ENVIRONMENTAL CRIMINOLOGY AND PLANNING: A DIALOGUE FOR A NEW PERSPECTIVE ON SAFER CITIES.

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Abstract

At a time of increasing global urbanisation, research consistently indicates that crime and the fear of crime are key concerns for urban populations in both developed and developing countries and communal safety is considered to be one of the key features of a high quality environment (Dempsey, 2008). Government planning policy in the UK, USA and Australia now advocates high-density, mixed-use residential developments in 'walkable', permeable neighbourhoods, close to public transport, employment and amenities. It is argued that this approach, commonly known as New Urbanism, reduces urban sprawl, contributes to the development of more sustainable cities and also reduces crime by promoting street level activity and at the same time, 'eyes on the street' (Jacobs, 1961).

However, Dempsey (2008) has recently challenged the assumption that various features of a quality built environment are actually socially beneficial. Evidence from environmental criminology challenges three of these assertions, indicating that highly permeable street configurations, mixed-use developments and high densities are commonly associated with increased levels of crime by virtue of the increased numbers of both potential offenders and potential targets made available (Brantingham and Brantingham, 1998). This evidence is not commonly utilised by New Urbanists or planners generally, and indicates that there are contradictions between some of the features assumed to contribute to a quality built environment.

This paper presents the criminological evidence and discusses the key theories within environmental criminology which can enhance our understanding of crime issues within planning and encourage a more informed dialogue across the disciplines of planning and criminology.

Keywords: Safer cities, environmental criminology, designing out crime, crime prevention through environmental design (CPTED), urban crime, urban sustainability, mixed-use development, permeability, high-density living.

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INTRODUCTION

The ubiquitous issues of crime and the fear of crime continue to represent endemic problems for post-industrial urban societies and in the UK for example, crime has increased on average by 5.1% per year since 1918 (Home Office, 1999). Although the Criminal Justice System (CJS) is a vital mechanism for maintaining social control, it has largely proven to be ineffective in operation and principally reactive in nature. Investigating the urban 'stage', where crime is located, can therefore contribute much to our existing knowledge and understanding of crime and contribute towards the creation and maintenance of safer, vibrant and more sustainable communities. Indeed, there is a growing body of research which links urban sustainability with crime (Du Plessis, 1999; Cozens, 2002; Knights *et al.,* 2002; Dewberry, 2003; Armitage, 2007; Cozens, 2008a) and it is increasingly recognised that a sustainable community is one which is both safe and perceived by its residents to be safe from crime.

In terms of the broader aims of sustainable development, one response to growing concerns about resource depletion, pollution, congestion, obesity and global warming has been a policy shift in planning. Indeed, in the UK, USA and Australia government policy now advocates high density, mixed-use residential developments in 'walkable', permeable neighbourhoods, and demonstrates the growing popularity and influence of New Urbanist ideas (Commonwealth of Australia, 1995; DETR, 1998; Office of the Deputy Prime Minister, 2004; American Planning Association, 2007).

Dempsey (2008) discusses some of these issues and raises a question for planners and designers as to exactly what a 'quality built environment' is conceptualized to represent. She lists a range of key features which have long been promoted in urban planning and design as socially beneficial, including high residential densities, mixed land-uses, accessibility, connectedness and permeability, legibility, attractiveness, inclusiveness, maintenance, safety and character. Crucially, Dempsey (2008) asserts that such claims are not supported by empirical evidence. Furthermore, there may be potential contradictions between certain features where the promotion of one 'quality built environment' feature competes with another, or indeed, against several others.

This paper argues that the sponsorship of permeable neighbourhoods, mixed-use residential developments and higher-densities (by current planning policies and New Urbanism) can come into conflict with the promotion of safety from crime in particular. Moreover, Schneider and Kitchen (2007, p46) observe "almost all agree that there is no objective empirical evidence to support New Urbanism's claims to prevent crime".

This paper presents the criminological evidence relating to these specific features of a 'quality built environment' and discusses key theories within environmental criminology, which can enhance understanding of crime issues within planning and encourage a more informed dialogue across the disciplines of planning and criminology.

