

CONFIGURATION AND CO-PRESENCE: The underpinnings of job opportunities

120

Ann Legeby

KTH

e-mail : ann.legeby@arch.kth.se

Abstract

Several suburbs in the Stockholm region witnessed serious outbreaks of violence during May 2013. The pattern is recognizable: frustration over a situation of social exclusion has resulted in recurrent disorder in disadvantaged neighbourhoods. There is no doubt that the matter of social segregation is highly complex; there is neither an easy explanation nor a simple solution. The uneven distribution of unemployment and the uneven income distribution in Stockholm that often coincide with ethnic residential segregation stand out as increasingly compromising manifestations of urban segregation and of increasing social polarization—a situation that has proved difficult to change in spite of several initiatives.

This paper focuses on how the built environment may play a role in matters related to segregation; more specifically, it studies this from the angle of chances in the labour market. The starting point for this investigation is twofold: first, geographical access to jobs has been identified as an extremely important factor affecting people's chances of success in the labour market (Åslund et al. 2010; 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 affords. 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; 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).

Through an application of 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 across the city of Stockholm. The results show that spatial configuration has a direct influence on access to workplaces as well as on other aspects that affect residents' opportunities in the labour market. It also comes to light that the local outcome is highly dependent on the context of a place or of a neighbourhood, indicating that an area's surroundings need to be acknowledged to a greater degree and taken into consideration in antisegregation initiatives. I argue that the precise spatial analysis applied in this paper captures important implications regarding urban configuration for matters related to opportunities in the labour market

Keywords: access to workplaces, configuration, co-presence, urban inequality, Place Syntax Tool

Theme: Urban Space and Social, Economic and Cultural Phenomena

1. Introduction

An outbreak of violence hit several districts in Stockholm during May 2013; cars were set on fire, and vandalism took place in public spaces. What is of great concern is that similar riots have occurred on several occasions during 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’¹—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 polarization and exclusion even though the violent outbreaks may be triggered by more immediate incidents. Uneven employment patterns and income distribution have been identified in particular as highly problematic; these phenomena have been described as a compromising manifestation 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 in which unemployment rates are higher among immigrants than among those native born (Hårsman 2006). In some neighbourhoods the situation appears to have become more or less permanent (Öresjö 1997). 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 segregation problem is highly complex in nature, this paper 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 poverty areas and that physical separation from the city’s economic life implies a lack of potential for the economically marginalized 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 paper 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 at the same time appear to be influenced by spatial configuration. First, geographical access to workplaces (Goubillon et al. 2005; Åslund et al. 2010; Zenou et al. 2006). Second, co-presence (i.e. people physically present at the same time in the same space) 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 acquiring a job (Granovetter 1973, 1983). In addition, the intensity (how many) and the constitution (the mix) of co-present people have an impact on various contextual effects (Sennett 1992; Grannis 1998; Strömlad 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 the global level (i.e., the city

¹ *Socialt nödrop*, a phrase coined and used by the French research leader Gilles Kepel (Atkuellit, news programme on Swedish Television, 2013-05-22).

level). This study establishes the variation in geographical access to workplaces in different parts of the city. Further, 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.

2. Access to urban resources

The importance of access to jobs

In a 2010 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. 2010).

Several studies of unequal labour market outcomes for majority and minority groups have found that residential segregation is an important factor (Åslund et al. 2010). Such analyses are based in part on the Spatial Mismatch Hypothesis first formulated by Kain (1968), which states that residing in segregated areas 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 decentralized (Gobillon et al. 2005). An important difference between the American situation and the Swedish (or European) one is that in Sweden ethnic minorities predominantly live in the suburbs, whereas most 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. 2010, 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. 2010, 391–392).

In order to understand the relevance of these findings from an urban design perspective, following points need to be highlighted. The variables used to measure job access are the number of jobs within five kilometres of the 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, values are summed and represented by the most central square in the grid (Åslund et al. 2010). This investigation’s method uses 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 submit, 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, in the Place Syntax Tool data are not aggregated but are rather saved at the address-point level; second, access is analysed through the street network, not as a straight-line distance—the Stockholm case is important in this respect owing to its spatial

configuration (i.e., the city has no concentric centrality) and owing to natural and artificial barriers (bodies of water, 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 ‘just around the corner’

Apart from the importance of geographical access to jobs 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 characterized by strong residential segregation, and it has been argued that this adversely affects those living in areas where the majority of the population is socioeconomically disadvantaged (SOU 2005:29). However, people are not influenced only by other people living in the same area; the inflow of non-locals and their status also affect 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 intensity—is an important factor determining which resources are made available in different places. Sennett (1992) has contended that street life is an important source for learning 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) emphasized the significance of who may share 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 on 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).

