SPACE AND CRIME IN DUTCH BUILT ENVIRONMENTS:

macro and micro scale spatial conditions for residential burglaries and thefts from cars

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Abstract

At this moment, more knowledge is available on the physical characteristics of the built environment and their relationship to criminal opportunity rather than the spatial characteristics of potential targets and the public and private space between them. To improve this situation, a research project was started in the Dutch cities Gouda and Alkmaar that aimed to address several spatial characteristics of the built environment, to develop a method to quantify these characteristics and to relate them to the geographic distribution of residential burglaries and thefts from cars[i]. The predominant task consisted in identifying the spatial conditions on various scale levels - in terms of the street net's configuration - and the relationship between private and public space favouring burglaries and theft from cars. Furthermore, statistical analysis was used to study the relationship between crime risk and spatial configuration on various scale levels.

Background - Urban Space, Targets and Criminal Opportunities

During the last decades, policy makers have taken advantage of various insights provided by environmental criminology. These insights are translated into practical prevention applications and resulted in successful approaches such as the British programme Secured by Design, the Dutch Police Label Safe Housing and the preventive design of parking areas. By manipulating built objects' physical characteristics, it can to some extent limit criminal opportunities.

However, when we look at the current opportunity reducing approaches and compare them with various theories from environmental criminology, we see that the spatial component is missing. The focus is too much on targets, rather than the spatial configuration of the street net and the spatial structure between objects. As emphasised within the criminological disciplines, spatial as well as physical components play a role in the way criminal incidents take place. However, the spatial component is underrepresented when it comes to crime control. Until recently, tools to address and quantify spatial characteristics were lacking or not commonly known in police practice.

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During the last decade, space syntax has been applied in studies on crime in built environments in the UK. The results show a clear correlation between the dispersal of crime and the streets' degree of spatial integration. However, what is missing is a genuine understanding of the relationship between micro scale spatial characteristics with the macro ones. More precisely, we need to know how objects or potential targets are placed in relationship to one another and relate this both to the configurative structure of their areas' street net, human behaviour and the geographic and temporal distribution of crime.

In a recently completed research project, the relationship between crime distribution and the spatial characteristics of the street net was studied. The inquiry consisted of three parts. In the first part, a space syntax analysis was carried out of the Dutch cities Gouda and Alkmaar, comparing the distribution of theft from cars and residential burglaries over a two years period. In the second part, a local area in each town was studied in a detailed manner. During the study of the local areas, micro scale spatial aspects were taken into account and compared with spatial characteristics on a macro level. The third part of the study consisted of a statistical analysis of the data. Correlations between the various spatial parameters were calculated and – by means of risk band analysis – related to the crime risks of similar street segments.

Environmental Criminology and Urbanism

Insights from Environmental Criminology

Environmental criminology assumes that some people are criminally motivated and focuses on the criminal event rather than offender motivation. The objective of environmental criminology is to sort out patterns in where, when and how crimes occur and to use the geographic imagination to describe, understand and control criminal events (Brantingham & Brantingham 1981, p. 18-21). This involves studying temporal and geographic distributions of criminal events, the location of crimes and the target selection of offenders. The most influential contemporary theories in environmental criminology are the rational choice, the routine activity and the crime pattern theory. These theories do not only provide insight into the geographic distribution of crimes, but also the spatial conditions that influence this distribution.

The rational choice theory addresses the question as to why criminals commit offences in some situations and not in others (Cornish & Clarke 1986). It thereby focuses on the individual's assessment of the criminal opportunities provided by specific situations or, in other words, his assessment of the possibilities to maximise gain with the lowest possible risk. The offender's assessment of the criminal opportunity is constrained by his limited knowledge of the situation. Nevertheless, he tries to make a fair assessment of the situation and will offend when he assumes that a specific situation represents good chances for a fair loot, a high degree of accessibility and low chances for getting caught.

The routine activity theory suggests that a major part of human activity is in fact recurrent and prevalent activities (Cohen & Felson 1979). Activities such as formalised work, commuting, leisure, social interaction and child rearing are often repeated over and over again with the same timing, rhythm and tempo. The structure of these everyday routine activities influences criminal opportunity and creates predictable situations upon which illegal behaviour feeds. Criminals take into account the availability of attractive targets and the structure of the activities of potential victims and guardians. They know that legal daily activities separate people from their personal property at given times and places. Likewise, criminals know how prevailing routine activities bring together different mixes of street users at various times of the day. The timing of work, shopping and recreation creates regular patterns of human behaviour and – in turn – regular patterns in criminal opportunity and the spatial and temporal behaviour of criminal offenders.