CRIME, SUSTAINABILITY AND ENVIRONMENTAL CRIMINOLOGY

Urban sustainability is a broad framework, which is increasingly being used to tackle various negative human behaviours, while promoting behaviours and lifestyles, which positively impact upon the long-term viability of the environment and its resources. Clearly, a variety of features of quality built environments are encompassed by this multidisciplinary theme. However, the crime dimension to sustainability has only recently been subject to widespread discussion (Napier *et al*, 1998; Vanderschueren, 1998; Du Plessis, 1999; Cozens, 1999 *et al*.; Cozens, 2002) and sustainability protocols arguable do not adequately represent realistic or appropriate indicators for crime or the fear of crime (Cozens, 2007a; 2008a). It is argued that a sustainable urban environment is one where the inhabitants "should not have cause for fear for their personal safety and the safety of possessions" (Du Plessis, 1999, p 33). Clearly, the level of crime and violence are powerful indicators of sustainability and an 'unsustainable' community is commonly characterized by notions of poverty, homelessness and increased levels of crime. Research also indicates that safety and security are primary and immediate concerns for the urban poor in both developed and developing countries (Napier *et al*, 1998; Vanderschueren, 1998).

In this paper, the author suggests the necessity for a broader consideration of environmental criminology by the planning profession since "most planning proceeds with little knowledge of crime patterns, crime attractors, crime generators, the importance of edges, paths and nodes or the site specific solutions that facilitate or even encourage crime" (Brantingham and Brantingham, 1998, p53).

Environmental criminology is defined as "… the study of crime, criminality, and victimisation as they relate *first*, to particular *places*, and *secondly*, to the way that individuals and organisations shape their activities by *placed-based* or *spatial factors*" (Bottoms and Wiles, 1997, p305).

It is argued that by adopting a more informed and evidence-based understanding of crime and the fear of crime, planning should be able to positively influence the level of crime and fear of crime. Indeed, Schneider and Kitchen (2007, p233) argue: "If planning is about making places better for people, then it has to address those elements that make places problematic for people, and crime and the fear of crime are high up this list".

The mapping of the distribution and demography of crime has a relatively extended history and there has been a long and continuous study of 'dangerous places' since the nineteenth century. This research represents the intellectual foundations of environmental criminology (e.g. Guerry, 1833; Quetelet, 1835; Fletcher, 1849; Mayhew, 1862). These early ideas were known as the ecology of crime and were concerned with both where criminals *lived* and where offences *occurred.* In America, urban sociologists at the 'Chicago School' mapped the location of offenders (Park *et al.*, 1925; White, 1932; Lottier, 1938; Shaw and McKay, 1942) although the study of the location of offences (Schmid, 1960) received little attention until victimisation studies in the 1960s and 1970s shifted the focus (Brantingham and Brantingham, 1975). Several researchers highlighted the existence of dangerous places; known as 'rookeries', 'slums', or 'dreadful enclosures' (Walter, 1972; Damer, 1974), where criminality is perceived to flourish. Ecological studies of crime flourished in the early twentieth century and peaked in popularity the inter-war period. However, after declining in popularity after 1945, Bottoms and Wiles (1997) argue that a new impetus was provided by victimization surveys in the 1960s and the 1970s which began to focus more sharply upon the 'offence' rather than the 'offender'.

Significant research by such as Lynch (1960), Jacobs (1961), Angel (1968), Jeffery (1971), Newman, (1973) and Brantingham and Brantingham, (1975; 1981) popularised the idea that urban design could influence criminality. Further studies focused upon the 'geography' of crime (e.g. Pyle, 1974; Harries, 1974; Brantingham and Brantingham, 1975), and the fear of crime (e.g. Garofalo, 1981; Smith, 1984) and the academic discipline of 'environmental criminology' gradually evolved in the late twentieth century.