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. But Granovetter (1974) 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 what is found locally, and this appears to be especially important for areas characterized by exclusion. Such information, it has been argued, has a significant effect on the life chances; to be confined to ‘provincial news and views’ might disadvantage one’s chances on the labour market or decrease the likelihood that people will organize in political movements (Granovetter 1983). This finding indicates that the mix of people found on a particular street may have considerable consequences. Strömblad (2001) discussed the social situation as one that has ‘contextual effects’. Similar to Zukin’s argument that a public culture is formed by those who participate in the negotiations, the idea here is that people are influenced by their social environment and that people consciously or unconsciously adapt to the information processed in public space by those who are co-present (Strömblad 2001, 156; Marcus & Legeby 2012).

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 here suggest 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.



Figure 1 What is available 'just around the corner'?

3. Data and method

To analyse access to jobs by taking spatial configuration into account, an axial map of Stockholm that represents public space by axial lines was used as a model; thus, all public space could be analysed as a continuous system of urban public space.² Information about the residents³ as well as about where jobs⁴ are, was available on the address-point level. Information about income was aggregated on the block level and on the base-area level.⁵ Unemployment data were available on the base-area level,⁶ as were data regarding median income level.⁷ Eighteen areas in the south of Stockholm compose the focus of this study, representing different socioeconomic profiles and different planning and design ideas. A social index for the areas illustrates this—an index borrowed from an investigation about segregation (USK/Melin 2006). This social index includes the four factors of income level, education level, ethnicity, and employment; index 1 indicates 'extremely exposed socially' and 5 indicates 'not at all exposed socially'.

² The axial map used (February 2012) is manually drawn by the research group SAD and Spacescape. It represents spaces accessible to pedestrians.

³ Residence (2009) was originally aggregated on the property level then distributed as a mean value down to address points in order to work better in the Place Syntax Tool, since information is directed to the closest line.

⁴ There are two data sources for workplaces: the PAR database (2006) and data provided by the municipality (2009). These sources are not identical but are largely consistent. The PAR data become more imprecise in areas where there are workplaces with many employees, since only the mean value is given.

⁵ Statistics for Stockholm were aggregated at the following levels: districts, base areas, blocks, properties, and addresses. Data on the address-point level are the most detailed data used here.

⁶ Unemployment and employment (2010).

⁷ Income level (2009).

Access to workplaces was analysed using the Place Syntax Tool (Ståhle et al. 2005), which allows for an analysis that integrates land-use and census data, and takes into account the configuration of the urban layout since analysis is made through the street network; hence, the outcome is dependent both on workplace distribution *in* space and on the distribution *of* space (Koch 2005, 2007). Data about jobs for the whole region were used, organized on the address-point level,⁸ but the result of the analysis is represented only on the address points within the municipality of Stockholm; this means that the result is not biased by the edge effect. Configurational analysis applying space syntax methods was used to disclose the distribution of centrality as spatial integration. The advantage of the space syntax method is that it allows for taking into consideration the network of streets and public spaces, spaces used in everyday activities. Information about the intensity and the constitution of co-present people in the eighteen neighbourhood centres and squares was collected through observations⁹ and through a questionnaire (N = 2,224)¹⁰ in these places (Legeby forthcoming).

4. Results

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 conditions that may be globally influenced are analysed: access to jobs, configurational properties (integration), and the distance in minutes needed to travel to the inner city. On the other hand affordances found locally are analysed: the number of local workplaces, the inflow of non-locals in public space, and the extent to which neighbourhood centres or squares are populated/crowded. This section starts, however, with a short description of the labour market in Stockholm.

Unemployment and workplaces in Stockholm

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 57.4%, 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 a polarization in the city that is of great concern (Stadsledningskontoret 2012).

Unemployment increased dramatically 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).¹¹ The unemployment rate is higher in the south of Stockholm (4.2%)¹² than in the north. However, in total 24% of those aged twenty to sixty-four years do not work but instead either are 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 districts as much as about 40% of the inhabitants between twenty and twenty-five years old neither work nor study.

⁸ The PAR register from 2006 is used here. For each address point an interval is given, and in this analysis a mean value was calculated for each such address point; thus, the precision is higher at low values, and the result for large working units may be misleading, for the interval here is much wider—for example, intervals are 1–4 or 90–99 employees, compared with a higher interval of 500–999 employees.

⁹ The observations of intensity used in this paper constitute what is called momentary intensity, in which all people present during a short period of time are counted. A median value of ten observations carried out during two different weekdays is used.

¹⁰ Questionnaire (May 2011).

¹¹ In October 2008 the unemployment rate was 2.3%.

¹² Statistik om Stockholm, Söderort (accessed 2012/06/25).

The prevailing situation in the eighteen places in focus¹³ is illustrated in the table below. Various socioeconomic profiles are represented within the sample. For example, the square in Mälärhöjden is located in an area in which the unemployment rate is 0.7%, while the area close to Skärholmen centre has an unemployment rate of 9.8%, places that are only three subway stops and about four kilometres apart. The median income level ranges between 120,413 and 388,161 SEK within the sample. There has been an increase in economic segregation in Stockholm: a larger share of citizens lives in areas with high income at the same time as the fraction 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).