The crime pattern theory combines the ideas of rational choice and routine activities to explain the geographic distribution of crime (Brantingham & Brantingham 1981, 1993 and 1995). This distribution is not random, it is clustered around the homes of offenders, the places they visit and the routes they travel. The locations about which an offender has specific environmental knowledge are called 'awareness space'. This space includes the area where the offender's routine activities take place. It includes the surroundings of his home, the places he visits for his work and leisure activities and the streets he is using when travelling from one known place to another. Inside the offender's awareness space there are several opportunity spaces, places perceived by the offender to contain attractive targets – targets (in the perception of the offender) representing high value, low guardianship and high accessibility. The crime pattern theory postulates that offences are most likely to occur where opportunity spaces intersect with awareness spaces.

Insights from Space Syntax Research

Recently, urban and architectural researchers have provided evidence on the relationship between spatial configurations and the distribution of crime through application of the space syntax method. Since the method is able to calculate a built environment's spatial properties (Hillier 1998), it becomes possible to correlate these properties with quantifiable crime data.

In general, the results from space syntax research are in line with the theories of situational criminology. The research has provided evidence for the fact that people use a predefined set of daily movement routines causing that some streets and some routes are frequented more often than others do. Space syntax has turned out to be useful identifying these routes and their underlying spatial conditions. In this way, space syntax is able for example to show how segregated streets have more complex routes to all other streets in a city in comparison with the integrated ones.

Space syntax research has made it clear that areas with segregated spaces, with urban grids visually broken up and with few dwelling entrances constituting streets are often affected by crime and social misuse (Hillier & Shu 2000, p. 232). The same is true for areas that have a poor correlation between connectivity and local and global integration of the vicinity, segregated areas that are many topological steps away from integrated streets and when the topological structure of an area is deep.

The same studies clarify that spatial organisation generates public movement patterns that in some extent are predictable and generates different levels of co-presence and co-awareness in a built environment (Hillier et. al. 1993). Valerie Alford identified the spatial features of different types of crime in a research project in London. As she concludes, different types of street crime take place in different kinds of space and criminal incidents and pedestrian flows are clearly linked (Alford 1996, p. 64 - 67).

In his PhD thesis *Housing Layout and Crime Vulnerability*, Chih-Feng Shu studied the correlation between the spatial configurative layout of housing estates and urban areas with the spatial distribution of property offences. Three different areas were investigated over a two years period (Chih-Feng Shu 2000). His findings challenge some aspects of Oscar Newman's ideas of defensible space and territoriality (Newman 1972, 1980), but are very much in line with the contemporary environmental theories such as the rational choice, routine activity and crime pattern theory. According to Shu, property crime tends to take place in segregated urban areas, especially in cul-de-sacs or enclosed clusters favoured by Oscar Newman. Shu's research differs from earlier research in that he provides detailed spatial studies on residential areas with a wide range of different types of dwellings, streets, spatial and social composition.

Hillier and Sahbaz brought research on space and crime further by emphasizing the need to use crime risks rather than crime rates. In their view, calculating crime risks is, however, only useful on the higher aggregation levels. When studying crime at the street or street segment level, a logarithmic function between the crime risk and the number of objects can be found. This distortion can be compensated by normalising the crime risk for example by aggregating the research data to the number of objects in every street segment (Hillier & Sahbaz 2005).

The methods and insights from environmental criminology are combined with a configurative approach in a study of the Dutch city Haarlem. The routine activity and crime pattern theories are used to identify where and when awareness and opportunity spaces of residential burglars coincide. The space syntax method is used to identify and measure the spatial configurative features of these particular places. As the results show, most residential burglaries take place in the most segregated and un-constituted streets within a radius of 2.1 km from a burglar's home address (López 2005, Van Nes 2005). However, the level of integration and constitutedness are not unrelated to other spatial characteristics. In fact they are highly interdependent and correlate to other spatial characteristics of the built environment and to social factors as well. Therefore, these spatial aspects are revealed in greater detail in the present study.

The Method

For the spatial analyses, two approaches have been used. The first approach focused on the macro level and consisted of the calculation of the spatial configuration of the street nets of the two cities and comparing the quantified spatial variables with the distribution of crime. On the micro level, another approach was used. For this, one local area in each city was selected and studied on location. For every street segment in these local areas 25 spatial variables were registered. Risk band analyses were used (Hillier & Sahbaz 2005) to analyse the relationship between the observed micro spatial variables, the calculated macro spatial variables and crime distribution. At this moment the possibilities for micro scale analysis are limited. Therefore, tools of this kind needed to be constructed during this inquiry. The results of the analysis are presented in two ways. On the one hand, the results on the relationship crime distribution and spatial configuration are made visible on maps, and on the other hand the results from the statistical analysis are represented.