The spatial distribution of offences and offenders throughout the city is not random and some places experience a disproportionate amount of crime. These 'hot spots' of crime have received increasing attention in recent years (e.g. Nasar and Fisher, 1993) with some suggesting that the potential impact of crime and fear of crime on our towns and cities "deserve the full attention of planners" (DeFrances and Titus, 1993, p190).
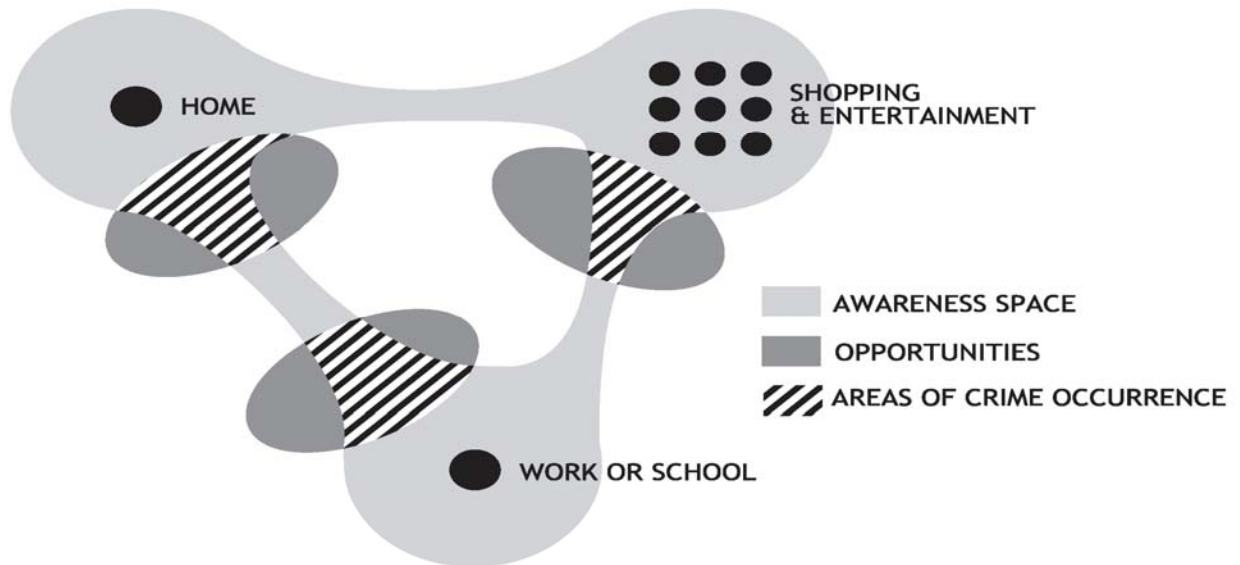
Environmental criminology therefore concentrates on the spatial location of crime and the fear of crime and how individuals' behaviour is influenced by place-based factors. It is underpinned by three related crime opportunity theories which provide an alternative perspective from which to consider the issues of permeable urban configurations, mixed-use developments and higher densities and to promote dialogue and more informed and consequently appropriate decision-making.

Cornish and Clarke's (1986) 'rational choice theory' (RCT) argues that most opportunistic criminals are rational in their decision-making and recognize, evaluate and respond to a variety of environmental cues. These are environmental factors and signals within the built environment, which relate to the perceived risk, reward and effort associated with an offence and are central to the offender's decision-making process.

Cohen and Felson's (1979) 'routine activities theory' (RAT) argues that for a crime to take place, there must be a motivated offender, a suitable target and the absence of capable guardians (see

also Felson, 1987). Offenders, like most citizens, have routine daily activities (work / school, visiting friends, shopping and entertainment) during which they might discover or search for potential targets (e.g. Maguire, 1982). These routine activities and travel routes form the 'awareness space' (Brantingham and Brantingham, 1984) of the offender (see Figure 1). Indeed, Brantingham and Brantingham (1993, p10) argue "all people, including those who commit crime, develop an awareness space … [from which] crime targets are usually picked".

Figure 1. Awareness Spaces - Routine Activities Theory

Source: Adeane (2007) adapted from Brantingham and Brantingham (1981).