CENTRE/SQUARE	Social Index (1-5)	Unemployed (%)	Median Income (SEK)
Mälärhöjden	5	0.72	271 813
Hammarby Sjöstad	5	1.63	388 161
Nytorget	4	2.42	268 528
Aspudden	3	2.50	296 760
Hammarbyhöjden	3	2.76	227 096
Södra Station	3	2.83	255 564
Björkhagen	4	3.71	209 588
Gubbängen	3	3.87	189 012
Skarpnäck	3	3.90	226 313
Västertorp	2	4.30	197 667
Bagarmossen	2	4.75	195 538
Hökarängen	2	5.53	120 413
Östbergahöjden	2	5.75	153 955
G:a Östberga	2	5.75	213 475
Farsta	3	5.86	210 569
Rågsved	2	7.52	145 272
Bredäng	1	7.80	173 382
Skärholmen	1	8.75	131 248

Figure 2 Unemployment, social index (USK/Melin 2006), and income levels.

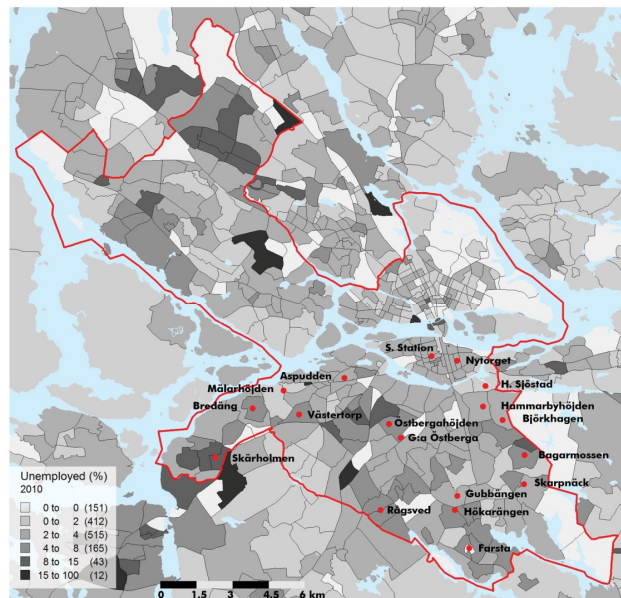


Figure 3 Unemployment rates (2010) according to 'base areas'.

¹³ That is, the situation in the base area, where the centre or square is located.

The map of unemployment shows that low levels are found in the inner city. There is, however, not a 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, high unemployment is found towards the municipal border, and in addition, there is a kind of wedge dividing the westernmost stretch from the central part of Stockholm's south. To some extent this pattern coincides with a wedge of spatial segregation. The integration analysis illustrates that spatial centrality in the south of Stockholm is primarily distributed straight to the south from the inner city, but there is also a stretch of high integration to the west, though this is less pronounced. The space between these two main swathes could be described as a wedge of spatial segregation coming very close to the central part of the city. In line with the reasoning of Hillier (2009), it is likely that this wedge of segregation is creating long distances between the background and the foreground network that are likely to have an adverse effect on economic activities, unfavourably affecting peoples' chances of obtaining a job.