The Data

This study was conducted in Gouda en Alkmaar with financial support of the Police and Science Program. The police regions Hollands-Midden and Noord-Holland-Noord provided detailed data for each residential burglary in terms of when it took place, the point of entry (from which side of the house), and the exact address of the intruded home. As regards to theft from cars, data of the address of where it was located and the temporal aspects were available.

For the macro scale analyses a total of 1.988 residential burglaries and 7.785 thefts from cars are analysed. These offences were reported to and registered by the police in the period January 2003 – December 2004[ii].

In order to study and reveal the micro spatial conditions, one local area in each city was studied in greater detail. In Gouda, the area consisted of the neighbourhoods Kadebuurt, Kort Haarlem, Vreewijk and Oosterwei. In Alkmaar the study was focused on De Hoef. These two local areas were chosen because of their large variation in terms of social composition and spatial set-up. Socio-economical aspects on the types of inhabitants living on each street segment are left out from this study, due to a lack of accessibility to detailed data of this kind.

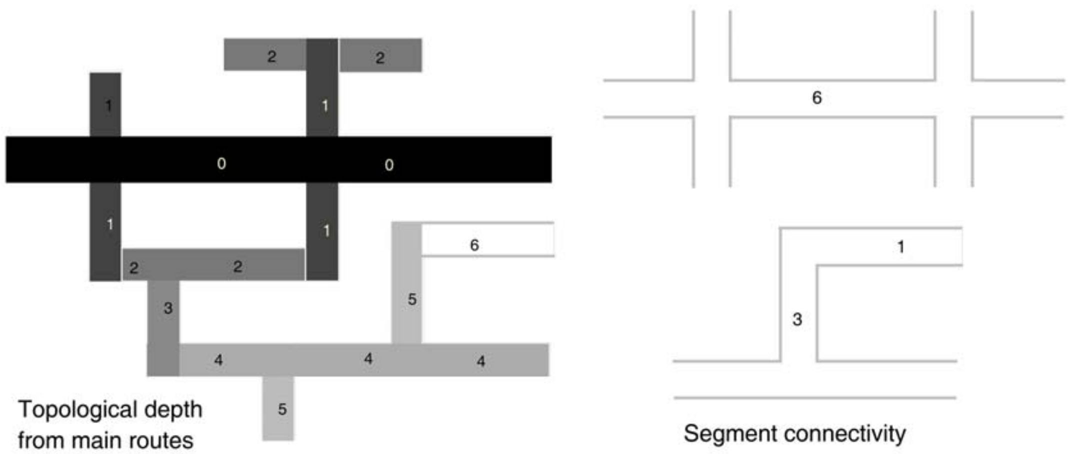
The Macro Scale Analyses

A macro scale analysis addresses the question on how a street or street segment is related to others in its direct vicinity and to the city as a whole. The following dynamic spatial measurements are calculated and taken into the analysis: global integration, local integration, area integration, integration gradient, control, and local angular integration (to identify the main routes through the cities). The following static spatial measures are taken into account: topological depth from the main routes, street connectivity and segment connectivity.

The calculation of a segment's depth from main routes is done manually. First, the main routes are identified through the angular analysis or local total angular depth with a radius 3. Then the thus identified main routes are drawn on a map. Counting the number of times one has to change direction to get from a specific street or street segment to the nearest main road identifies the topological depth of this street (segment). For each step, a colour code is given. Figure 1 (left) shows how this is done.

Figure 1:

How the topological depth from main routes (left) and segment connectivity (right) is calculated



Segment connectivity consists in counting the number of connections from a street segment. It relates to access and egress and indicates the degree of possible escape routes from a segment. Likewise, it is a way to quantify the difference between grid-like and tree-like street layouts (Hillier & Sahbaz 2005). Figure 1 (right) illustrates how the calculation of segment connectivity is carried out.

Micro Scale Spatial Relationships

In urban studies, a micro scale analysis focus is on the spatial relationships between built objects and the street segments. Most objects contain private spaces. Therefore, micro scale analysis is especially useful to study the configurative relationships between private and public spaces. Micro scale configurative relationships can at present not be processed through computer software like the axial and angular analyses (as done in the macro scale analyses). Hence, each micro scale characteristic is observed on location and registered in order to make it accessible for statistical analysis.

During visual observations, 25 different features were registered in 1.168 different street segments. The number of burglaries and theft from cars was plotted in for each street segment. For each street segment the street name, the house numbers at issue and the building period were written down. The number of potential targets at each segment is assessed by counting the number of dwellings, parking places, shops, cafés or pubs, and other buildings[iii].