Brantingham and Brantingham's (1981; 1984) Crime Pattern Theory (CPT) seeks to understand the search and selection processes that criminals use and analyses how people and objects associated with crime move about in space and time. Crimes against the person predominantly take place at home or in and around drinking establishments (Fattah, 1991) while property crimes are concentrated at or near activity nodes and attractors, where people congregate (Brantingham and Brantingham, 1993; Kinney *et al.*, 2008). These locations include the home, shopping centres, work / school, sports areas, parks and recreation centres and along the routes that connect these nodes / attractors.

THE EVIDENCE ON PERMEABILITY

Research has consistently found that permeability increases opportunities for crime. Beavon *et al.*, (1994) reported that heavy pedestrian and vehicular traffic flows were associated with higher victimisation rates and that the shape of traffic intersections also influenced crime. Isolated cul-de-sacs were least accessible to crime and grid-like inter-sections were the most accessible to crime. Furthermore, corner houses, which are more frequent in grid layouts, have been found to be significantly more vulnerable to burglary (Taylor and Nee, 1988; Hakim *et al.*, 2001).

Designing Out Crime: The Cost of Policing New Urbanism (Knowles, 2006) claims that policing costs for a permeable New Urbanist housing development of 4,500 would be three times higher

than non-permeable cul-de-sac layouts promoted by the UK Association of Chief Police Officer's (ACPO) Secured By Design (SBD) scheme. Knowles (2006) also indicated that reported crime is five times higher in the New Urbanist layouts investigated (Town and O'Toole, 2005; Town *et al.,* 2003). Furthermore, in surveys, six of the first seven reasons burglars stated for selecting a particular property for victimisation were related to access routes (Town *et al.*, 2003). The UK's SBD scheme has been evaluated and results indicate that such developments reduce both crime and fear of crime (for a review see Cozens *et al.*, 2004; 2007). Significantly, SBD largely promotes the building of non-permeable cul-de-sac layouts.

Modifying grid layouts using road closures has been used as a successful crime prevention strategy in several studies and this effectively converts the grid into a cul-de-sac (Matthews, 1992; Newman, 1995, Lasley, 1998; Zavoski *et al*, 1999). Sheard (1991) studied children's walkways in a Vancouver (Canada) suburb, finding that newly introduced pedestrian pathways connecting the ends of cul-de-sacs led to increases in crime. Again, these modifications effectively increased permeability and created through-routes for both residents and other users.

In a report for the United States Department of Justice (USDOJ) Clarke (2002) cites numerous examples of studies, which indicated that reducing connectivity reduces crime (e.g. Bevis and Nutter, 1978; Beavon *et al.*, 1994; Wagner, 1997; White, 1990; Bowers *et al.*, 2005). Furthermore, three recent studies all confirm these findings (Brooke, 2004; Yang, 2006; Armitage, 2007).

Brooke (2004) studied a New Urbanist development in Bradford, UK, reporting burglary rates twenty times higher than the national average. Yang (2006) investigated over three thousand residential burglaries across a range of street configurations finding lower rates of burglary for properties located on less permeable layouts such as cul-de-sacs. Furthermore, Armitage (2007) analysed crime on 50 housing estates in the UK and also found that properties on permeable estates are more vulnerable to victimization (for a review of the evidence relating to crime, permeability and New Urbanism see Cozens, 2008b).

Conversely, there is some research associated with the Space Syntax methodology of Hillier (e.g. Hillier and Shu, 2000), which consistently contradicts these findings. This research indicates that incidents of burglary are higher on more isolated properties on cul-de-sacs. However, Town *et al.*, (2003) argue that many of the cul-de-sacs in the study were 'leaking' and possessed pedestrian access ways, which effectively made them through streets – at least for pedestrians. Furthermore, Schneider and Kitchen (2007, p44) suggest this perspective is "a floating challenge to orthodoxy which has struggled to garner much independent support".