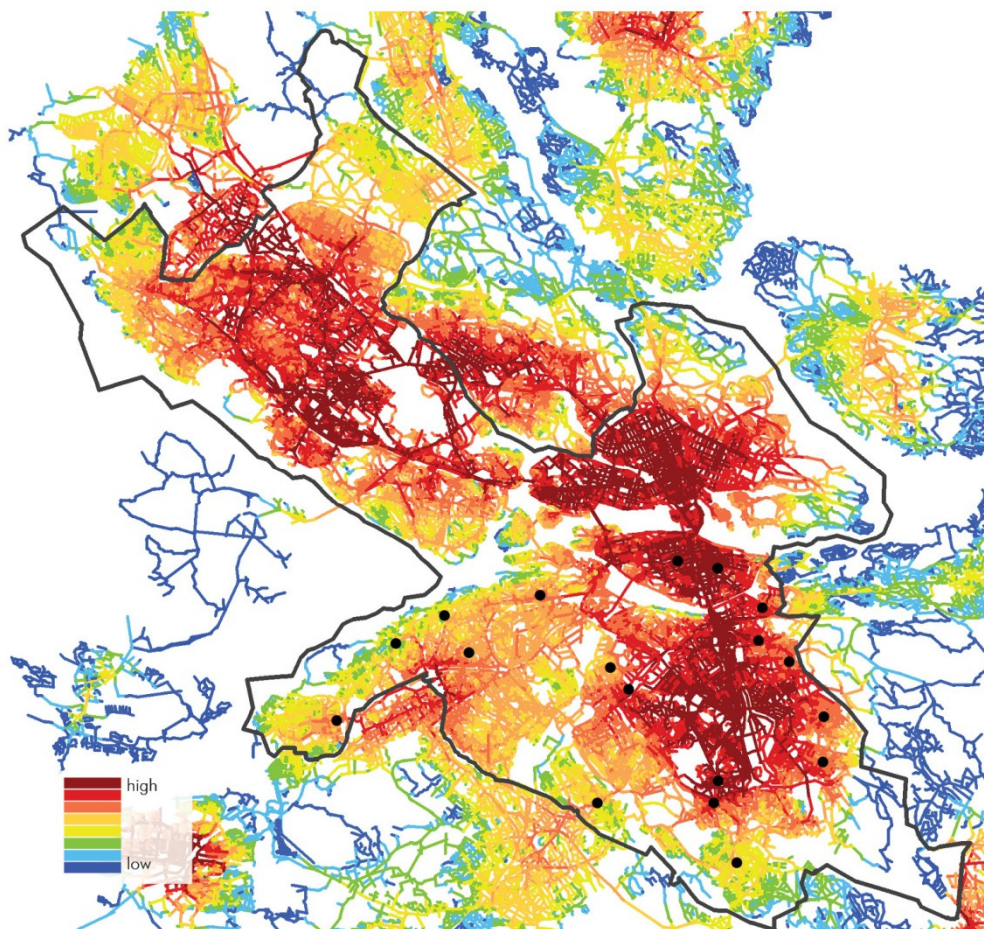


Figure 4 Global integration (radius 30).

Access to jobs

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 figure 5). In addition, in Stockholm's north, it is possible to see that the patterns of integration and job access exhibit similarities that also correspond to the municipality's administrative 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 who live 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 (land use) has been demonstrated in earlier research (Hillier et al. 1993; Hillier 1996).

The analysis of access to jobs as the radius is increased to 3,000 metres shows that the pattern takes on a more concentric shape. In the Stockholm's south the reddish colours reach farther straight 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 3,000 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 in which access to jobs is low but unemployment is also low—for example, Mälarhöjden and Aspudden. There the income levels are also higher. In light of the results of earlier research (Åslund 2010) 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 local place. This would concur with what Hanson found when studying the transformation of urban layouts and the extent to which different (socioeconomic) groups are dependent on public life and local affordances (Hanson 2000), as well as with what Vaughan found when studying places in which economically marginalized groups live (Vaughan et al. 2005; Vaughan 2007).

The results also show that at the local level the (regional) centres Skärholmen and Farsta exhibit rather 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 antisegregation 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 integrated. This finding is especially relevant from an urban design perspective and demonstrates that segregation is not a local phenomenon but rather a concern on a comprehensive level.