The following private-public spatial relationships were taken into account.

- The topological depth between private and public spaces.
- The density of entrances.
- The degree of constitutedness of entrances to streets.
- Street function[iv].
- Dwelling types[v].
- The degree of territoriality[vi].
- The street *form,* in order to describe the mode of transport suitable for the street as well as the spatial possibilities for a perpetrator's escape[vii].
- The degree of inter-visibility from neighbouring houses.

The degree of inter-visibility from neighbouring houses is measured by counting the number of doors visible from the doors of other houses divided by the total number of houses in each street segment. The same procedure is done with the registration of windows and parking lots visible from dwellings. As it turns out, there is a strong correlation between inter-visibility from windows and the dispersal of burglaries. Figure 2 shows some diagrams about various degrees of inter-visibility and the constitutedness - un-constitutedness relationship. A detailed description of how the other micro scale variables are defined and calculated is given in another paper in the proceedings (Van Nes & López 2007).

Interpreting the Axial Maps

All registered criminal incidents are plotted on axial maps and compared with the distribution of the spatial variables. In the local areas, the burglars' point of entries and every back alley are registered in detail. The strongest visual correlation is found between the topological depth from main routes and the dispersal of burglaries.

There is also a correlation between local integration and the dispersal of burglaries.

Figure 3 shows the topological depth from Alkmaar's main routes and all registered residential burglaries. The map suggests that most burglaries take place in the topological deepest streets. The same results are found in Gouda.

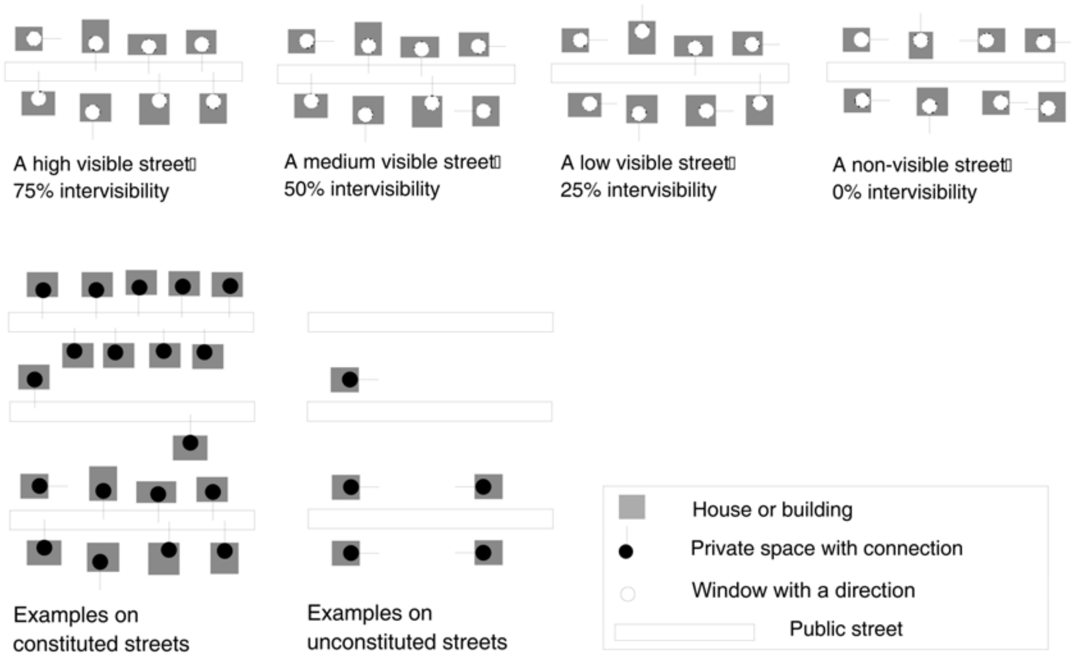


Figure 2:

Diagram showing a street's various degrees of inter-visibility and constitutedness

Figure 3:

The topological depth from main routes in Alkmaar and the dispersal of burglaries

There is also a visual correlation between local integration and the dispersal of burglaries. As figure 4 of Gouda shows, residential burglaries are more common in the most locally segregated streets than in the more integrated streets. The same results are observed in Alkmaar.

The degree of constitutedness and inter-visibility between doors and windows influence burglary rates to. Since no software is developed for calculating micro scale spatial relationships, calculations were done manually and the variables were visualised on a map. Figure 5 shows the degree of inter-visibility between windows in Alkmaar's local area.

