value and the others are compared.