THE EVIDENCE ON MIXED-USE DEVELOPMENTS

Mixed-use development is valued by New Urbanists and planners in general, as an approach to economically and socially rejuvenate an area. In theory, mixed-uses provide more pedestrian activity and 'eyes on the street' over longer time periods, which discourages criminal activity. Mixing land-use (largely residential and commercial) is suggested as a means of increasing diversity in neighbourhoods since otherwise homogenous areas of land use would be abandoned or left unsupervised during certain times. Integrating residences with businesses therefore assists in increasing the 'eyes on the street' (Jacobs, 1961) and improving safety. However, Schneider and Kitchen, (2007, p51) claim there are multiple studies, which reveal that mix-use development in residential areas is *"not totally benign"*.

From an environmental criminology standpoint, Brantingham and Brantingham (1993) observe the concentration of crime at personal attractors such as the home, work / school, transport nodes and shopping centres, parks and recreation centres, and on the routes that link these 'awareness spaces.' Mixed-use developments are likely to contain a variety of land-uses which could potentially provide increased and more diverse opportunities for crime. Indeed, shopping centres, storage places, schools, service stations and restaurants tend to attract criminals as well as legitimate customers to the area. The routine activities of the community (including potential offenders) will therefore affect the incidence of crime in and around these nodes of activity, which are systematically more concentrated in mixed-use developments.

Studies have demonstrated that homogenous residential environments exhibit lower rates of

crime than areas with mixed uses (Greenberg *et al.,* 1982; Greenberg and Rohe, 1984) challenging the 'mixed-use equals safety' assumption held by New Urbanists and inherent in current planning policies.

Schneider and Kitchen (2007) highlight empirical work in the USA which suggests that in mixed-use neighbourhoods in particular, increased vehicular and pedestrian flows can result in 'social cocooning' among residents, reducing the potential for interaction and for recognising strangers (Baum, 1978; Appleyard, 1980; Taylor and Harrell, 1996). Mixed-use neighbourhoods are also potentially more criminogenic by virtue of their proximity to a range of different land-uses, which might 'generate' crime (Luedtke and Associates, 1970; Buck et al., 1993) and accessibility to potential and motivated offenders (Brantingham and Brantingham, 1981). Land use patterns will therefore also influence the routine activities of the community and potentially influence opportunities for crime.

A study by Davison and Smith (2003) reported that crime was more frequent in accessible areas with commercial land use and residential burglary was reported to be more frequent in residential properties close to commercial areas (Dietrick, 1977). Furthermore, research by Wilcox and Quisenberry (2004) revealed that businesses in residential areas exhibited an increased risk of burglary. Yang's research (2006), which investigated some three thousand burglaries, found that burglaries are more likely to occur in properties located in mixed-use sites.

Clearly, mixed-use is 'not totally benign' and other strategies to reduce opportunities for crime may need to be considered to promote safety. Schneider and Kitchen, (2007, p52) observe that there is "a growing body of literature arguing that land-use heterogeneity has a price relative to the incidence of certain types of crime". Schneider and Kitchen (2007, p226) observe that although many New Urbanist communities are aesthetically attractive "the preponderance of empirical evidence sows that gridiron street layouts and mixed uses are often crime facilitators, not inhibitors". Furthermore, Brantingham and Brantingham (2008, p91) have recently discussed mixing land-uses, as supported by New Urbanism, and comment "this planning practice will increase the activity in some nodes and is likely to produce a clustering of crime".

THE EVIDENCE ON HIGH-DENSITY LIVING

In theory, higher densities should provide more 'eyes on the street' and therefore more potential capable guardianship and lower levels of crime. However, higher densities also mean more targets and opportunities available for crime in a given area and potentially more offenders.

Theories from sociologists such as Durkheim (1893) and Wirth (1938) underpin the idea that industrialization, the rapid development of urban centres and high population densities were associated with the development of a sense of 'anomie' and social alienation, which can be destabilizing to the individual and the community. Later, Calhoun's 'crowding theory' (1962) argued that as densities increased, so did violence and aggression. Some of these ideas resonate with Newman's (1973) work on public housing estates in the USA, the predominance of unassigned public spaces and the large number of people sharing common entrances allegedly contributed to higher rates of crime. The impersonal design of these projects and the lack of informal surveillance and a sense of 'ownership' and territoriality control were also important factors in explaining higher levels of crime and anti-social behaviour (Newman, 1973).