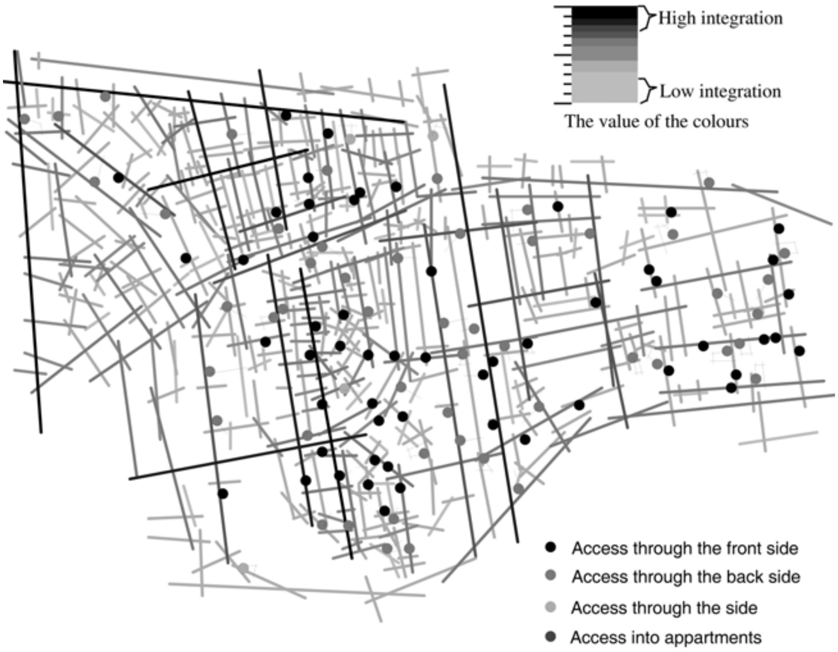


Figure 4:

Local integration and dispersal of burglaries in Gouda

Figure 5:

Degree of inter-visibility from windows and dispersal of burglaries in Gouda

The black coloured lines illustrate 100% visibility, the dark grey lines 80%, the grey lines 60% visibility, and accordingly the very light grey lines show 0% inter-visibility. Figure 6 shows the degree of constitudedness for the same area. The black lines show the constituted streets, while the light grey colour marks the un-constituted streets. The grey lines represent boarder cases.

A visual interpretation of axial maps gives a certain impression of possible relationships. However, it is by no means a reliable source for conclusions, since the visual analysis does not show the number of targets located along the axial lines. Some streets have no homes, while others have several. In this respect statistical analysis is helpful for demonstrating precise correlations between the various spatial measures, the distribution of crime and the number of targets.

Figure 6:

Degree of constitutedness and dispersal of burglaries in Gouda

The Statistical Analysis

Statistical analysis is beneficial in the way that exact numerical evidence can be provided for hypothesis testing. In order to reveal the degree of significance of the observed correlations, crime risks are calculated and a risk band analyses is conducted according to the method developed by Hillier and Sahbaz (2005). With a total number of 1.168 street segments, there is sufficient material for carrying out such an analysis.

A risk band analysis consists of clustering street segments with the same number of dwellings and analysing the correlations between the different variables in relation to the different risk bands. In other words, one aggregates the data by focusing on the number of targets per street segment. In this way one clusters segments with only one dwelling, segments with two dwellings, those with three dwellings etc. In order to make sure that the number of analysed parts is not too small, one unifies various units to risk bands. These risk bands need to be comparable. By using risk bands the crime risk in every street segment is normalised to the number of objects. At the same time the unit of analysis is no longer the street segment, but the risk band. In the analyses of Alkmaar and Gouda eight categories were made, which include street segments with 1 - 4 dwellings, 5 and 6 dwellings, 7 and 8 dwellings, 9 and 10 dwellings, 11 - 15 dwellings, 16 - 20 dwellings, 21 - 40 dwellings and more than 40 dwellings.