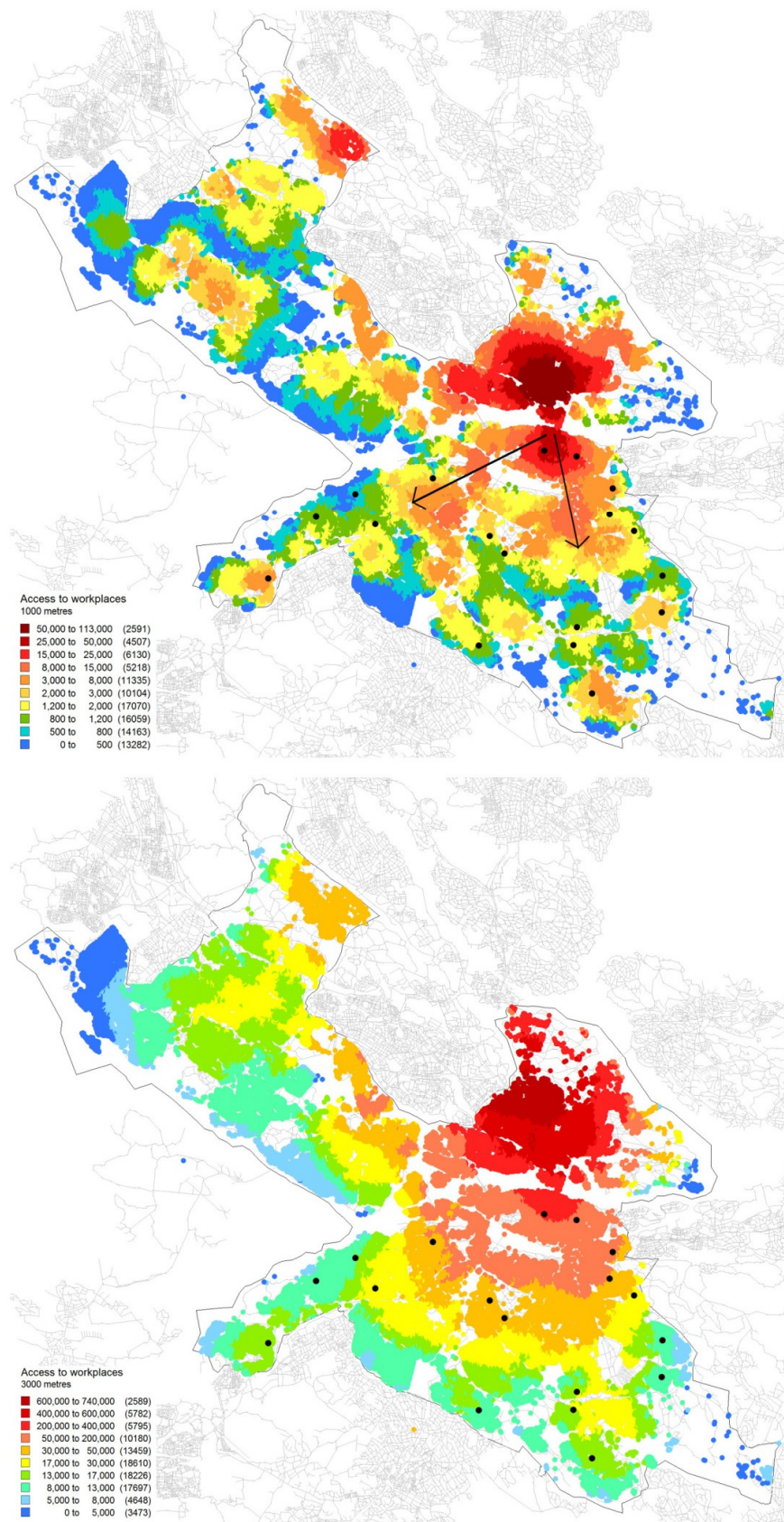


Figure 5 Access to jobs within 1,000 and 3,000 metres.

Travel time to the inner city

The distance to the city centre, here measured as travel time using public transportation, 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 transportation.¹⁴ Better access to the city core implies better access to jobs in the region. Further, the metric distance indicates the potential for using other modes of transportation, such as walking or biking.

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%).¹⁵ As much as 37% work in the inner city, and only 5% work in the north-west of Stockholm. The share that uses public transportation on a weekly basis among those living 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 transportation between the city centre and a specific neighbourhood is not only revealing in terms of access to the city centre, but it also says something about how accessible that neighbourhood is from other parts of the city, speaking to 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 southbound 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 characterized by high unemployment, e.g., Skärholmen, Farsta, and Rågsved. The difference in travel time in relation to other neighbourhoods is, however, small. What needs 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 rather few local jobs. This is an example of an area where the residents most likely are 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.

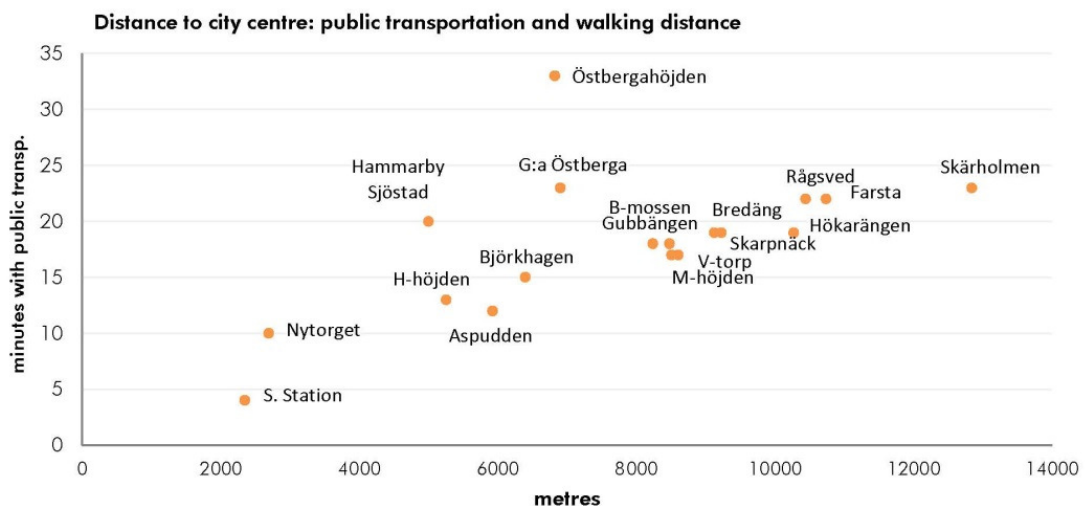


Figure 6 Distance to the city centre on public transportation and walking distance.

¹⁴ 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.

¹⁵ Områdesfakta, Söderort: <http://www.statistik.sweco.se/tabellverktyg/tv.aspx?projekt=omradesfakta&omrade=21>.

What is 'just around the corner'

Drawing on the ideas that an urban culture is created locally by those who have the ability to participate in public life (Zukin 1995) and that secondary social relations are influenced by intensity and the constitution of co-present people, we now turn to analysing the conditions found at different centres or squares in Stockholm's south.

