

REMOTE UNCONTROL

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35.1

0 Abstract

The character and attractiveness of urban areas may change gradually and dramatically over time. Very seldom can specific actions within the area be identified as the cause to these changes. In this study an area in Gothenburg in Sweden will be focused upon. The area once was vivid and had a flourishing business life but have gradually turned into a slumbering and unpopular neighbourhood. It seems as if this development is caused by a number of planned urban interventions remote from the area rather than by local actions.

A diachronic study of an urban area and its embedment in the global urban structure can give some insight of the "transspatial" correlation. The historic development of the area is discussed in relation to the development of the global urban aggregate. Here a technique is introduced to indicate local changes of spatial properties as a result of remote actions. Compared to other methods space syntax analysis is straight-forward, not taking detours through e.g. social and economic data and aesthetic aspects.

Keywords: urban changes, diachronic, land use, vividness, transspatial, space syntax

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1 Introduction

That cities are continuously changing over time is rarely questioned but when it comes to the reasons why certain changes evolve the opinions differ greatly. Usually great importance is attached to economic and social data, however, their interdependency to spatial design are often neglected.

Hillier argues, that spatial configuration govern and generate movement, and therefore it governs use of space and the potential of encounter amongst people. The properties of a spatial system is depending on its configuration, which means that local physical changes in the spatial system will have more or less global configurational effects. Hence, remote local interventions may have unforeseen global effects, as well as global changes produce unforeseen effects at the local level. The relationship between the form of space and how people use it is analyzable, and to some extent predictable. (Hillier, 1996: pp. 151-154, 299).

According to the encyclopedia (Mac Graw Hill, 1997), "remote-control" means that the issuing of the control command and its execution are separated by a relatively significant distance. In many ways this is also applicable to a city. The spatial properties at a local level is depending on the global spatial system and its properties, since the parts are related to the city as a whole. In other words, "commands" in one part of the city will result in "executions" at distant places, which means that for example changes in the periphery will to some extent also affect the city core as well as other peripheral areas.

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Figure 1. Aerial photo of the case area.

Is it really possible to control the development of some parts of the city by distant actions? Are architects, planners and decision-makers aware of possible remote effects caused by interventions in the city? It is very seldom obvious or attended exactly which consequences the changes involve. In contrast to a remote control for a television, the city is far more complicated and the relations between the parts and the whole more complex which makes it more aptly to talk about remote uncontrol.

This paper will focus upon an area in the outskirts of Gothenburg city center. See figure 1. The area used to be quite vivid but today some parts are apprehended as non attractive. It will be argued that this retrogression mainly is caused by changes of the spatial structure in the global aggregate. Planned development at places remote from the area have caused changes in the global spatial system which in turn have had great effects on a local level.

2 Using the space syntax method to visualize effects of physical changes

According to Hillier the use of space is determined by the ordering of space. The possibilities to experience other people in everyday life is determined by spatial configuration. The measure of integration may be looked upon as an indicator of vividness, and previous research has shown that there is a positive correlation between high integration values and movement, which attract shops and services. (Hillier, 1996:167 & Klarqvist, 1997:2). The value of mean integration is decreased by for example barriers or segregated enclaves in the urban fabric (Klarqvist, 1997:8).

To elucidate how interventions and additions in the urban aggregate have affected the spatial properties in the studied area, space syntax analyses of layouts dating from different times have been conducted. Axial maps have been drawn from historical maps, from 1927, 1957, as well as from 1997. The diachronic analysis gives a deeper insight into the development of the structure and enables a better understanding of the causes behind the changes in properties of the spatial system. By gaining insight into the transspatial correlations, actions which could contribute to a more attractive neighbourhood may be identified.

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The method of compiling the axial maps in this study need to be recognized. Firstly, the axial maps of the historical layouts is a combination of the existing urban structure and planned future additions, originating from that specific time (describing the contemporary intentions). Secondly, the axial maps covers only a limited geographical area, including the immediate surroundings only. The relation to the global network will be discussed according to the interdependency between global and local structures.



3 The diachronic study

The area is situated approximately two kilometers from Gothenburg city center, on the opposite side of the river Göta Älv on the island of Hisingen. Historically the area has been an unsettled borderland between Sweden, Norway and Denmark. The studied area was declared/became Swedish in the 13th century. In the middle of the 19th century industries established along the river front on the reeded and marshy land and in connection to the industries, dwellings for the workers were erected. When the area was incorporated with the city of Gothenburg in 1906, the urban aggregate was organized in a grid structure. Right up to the middle of the 20th century, the main road from the north to the city of Gothenburg, passed through the area, alongside the Kville square. The square was an important market place, especially for the peasants from Hisingen. The area, as well as Hisingen, was continuously developed. A new bridge was built over the river and new thoroughfares were laid out in the urban fabric to provide good accessibility for new large scale suburbs, resulting in a change of the spatial configuration. The traffic through the area was redirected with a consequence that the old main road was closed, hence, the Kville square was no longer adjacent to any of the main roads in the comprehensive traffic network. See figure 2 and 3.