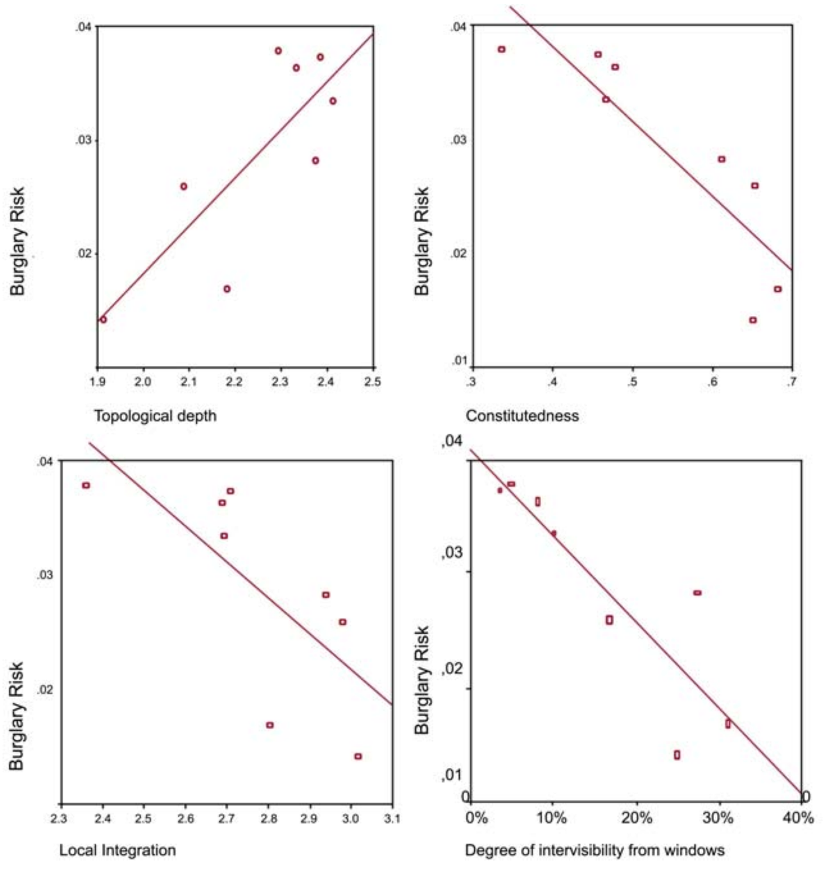
Nearly all investigated spatial variables show (strong) correlations with the risks of residential burglary and theft from cars. The only exception to this was street function. The spatial parameters do not only correlate with the crime risks, but also with one another.

Residential Burglaries

Figure 7 shows some scattergrams with the relationship between the normalised burglary risk and three significant spatial variables. There is a linear correlation between burglary risk and a street segment's topological depth (R^2= 0.64, sign.= .016). Apparently, chances on residential burglary increase the further away one is from the main routes through urban areas. The relationship between burglary risk and constitutedness is also linear. This variable explains 77% of the variance (sign= .004). The higher the level of un-constitutedness, the higher the burglary risks. The last graphic shows the relationship between the normalised burglary risk and local integration. Also here a strong and significant correlation is found (R^2= 0.43, sign. = .044). In general, locally segregated street segments apparently carry a higher burglary risk than the locally integrated ones.

Figure 7:

Scattergrams with the relationship between the normalised burglary risk and three significant spatial variables



The degree of inter-visibility between windows influences a street segment’s risk on residential burglary. The higher degrees of inter-visibility between windows (the percentage of windows visible from other windows in a street segment), the lower chances of residential burglary. It is a strong correlation (R^2= 0.77) and highly significant (sign. = .004).

Theft from Cars

Also with regards to theft from cars, correlations between the crime risk and the spatial characteristics of the street segments can be found. However, these relationships are not as impressive as for residential burglary[viii]. The topological depth of a street segment explains 43% of the variance in the risk on theft from cars. There are also linear relationships with the other spatial characteristics, such as local integration and the inter-visibility of parking places.