In this paper the local conditions—that is, what accessible 'just around the corner'—are analysed through the following factors: the intensity of co-presence in public space, the inflow of non-locals, and access to local jobs (i.e., within 500 metres). Information about the inflow of non-locals was collected through interviews in the eighteen squares, and intensity was recorded through observations counting simultaneously co-present people, both moving and static people (Legeby forthcoming).

This study found that the inflow of non-locals and intensity are strongly related. Within the sample large variations were found, and some centres were characterized 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 who were co-present to 80%. The two inner-city places were among those with higher inflow, but 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.

The number of working places locally (within 500 metres) varied 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 Södra Station 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 highly relevant.

To make comparison easier and to illustrate the conditions found at the eighteen locations, the results are represented in a diagram (figure 7). The social index and the unemployment rate illustrate the status of the area from a statistical perspective. Configuration is here measured 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 measures are transferred to indexes: either an index that illustrates a neighbourhood's situation in relation to the other areas within the sample¹⁶ or some values that are used more or less directly.¹⁷ 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 characterized by low 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, Mälarhöjden, Hammarby Sjöstad, and Björkhagen—at the same time as the inflow of non-locals and the intensity of public life are rather low. Taken together, the numbers 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 Mälarhöjden in this respect is among the most isolated areas, and similar isolation is found in areas with low social indexes: Östberghöjden, Rågsved, and Västertorp.

¹⁶ A normalization was done based on the values within the sample: global integration, access to jobs, travel time to the central station, and intensity.

¹⁷ Values that from the beginning are given as shares or fractions—namely, the inflow of non-locals, unemployment, and the social index.

Spatial properties may thus contribute to an isolation of both affluent areas and more vulnerable areas, making both the residents less accessible from the city as a whole, and limiting their residents' access to other parts of the city.

