Crime policy and place layout

This briefing note synthesises the key themes from a project supported by the Bartlett Enterprise Development Fund and Space Syntax Limited in 2017 which investigated ‘The impact of space syntax research on urban policymaking: linking research into UK policy’.

Authors
Tom Bolton, Francesca Froy and Sadaf Sultan Khan: Space Syntax Laboratory
Nicholas Francis: Space Syntax Limited

Overview
• Analysis of place layout shows why particular types of crime take place in particular types of spaces.
• Space syntax research has shown that the greater the natural surveillance of a street, and the more people present, the safer you are.
• Both the spatial accessibility and number of dwellings on a street influence the risk of criminal activity.
• More permeable urban blocks encourage greater local through movement which increases safety and security.
• Space syntax research shows that the degree of risk depends partly on housing type.

HOW CAN SPATIAL THINKING IMPROVE POLICY INSIGHT?

Urban design and crime
There are two competing schools of thought on how urban design might influence crime and community safety [1]: that of ‘new urbanism’, influenced by Jane Jacobs who felt that open and permeable mixed use environments were safest [15]; and that of Oscar Newman, who developed a concept of ‘defensible space’ [16] and argued that through movement needed to be restricted so that people could gain ‘control’ over their territory. It is widely acknowledged that the built environment has an important influence on crime and security. However, space syntax analysis has shown that both these theoretical perspectives have their strengths and weaknesses, with the relationship between crime and urban morphology being both complex and subtle.

Street layout and spatial patterns
Studies have shown that criminal activity is intrinsically linked to pedestrian flows and that particular spatial configurations facilitate particular types of crime [2]. Four types of crime are discussed to illustrate the relationship between crime and spatial configuration: residential burglary, street robbery, drug dealing and theft from cars.

Residential burglary: space syntax research shows that spatial configuration influences the level of burglary. Highly accessible low-income and middle-income neighbourhoods are safer than more segregated areas [3]. However, linear cul-de-sacs with good inter-visibility of dwellings, in a through-street pattern, can also be very safe [4,5]. There are ‘flip over effects’ where normally safe types of urban design become dangerous with the addition of particular contextual
factors. For example, more accessible (integrated) streets usually have a lower risk of burglary, but if they also have alleys or adjacent open areas, or basement access, they can become vulnerable [2]. Highly accessible streets that allow residents easy access may also allow criminals easy escape routes [6].

**Street robbery:** proximity to streets with high levels of movement increases the risk of becoming a victim of crime [7]. Street robbery and violent crime are more likely on streets which are easily accessible but have low through movement potential, for example an alley off a high street [1,9]. In the case of street robbery, this effect depends on time of day. Daytime street robbery is higher on streets with lower movement, but after midnight it is higher on streets with high movement [2].

**Drug dealing:** a study based in Tower Hamlets in London showed that drug dealing benefits from proximity to the high street, as sales are higher with more people passing through. However, the study also showed that streets one turning away were associated with drug crime, as these locations were less likely to be surveyed by, for example, a police patrol [10].

**Theft from cars:** a study in the Netherlands showed that proximity to main roads increased the likelihood of theft from cars and, similarly, the higher the accessibility of a street the greater the risk of theft from the car [11]. While residential burglars target quiet streets, thefts from cars were perpetrated on streets with higher movement flows.

---

**Case Study**

**Gosnells, Western Australia: Identifying the spatial distribution of crime**

The city of Gosnells, in Perth, Australia has used space syntax analysis as part of an initiative to improve safety. Instead of more police patrols, Gosnells used space syntax techniques to link the location of crimes to local movement patterns. Many estates had created ‘defensible space’, but this led to streets with few pedestrians and low visibility from passers-by, which proved the most vulnerable to crime. In response, a more accessible street network was developed, lighting improved, and facilities made more accessible by foot, increasing pedestrian movement. Gosnells aimed to reduce crime by 10% over 3 years [17].