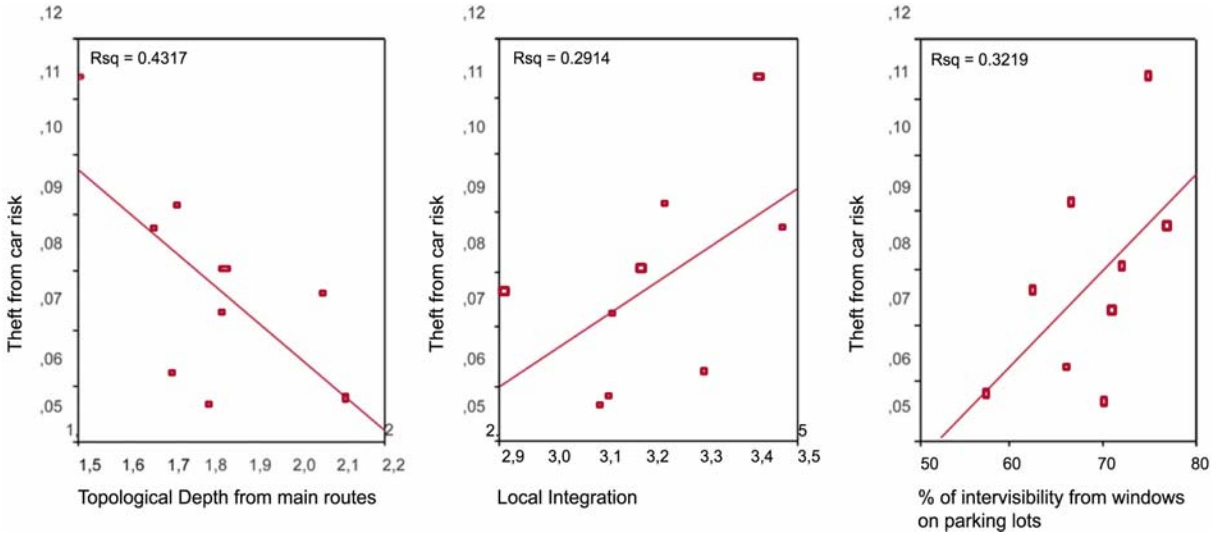


Figure 8:

Scattergrams with the relationship between the normalised car crime risk and three significant spatial variables

The correlation between the normalised risk of theft from cars and topological depth is reversed in comparison with residential burglary. The closer one parks a car to the main routes, the higher chances for victimisation. Likewise, the correlation between theft from cars and local integration is reversed in comparison with residential burglary. The higher the local integration values, the higher the risk on theft from cars. Offenders stealing from cars apparently have a different spatial behaviour than residential burglars. Residential burglars tend to target quiet streets, while car burglars seem to prefer streets with high pedestrian and vehicular flow rates. Main routes tend to offer opportunities for anonymity and many escape routes, even though the social control is high. The sound when breaking up a car door or window disappears in streets with high traffic noise.

One might expect, the higher the inter-visibility between cars and dwellings the lower the risk of theft from cars. The opposite is however the case. Apparently, car burglars feel relatively safe in the tumultuous environment of the main street. They can blend in the crowd and commit their offences quickly with low chances of being noticed.

The Inter-Relationship of Spatial Variables

The spatial variables do not only correlate with the crime risks, they are also inter-related. Especially a street segment's topological depth from main routes appears to give a good 'summary' of the various spatial characteristics of the street segment. When we compare this factor with the various spatial characteristics (both on the micro and macro level) then we see correlations that are both significant and linear. In more than one way topological deep street segments seem to be the opposite from segments that are topological shallow.

Segments with a topological depth of 0 or 1 are generally through carriage ways, while segments with a depth of 4 and higher are more often pedestrian based (footpaths and back alleys). Commercial buildings such as shops, cafés and offices are usually located at the main road (depth=0) or around the main road's corner (depth=1). Dwellings at the main road often have a direct connection to the street, while dwellings at segments with a higher topological depth are more often shielded by gardens, fences and hedges. Topological deep segments generally show lower local and global integration values, lower line- and segment connectivity and lower control values. The higher the topological depth, the higher the degree of territoriality. Un-constituted segments are generally found in the deeper street segments.

Discussion

Obviously, there is a relation between the distribution of residential burglaries, thefts from cars and the spatial configuration of the street net. This correlation appears in all of the investigated spatial variables with the exception of street functions. Moreover, the various spatial variables are also interdependent to one another. The most dominant factor explaining the variation in the spatial variables as well as the difference in the distribution of criminal incidents is the *topological depth* of a street segment in relationship with the main route system through urban areas. It gives a comprehensive summary of the spatial set up of an urban area, gives indications of the city's flow of human movement, either pedestrian or vehicular, and shows significant statistical correlations with the micro spatial parameters of targets and the distribution of residential burglaries and theft from cars.

In comparison with the few studies carried out in the UK, this inquiry's outcome complies with most of their results. In Shu's research on three UK towns, burglary risk decreases with the degree of inter-visible neighbours of the axial line unit. In the case of Alkmaar and Gouda, it decreases on the segment unit. Like in Hillier and Sahbaz's risk band analyses, crime vulnerability is high in street segments with a small number of buildings, in particular in cul-de-sac streets. As Hillier and Sahbaz postulate, dwellings connected directly to streets make streets safe. However, precise micro scale spatial analyses tools on the relationship between dwelling and streets are missing in their studies. Alford states that different types of crime take place in different kinds of space and criminal incidents and pedestrian flows are linked. This is also the case in Alkmaar and Gouda where the relationship between topological depth, local integration and inter-visibility on the one hand and crime risk on the other are reversed for residential burglary and theft from cars.

The results from this inquiry differ from previous similar inquiries in the way angular route choices and the topological depth from the identified main routes are taken into account.