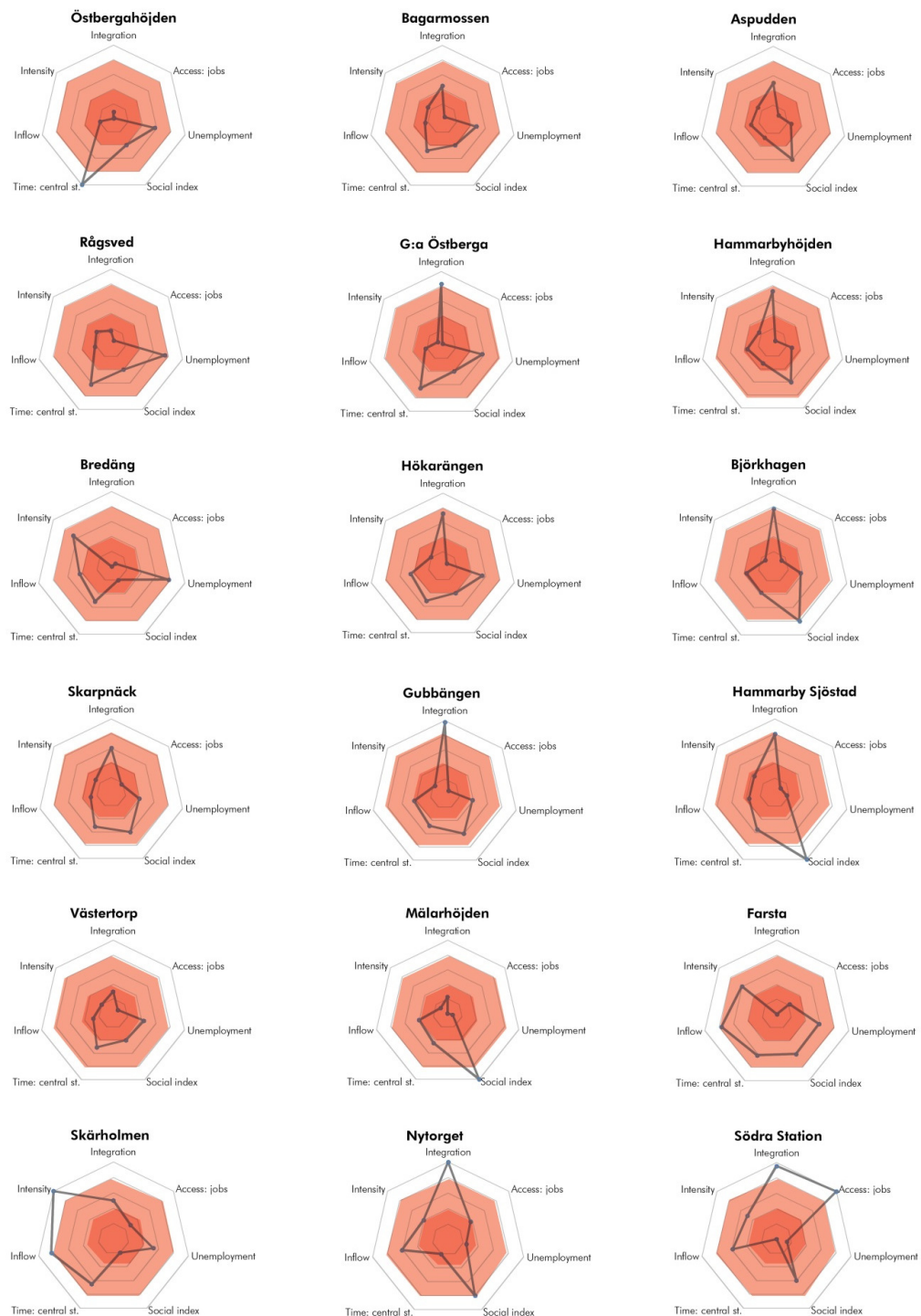


Figure 7 The eighteen study locations: local conditions illustrated.

5. Discussion and conclusions

The results show that many areas characterized by high unemployment rates and low income levels are disadvantaged in terms of access to jobs, access to non-residents locally, and a limited day population, which entails a public life with very low intensity. 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. This analysis has demonstrated that a spatial mechanism is involved in creating this separation of certain neighbourhoods from job opportunities in various ways. Such configurational properties are suggested to 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 does this concern access to jobs, but the other aspects analysed have proved highly beneficial for residents' chances 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 transportation. Outer city areas do not even come close to the situation found in the inner city. This illustrates an important inequality, an inequality that only comprehensive interventions can 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, not only will local changes influence local outcomes, but to a large extent remote interventions may also have a strong impact locally. Conversely, disadvantageous conditions identified in an area can be counteracted 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, the strong belief in so-called area-based initiatives may be questioned. This paper suggests 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, this will not have the same effect on its residents or users as it would in areas whose populations have fewer resources or are economically marginalized. 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 characterized by high unemployment (Östberga 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 a remarkably long travel time to the inner city in spite of a short metric distance

(at least in Östbergahöjden). However, according to what has been demonstrated in this paper 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 antisegregation 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 that 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. However, far more analysis than that presented in this paper is needed in order to investigate this thoroughly.

References

- Aktuellt. 2013. Interview with Gilles Kepel in Swedish Television News *Aktuellt*. May 22.
- Bäckström, Cecilia, and Staffan Forsell. 2001. *Har segregationen ökat i Stockholms stad? Områdets sociala utsatthet*. Stockholm: Stockholms stad, Integrationsförvaltningen.
- Franzén, Mats. 2009. "Matters of Urban Segregation." In *Proceedings to the 7th International Space Syntax Symposium*, edited by Daniel Koch, Lars Marcus, Jesper Steen, 105:1- 105:1. Stockholm, KTH.
- Gobillon, Laurent, Harris Selod, and Yves Zenou. 2005. "The Mechanisms of Spatial Mismatch." In *CEPR Discussion Paper* 5346.
- Grannis, Rick. 1998. "The Importance of Trivial Streets: Residential Streets and Residential Segregation." *American Journal of Sociology* 103(6): 1530-1564.
- Granovetter, Mark. 1973. "The strength of weak ties." *American Journal of Sociology* 78:6.
- Granovetter, Mark. 1983. "The strength of weak ties: a network theory revisited." *Sociological Theory* 1: 201-233.
- Hanson, Julianne. 2000. "Urban transformations: a history of design ideas." *Urban Design International* 5: 97-133.
- Hanson, Julianne, and Bill Hillier. 1987. "The Architecture of Community: Some New Proposals on the Social consequences of Architectural and Planning Decisions." *Architectural Behaviour* 3(3): 251-273.
- Hillier, Bill. 1996. *Space is the machine*. Cambridge, UK: Cambridge University Press.
- Hillier, Bill. 2009. "Spatial Sustainability in Cities Organic Patterns and Sustainable Forms." In *Proceedings to the 7th International Space Syntax Symposium*, edited by Daniel Koch, Lars Marcus and Jesper Steen. 105:1-105:2. Stockholm: KTH.
- Hillier, Bill. 2010. "What do We Need to Add to a Social Network to Get a Society?" *The Journal of Space Syntax* 1(1): 41-58.
- Hillier, Bill, and Julianne Hanson. 1984. *The social logic of space*. Cambridge, UK: Cambridge

University Press.