Figure 2. The city of Gothenburg in the 1920's with the case area north of the city center.

Figure 3. The city of Gothenburg in the 1990's. The case area is no longer in the periphery of the city.

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The syntax analysis of the plan pattern originating from 1927 shows us a well defined grid system in the lower parts of the area with equally good accessibility and with a multiplicity of routes. In the northern part of the grid structure only a few buildings were erected at this time, however, the analysis shows that there are highly integrated lines in this part. One of the most integrated axial line in the system is found along a street running in a north-south direction, which was not yet implemented by this decade. The old main road to the city core of Gothenburg, passing the Kville square, was actually the only street in a north-south direction. Hence, this road was in reality probably the most integrated axial line. These facts indicate, that as soon as the new physical structure outlined at this time is implemented, the old main road will become dramatically less important and the Kville square will be located in a less strategic position within the urban fabric. See figure 4.



Figure 4. Axial map of the layout of 1927.

Figure 5. Axial map of the layout of 1957.

During the three following decades Gothenburg was expanding dramatically. New suburbs were planned and built on Hisingen and new industries were established. The population as well as traffic increased and there was great need for new thoroughfares. In the mid thirties a new bridge with higher capacity was constructed to replace the old one. The overall traffic network was hereby changed; new roads were built while others were excluded from the primary network. In addition, two large road reserves in the area implied that several of the connections in a north-south direction were cut off, limiting the possibilities for movement within the area. As the area was built out very little land was left undeveloped. The integration core was concentrated to a street junction and the area was divided into a southern and a northern part. The grid structure which earlier was explicit turned into something which could be compared to "enclaved grids" where a group of blocks is organized in grids with few joints to its embedment and poor accessibility. See figure 5.

Between 1957 and the 1990's very little happened with the structure within the area, the changes were implemented elsewhere. The connection over the river was improved by an additional bridge (1966) and a new tunnel (1968). See figure 6. New alternative roads implied less traffic through the area and the traffic flow on the main east-west going road was nearly halved during this period. Highly integrated streets were the north-south going streets, parallel to the old county road and two streets in the northern part in an east-west direction. The analysis of the map from 1997 is convincingly indicating that the Kville square is isolated from the more important streets and is located in one of the so called enclaved grids. On the contrary, former low density areas have come in a more strategic position – next to one of the primary roads – and has developed in to a flourishing low-price commercial area. See figure 7.

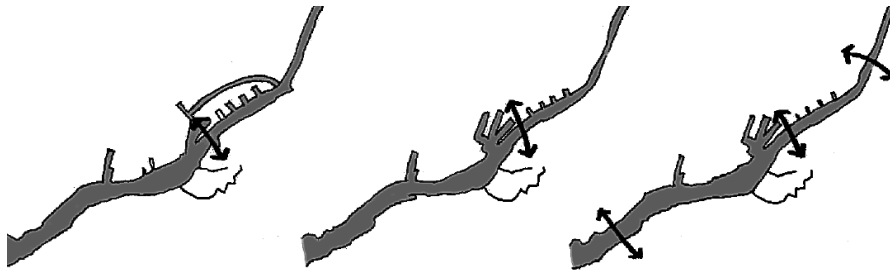


Figure 6. The connections over the river, in the 1920's, the 1950's and the 1990's.

To be able to understand what the development have implied for pedestrians an analysis have been conducted for the pedestrian network of the layout of today. The axial map shows that there is a higher accessibility for pedestrians than for vehicles between some of the enclaved grids, especially in the northern part. Still, many barriers limit the possibilities of movement and the most integrated lines are found in the junction where the southern part is connected to the northern part. See figure 8.



Figure 7. Axial map of the layout of 1997.

Figure 8. Axial map of the pedestrian network in the layout of 1997.

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4 Measurable spatial properties

The changes of the spatial properties within the different structures can be concretized by comparing the values for integration and intelligibility. Integration, which is a global property relating the line to the system as a whole, have a positive correlation to use density. The value of intelligibility is the same as the degree of correlation between the connectivity (a local property) and the integration (a global property) of a line.

The quantitative measures derived from the analyses reveals that the value for mean integration is lower in the layouts of today compared with how the area looked and was planned in the 1920's. In addition, the value of the most integrated line as well as of the least integrated line is lower in the modern layouts. The values of intelligibility is considerably lower in the layout of today compared to the layout of 1927. See table 1 (the "modified layout" is described below).

Table 1

	<i>mean integration</i>	<i>max/min integration</i>	<i>intelligibility</i>
Layout from 1927	1.22	1.98 / 0.43	0.46
Layout from 1957	0.91	1.42 / 0.50	0.22
Layout from 1997, vehicle network	0.90	1.62 / 0.34	0.22
Layout from 1997, pedestrian network	0.57	0.86 / 0.19	0.15
Modified layout, pedestrian network	0.73	1.10 / 0.21	0.21

5 The Kville square

The next phase of the study aims at understanding how the conditions for certain activities have changed. According to the results it seems as the modern layouts possess lower potential for vividness than the older ones. Consequently, the conditions for business activities have become worse. In earlier research it has been shown that there is a relation between the spatial organization and the attractiveness of property. (Desyllas, 1997:14). Therefore the development of the Kville square have been studied in detail regarding its spatial properties, with focus upon the situation for pedestrians. The layout from 1927 has been compared with the layout from 1997 showing the pedestrian network. It is here assumed that these are comparable since people during the 1920's were able to use the entire road network since the intensity of vehicle traffic was low.