---

**Natural Surveillance and Co-presence**

Similarly to the way that different spatial patterns facilitate different types of criminal activity, different degrees of visibility, natural surveillance and co-presence also impact crime.

**Residential burglary:** space syntax has shown that the more ground floor neighbours with ‘eyes on the street’, the safer it is [6,8,1,2]. Therefore mixed-use streets with fewer residents are particularly at risk [2]. This risk diminishes as the ratio of residential to non-residential units shifts in favour of a residential street culture. This is also related to the number of doors and windows opening on to the street, with fewer associated with a higher burglary risk [11]. Such risks can be monetised (see Figure 1).
Street robbery: a strong link has been shown between street robbery and non-residential land uses. However, the increased potential for movement often associated with non-residential streets can deter street robberies during daytime hours [2].

Theft from cars: studies show that, unlike residential burglary, theft from cars seem to take advantage of the commotion generated by higher numbers of people. Despite increased surveillance, crowded streets provide the perfect environments for car burglars to commit their crime and disappear into the crowd, with more theft from cars on busier streets [11].

Permeability
Space syntax studies have shown that in residential areas, streets that are accessible from a greater distance have a higher risk of crime, but this is reduced on more locally accessible streets [2]. For this reason, residential areas need to be designed for local through-movement, while exercising care about intra-city movement. Where there is intra-city scale movement, safer dwelling types can provide more surveillance [5,1,2]. The importance of permeability and perforated building façades, ideas popularised by Jan Gehl, are gaining significant traction in places tackling serious security problems such as Brazil [14]. Shorter blocks with routes through façades allow more through movement and more visibility. However, permeability may help certain types of criminal activity: a London study showed that drug supply and possession tended towards permeable streets that were highly accessible as destinations at both local and intra-city scales [10].

Dwelling type
Studies in both the UK and the USA have shown that the risk of residential burglary depends on dwelling type [8, 2, 12]. There are two primary factors: i) the number of sides of the dwelling exposed to the public realm and, ii) the socio-economic class of the residents, with wealthy residents in flats safer than those in detached or isolated houses [8,2]. The risk of crime against both property and persons also increases as the number of dwellings decreases. Research on broader crime types (vehicle crime, vandalism, drugs, fly-tipping, violence, theft, graffiti and harassment) found that incidents were higher in ‘estate-type’ urban layouts, with limited pedestrian movement and a lack of residential
entrances onto streets [13]. Further it was seen that in such layouts, criminal activity took place in more segregated places, while better connected routes provided a means of escape [12].

How can spatial thinking strengthen policymaking?

- While these findings are complex, showing that there are many aspects of the built environment influence the design of open and safe places, one of the key findings is that spatial and social factors work together.

- Space syntax has produced robust large-scale studies, including multivariate and regression analysis, which helps to identify the relative importance of space syntax against other variables, in addition to meta-analyses of the existing literature.

- While the emphasis to date has been on statistical analysis of crime that aggregates data so as to show ‘hot spots’, space syntax has shown that the occurrence of crime is far more nuanced, with the risk factor varying from street to street and across dwelling types. This insight can allow for a more sensitive approach to urban design.

- The use of both space syntax methods and the availability of data makes it relatively easy for policy makers to both measure the problem and assess the impact of proposed solutions.

What is space syntax?

Space syntax is a methodology developed at University College, London and used over the last forty years in architecture, planning, urban design projects around the world. It measures the connectedness of individual streets within a street network, producing a clear picture of varying levels connectivity at scales from villages to entire countries and beyond. It is important for urban policymakers in particular to understand the strong relationship between street patterns and many urban policy issues, from transport to inclusive growth. Building layouts can also be analysed in the same way. The international space syntax research base provides powerful, practical insights in the way cities function, and how they can be improved.

References

7. Nubani, L. and Wineman, J., 2005. The role of space syntax in identifying the relationship between space and crime. American University in Dubai, UAE & University of Michigan, USA, pp.413-422.