- Hillier, Bill, Alan Penn, T. Grajewski, and J. Xu. 1993. "Natural movement: or, configuration and attraction in urban pedestrian movement." *Environment and Planning B: Planning and Design* 20: 29-66.
- Hårsman, Björn. 2006. "Ethnic Diversity and Spatial Segregation in the Stockholm Region." *Urban Studies* 43(8): 1341-1364.
- Kain, John. 1968. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *Quarterly Journal of Economics* 82 (2): 175-197.
- Koch, Daniel. 2004. "Spatial systems as producers of meaning: the idea of knowledge in three public libraries." Licentiate thesis, KTH School of Architecture. Stockholm: KTH.
- Koch, Daniel. 2007. "Structuring fashion: department stores as situation spatial practice." PhD diss., KTH School of Architecture. Stockholm: Axl Books.
- Legeby, Ann. 2010a. "Urban segregation and urban form: From residential segregation to segregation in public space." Licentiate thesis, KTH School of Architecture, Stockholm: KTH.
- Legeby, Ann. 2010b. "From Housing Segregation to Integration in Public Space: A Space Syntax Approach Applied on the City of Södertälje." *The Journal of Space Syntax* 1(1): 92-107.
- Legeby, Ann, and Lars Marcus. 2011. "Does the urban structure of Swedish cities inhibit the sharing of public space?" *Built Environment* 37 (2): 155-169.
- Marcus, Lars. 2007. "Spatial Capital and how to measure it - An outline of an analytical theory of the social performativity of urban form." In *Proceedings to the 6th International Space Syntax Symposium*, edited by Ayşe Sema Kubat, Özhan Ertekin, Yasemin Ince Güney and Engin Eyüboğlu. Istanbul: ITU Faculty of Architecture. 005.1-005.12.
- Marcus, Lars, and Ann Legeby. 2012. "The need for co-presence in urban complexity – measuring social capital using space syntax." In *Proceedings of the 8th International Space Syntax Symposium*, edited by Margarita Greene, José Reyes and Andrea Castro. Santiago de Chile: PUC.
- OECD. 2013. *Crisis squeezes income and puts pressure on inequality and poverty*. OECD.
- OECD. 2013. "Social policies and data." Web page accessed May 26, <http://www.oecd.org/els/soc/income-distribution-database.htm>.
- Olsson, Sören. 1998. *Det offentliga stadslivets förändringar*. Göteborg: Centrum för byggnadskultur i västra Sverige.
- Patacchini, Eleonora, and Y. Zenou. 2007. "Spatial dependence in local unemployment rates." *Journal of Economic Geography* 1-23.
- Sennett, Richard. 1992. *The Conscience of the eye: the design and social life of cities*. New York: W.W. Norton [1990].
- SOU. 2005. "Storstad i rörelse: kunskapsöversikt över utvärderingar av storstadspolitikens lokala utvecklingsavtal: slutbetänkande." *Utredningen om utvärdering av lokala utvecklingsavtal*. Stockholm: Fritze. 29.
- Stadsledningskontoret. 2012. *Statistik Om Stockholm. Arbetsmarknad 2010*. Report 07. Stockholm: Stadsledningskontoret.
- Stockholm Stad. 2010. *Statistik om Stockholm 2012:0*. Stockholm: Stockholm Stad.
- Strömblad, Per. 2001. "Segregationens konsekvenser." In *Den delade staden*, edited by L.

- Magnusson. 155-180. Umeå: Borea.
- Ståhle, Alexander, Lars Marcus, and Anders Karlström. 2006. "Place Syntax – Geographic Accessibility with Axial Lines in GIS." In *Proceedings of the 5th International Space Syntax Symposium, Volume I*, edited by A van Nes. Delft: Techne Press.
- USK. 2009. *Statistikunderlag för Söderortsvisionen*. 2009-04-29. DNR 011/084-09. Stockholm: Stockholms Stads Utrednings- och Statistikkontor AB (USK).
- USK/Melin. 2006. *Har segregationen ökat i Stockholms stad? – En studie om områdets sociala utsatthet*. Pernilla Melin/USK. Stockholm: Stockholms Stads Utrednings- och Statistikkontor (USK).
- USK/Waaranperä. 2010. *Statistik om STHLM: Arbetssökande i stadsdelsområden 2009*. Report S:1. Stockholm: Stockholms Stads Utrednings- och Statistikkontor (USK).
- Vaughan, Laura, David L. Chatford Clark, Ozlem Sahbaz, and Mordechai (Muki) Haklay. 2005. "Space and Exclusion: does urban morphology play a part in social deprivation." *Area* 37 (4): 402-412.
- Vaughan, Laura. 2005. "The relationship between physical segregation and social marginalisation in the urban environment." *World Architecture* 185: 88-96.
- Vaughan, Laura. 2007. "The spatial syntax of urban segregation." *Progress in Planning* 67(3): 205–294.
- Zenou, Yves, and John Östh. 2006. "Hur viktig är närheten till jobb för chanserna på arbetsmarknaden?" *Ekonomiskdebatt* 34: 31-42.
- Zukin, Sharon. 1995. *The Culture of Cities*. Oxford: Blackwell.
- Åslund, Olof, John Östh, and Yves Zenou. 2010. "How important is access to jobs? Old question – improved answer." *Journal of Economic Geography* 10: 389-422.
- Öresjö, Eva. 1997. "Neighbourhood integration and Mobilization." In *Swedish Planning Towards Sustainable Development*, edited by C. G. Buinchard. 42-46. Gävle: Swedish Society for Town and Country Planning.