The psychological experience of high density living conditions is known as crowding and research demonstrates that urban population density is associated with various physical, psychological and behavioural problems, including increased levels of crime (Gove, *et al.,* 1977). Highly dense urban areas within the city generally experience higher crime levels than less-densely populated suburban areas, while sparsely populated rural areas often exhibit the lowest levels of recorded crime (Bottoms and Wiles, 1997). Rubenstein *et al.*, (1980) reported that heavy pedestrian and vehicular traffic flows were associated with higher victimisation rates. In high-density environments, the recognition of 'strangers' and potential offenders by residents is also more problematic. Furthermore, a range of anti-social behaviours have been reported in high density situations including prisons (Paulus, 1988), college dormitories (Baum and Valins, 1977), nightclubs (Macintyre and Homel, 1997) and naval ships (Dean *et al.*, 1978).

Harries (2006) recently studied reported crime and population densities in Baltimore County, Maryland, U.S.A. He analysed over 100,000 property crimes and crimes against the person and concluded; *"*By and large, the available evidence increasingly tends to suggest that most types of crime tend to increase in levels of occurrence with increasing population density". Harries (2006) observes, however, that this relationship is moderated by socio-economic status such that an affluent high-rise apartmentblock may have high density, but will also have a high level of guardianship, thereby reducing crime. In terms of the crime-density relationship Harries (2006) argues that smaller geographic scales are more appropriate for making generalizations.

Schneider and Kitchen (2007, p121) also report on a study which compared a dense permeable housing estate (Area A) with a lower density estate dominated by cul-de-sacs (Area B). They reported that burglaries, auto crime, arson and public disorder were significantly higher for Area A (the higher density permeable development). They are cautious to note that there are many other factors, other than density and street layout, which may help to explain these patterns.

FEATURES ASSOCIATED WITH QUALITY ENVIRONMENTS

Although it is beyond the scope of this paper to discuss all the features of a 'quality' built environment, the three features of permeable street configurations, mixed-use residential developments and high-density living are critically inspected in terms of the criminological evidence currently available.

Dempsey (2008) observes how a well-connected and permeable built environment is considered as a feature of high quality in the form of small blocks (Jacobs, 1961; Bentley, 1985; Aldous, 1992). Small blocks provide more varied routes for pedestrians and allow easier movement (Jacobs, 1961; Bentley, 1985; Aldous, 1992; Carmona *et al.*, 2003). Gehl (1971; 2001) makes the assumption that well-connected pedestrian routes are well-used and are preferred over deserted or low volume routes. Therefore, the assumption is that permeable streets are safer since their increased usage results in more 'eyes on the street' (Jacobs, 1961) and enhanced levels of safety.

Although there is a general consensus that mixed land-uses are more desirable than purely residential settings, since they offer services and facilities close to residents (Jacobs, 1961; Grant, 2002; Burton and Mitchell, 2006), Dempsey (2008) notes that there is no agreement on precisely how this mix is constituted. Mixed-use developments are assumed to provide more potential activity and 'eyes on the street' (Jacobs, 1961) over extended time periods, thereby enhancing personal safety and reducing crime.

High residential densities now represent a significant, albeit contentious feature of sustainable urban environments (Urban Task Force, 1999). Hypothetically, advantages include equitable access to key services within walking distance and a strong local identify (Jacobs, 1961; Llewelyn-Davies, 2000). Furthermore, higher densities potentially mean more 'eyes on the street' and therefore lower levels of crime and enhanced levels of personal safety. However, again, consensus is not evident regarding whether high densities are consistently a positive feature of the built environment. They may not be preferred by residents (Churchman, 1999), they may not provide good access to open space (Burton, 2000) and others argue passionately that low-density environments can be of high quality (Nicholson-Lord, 2003). However, global environmental and demographic pressures on land and housing suggest the need for higher densities and this approach has been adopted by governments in order to increase land-use efficiency and drive sustainable urban development agendas (Commonwealth of Australia, 1995; DETR, 1998; DETR, 2000; Office of the Deputy Prime Minister, 2004; American Planning Association, 2007). This is in spite of a lack of consensus on how high 'high-density' is or how high it should be (Rudlin and Falk, 1995; Jenks and Dempsey, 2005). There are also important differences between population density and housing density and high density housing does not necessarily automatically imply high population densities.