Bridging the Gap between Environmental Criminology and Urbanism

At present, there is a faint connection between the urban and environmental criminological disciplines (López 2005). Both disciplines have common subjects and common interests but the connection is rarely made. Interdisciplinary research projects contribute to improve the understanding of criminal opportunities and a built environment's spatial set up and to improve various research approaches. Evidently, there is a relationship between the spatial configuration of the street net and the dispersal of residential burglary and theft from cars. This relationship is no longer assumed, but can be measured and quantified. A configurative approach can measure and quantify the fine-grained spatial structure of a built environment's awareness space and opportunity space. What is needed is more research in order to gain sufficient evidence for making crime preventive strategies. Both the police and environmental criminology can gain from these insights. By addressing the spatial characteristics criminologists can open up ways to improve understandings on the relationship between space and crime and formulate better ways to control crime.

At least, this inquiry provides some tools describing the spatial properties of crime vulnerably in urban areas. As the results from this inquiry so far indicate, there is a need for more research in order to improve, revise and upgrade existing crime prevention programs such as the British programme Secured by Design, the Dutch Police Label Safe Housing and the preventive design of parking areas. In this way it might be possible to not only incorporate physical standards to the built environment, but also make requirements on a street net's spatial configuration, inter-visibility and relationships between buildings and public space.

To what extent can criminal opportunity be limited by the application of spatial measures? The degree of predictability in this case is difficult, due to the fact that social, physical and spatial factors are often inter-related. However, at least this inquiry is a first step to gain insight on how crime distribution relates to spatial properties. The configurative spatial structure of the street net is not only important in it self. It also has to take into account the topological relationship between private and public space and the degree of social control of the street from buildings. Interdependence between these spatial factors plays a significant role in the way built environments can be made safe. It is all about various degrees of adjacency, permeability and inter-visibility on different scale levels.

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ii. Both completed and attempted offences were studied. In Alkmaar 958 completed and 104 attempted residential burglaries were registered. In Gouda these were 704 respectively 222. The registered number of completed thefts from cars in Alkmaar was 3.051 and 152 attempts. In Gouda 3.256 completed and 1.326 attempted thefts from cars were registered.

iii. In the 'others' group, schools, public buildings and offices are included.

iv. For the definition of the street function, the classification of the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) is used. However, this classification turned out to be too rough and not suitable for studies on urban safety and crime. Some streets can fit under several categories, while others do not fit under any of them. VROM uses the following classification: shopping street, urban traffic road, dwelling (upper floor) and office (ground floor) street, mixed household dwelling street in urban areas, flats in green areas, run down area street, family dwelling street in urban areas, dwelling and offices in low rise buildings street, low rise buildings along footpath, family dwelling street in green areas and detached housing. This kind of classification relates more to the area type where the streets are located, rather than the street function itself. As one might expect, no significant correlations are found between VROM's functional street classification and crime dispersal.

v. Different dwellings types are divided into several categories. The low-rise dwellings are divided into row houses, detached houses, and semi-detached houses, were as the high-rise dwellings were sub-categorised as apartment buildings, maisonettes, and flats. Likewise, the number of floors in flats is registered.

vi. During the observations, the degree of territoriality of the different street segments is taken into account. Although this is a very subjective variable, it was in general easy to identify the degree of territoriality in public streets and semi-private back alleys with a high degree of territoriality. Semi-public back alleys were difficult to classify. Hence, they are considered to have a medium degree of territoriality.

vii. In line with Shu (2000, p. 115-117), street form was categorised as: through carriage ways, cul-de-sac carriage ways, pedestrianised street, cul-de-sac driveways, through footpaths, cul-de-sac front footpaths and cul-de-sac back alleys.

viii. The explanation of these lower correlations can probably be found partially in the operationalisation of the number of targets. The object of residential burglary is the household. In this inquiry (like in most studies on residential burglary) the number of dwellings was counted and assumed to be more or less the same as the number of households. Since this assumption is not entirely correct, it gives a small but acceptable deviation of the outcome of the analysis. In the case of theft from cars this deviation is however quite large. The frequency of parking lot usage differs from street to street. Along main routes, several cars can use one parking lot during a day, while in segregated residential streets one car can occupy one parking lot for several days. The number of targets of this offence is the number of cars parked in the street segment during the offence time. Since it is undoable to reliably measure this number, a practical option is to count only the number of parking lots. Assumedly, this is more or less the same as the number of parked cars. Naturally, it gives an overestimation of the number of targets in general and an overrepresentation of the street segments with a lower frequency of parking lot usage. Another partial explanation can be found in the geographic dispersal of the two offence types. Residential burglary appears to be more geographically clustered (21% of all studied street segments) than theft from cars (41% of all studied street segments).