The square has almost the same physical form now as in 1927, but as shown above, the structure around the area has changed considerably as a result of remote development. In table 2 the integration values of three streets adjacent to the square is listed. The result clearly indicates that its potential to preserve and obtain successful business activities has been limited.

In an attempt to understand how local changes can affect the spatial properties within the area, the structure have been modified. The intention of these desktop studies, has been to improve the accessibility for pedestrians and increase the value of mean integration as well as the integration value around the Kville square. Several alternative layouts have been analyzed according to the space syntax method (illustrated in an unpublished diploma work), of which one will be presented in this paper. The approach was to de-barrier the area by relatively small adjustments of the pattern. For example, the old main county road is reintroduced and pedestrian paths is implemented over the Kville creek.

Figure 9. Axial map of the modified layout.

Table 2
The integration values of the streets adjacent to the square

	west	south	east
Layout from 1927	1.44	1.61	1.44
Layout from 1997	0.71	0.75	0.65
Modified layout	0.99	0.97	0.88



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The calculations show that it is possible to improve the potential for vividness by local interventions. Mean integration as well as intelligibility are higher, even if they still are far lower than in 1927. However, the most significant difference is that the integration core no longer is located to the large traffic junction at the thoroughfare. The most integrated lines – amongst which the old county road is one – are now connecting the Kville square with the two other commercial centers. By these planned interventions the potential for business activities will be somewhat reestablished, partly due to the extension of the old main road. See table 1, 2 and figure 9.

Figure 9. Axial map of the modified layout.

6 Discussion and conclusions

The development of the area on Hisingen is a result of deliberately planned actions as well as of unforeseen side effects of remote actions. The exploitation in the periphery, remote from the studied area, has required interventions at a local level. Some of these implemented interventions have had additional effects apart from those intended. The diachronic study using the space syntax analysis reveals in an objective manner the configurational changes and it has shown that the spatial properties – as well as the conditions for social life – have changed dramatically within the local area during the time period studied.

On one hand, the accessibility to the island of Hisingen has been improved in time, due to the tram, the thoroughfares and other infrastructural investments. On the other hand, these additions also functions as barriers at a local level, isolating areas from each other and creating enclaved grids with a negative effect on vividness and other social aspects according to the space syntax analysis. These negative effects are most probably unintended, undesired and unexpected. From a local perspective the effects may be looked upon as uncontrollable.

An example is the Kville square where the flourishing business life has declined and commercial activities have moved to other locations. In order to turn such a downward tendency a common action has been to improve the physical environment of a place in an attempt to increase the attractiveness with more or less cosmetical additions. The analysis of the local area has shown how dependent the spatial properties

of a place are on how its embedment is configured. This has been pointed out by Hillier who emphasizes that places are no local things, thus it is the cities that make places. (Hillier, 1996: 151). According to this, a more effective way to obtain higher integration values and attain vividness, would be to carry out some strategic adjustments in the surroundings.

There is no doubt that the spatial properties change instantaneously if the structure is modified. Nevertheless, in reality the effects often seem to be delayed which indicates that there is some kind of inertia in the system. Factors which most likely constitute great obstacles for fast transformation in urban aggregates are for example habits, traditions, planning regulations and private investments i.e. buildings and infrastructure. The delayness makes it difficult to identify the actions which cause certain changes. In this paper the space syntax analysis proved to be a useful instrument to predict changes of spatial properties as a result of different interventions.

As the city grew, new alternative connections were established over the river, which implied that the thoroughfares in the studied area lost in importance within the global system. Hypothetically, it would now be possible to reopen some of the closed streets and reestablish a grid pattern which would promote social sustainability, since the thoroughfares no longer have the same status in the global network. However, the existing urban aggregate, which structure poorly supports social life, is an obstacle and a threshold for change.

In the previous section it has been shown that it is feasible to reintroduce some of the spatial properties in the local area which will attract enterprises and enhance vividness. In this case the proposed adjustments in strategic locations, were relatively small-scaled and realistic. The southern part was joined to the northern part and highly integrated lines connected the three commercial areas.

As it is understood that it is possible to attain certain changes by planned interventions a question is raised regarding the ascendancy of the urban pattern. Apparently, global and local interests may be irreconcilable. Is there an awareness of the remote consequences of planned interventions amongst those involved with urban development? What responsibility do architects and planners have to evaluate the effects of changes in the urban fabric? The space syntax method has proved to be a useful tool to increase the understanding of remote uncontrol – the "commands" and the "executions" in such a complex system as a city constitute – may be enlightened.

7 References

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