Dempsey (2008) observes that safety is also an accepted and well-recognised feature of high quality environments (Jacob, 1961; Newman, 1973; Llewelyn-Davies, 2000; Cozens, 2002; Carmona, 2003 *et al.,*; ODPM, 2004). If citizens feel safe, they are more likely to actively utilize

urban space, which also contributes towards the vitality and sustainability of the built environment. In recent years, there has been an increasing awareness and application of place-based crime prevention as part of the planning and development process. Indeed, Designing Out Crime and Crime Prevention Through Environmental Design (CPTED[2]) ideas are being applied in the UK (Cozens *et al.*, 2004), in Australia (Cozens *et al.,* 2008) at a global level (Schneider and Kitchen, 2007; Cozens, 2008c).

However, although CPTED can be a useful tool for planners and health professionals (Cozens, 2007b), an understanding of where and when crimes occur in the city is arguably a more pressing concern. Indeed, most planners have a limited knowledge of environmental criminology (Brantingham and Brantingham, 1998), and particularly 'where' and 'when' specific types of crimes concentrate.

Moreover, Demsey (2008, p256) points out "while there is no consensus on how a safe built environment should or can be designed, there is widespread agreement that safety is an essential feature of high quality built environments." If this is indeed the case, built environment professionals (and particularly architects, planners and urban designers) should arguably possess a detailed knowledge of how crime and the fear of crime are intricately interwoven within the mosaic of the city.

INTERDISCIPLINARY SCHEMAS

The built environment is increasingly recognised by health professionals as being an important influence of people's health. Although planning's focus on environmental sustainability has addressed health issues to some degree, planners have only recently began to embrace the improvement of human health as an agenda issue. Indeed, Thompson and McCue (2008, p3) argue "engaging with the interconnections between people's behaviour and the places they use everyday, is an exciting new area of policy and practice".

Thompson and McCue (2008, p16) argue that "healthy planning is an interdisciplinary response to a complex problem" and discuss several schemas that have been developed to encourage multi-disciplinary approaches. The 'Five C Principles' (Davies, 2007) focus on the street and the principles are:

- Connections – pedestrian and cycle routes should connect places where people want to go to;
- Convenience – routes should be direct and easy to use and waiting times should be minimal;
- Convivial – safe and attractive to use;
- Comfortable – routes should be of good quality, and;
- Conspicuousness – signage should indicate clearly where paths lead.

According to healthy city advocate Gehl (2008) a city can encourage people to cycle and walk, and quality urban spaces for people should be;

- Lively
- Attractive
- Safe
- Sustainable
- Healthy

Thompson and McCue (2008) suggest that their CHESS principles provide a way forward. CHESS principles are different 'environments', which support the achievement of healthy people, healthy places and a healthy planet. CHESS encompasses:

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[2] For a review see Cozens, P., Saville, G. and Hillier, D. (2005) Crime prevention through environmental design (cpted): a review and modern bibliography, *Journal of Property Management,* 23(5), pp. 328-356.

- Connected environments;

- Healthy Eating environments;

- Safe environments;

- Sustainable environments.

Significantly, Thompson and McCue (2008, p9) also state; "a safe environment is the foundation of a healthy city" and that CPTED is a useful tool for promoting health and active living principles (Cozens, 2007b). Although the knowledge and application of CPTED may be disseminating more widely throughout planning and the health professions, what is significantly less well-known is the evidence associated with where and when specific types of crime concentrate within the city and how this might contradict or work against some of the other features of a good quality built environment. More specifically, planners should be aware of what the criminological evidence indicates about crime and permeable street configurations, mix-use developments and higher densities and how land-use patterns and crime interact. Knowledge of the principles of CPTED is insufficient in isolation, and it is arguably inappropriate to apply potential CPTED solutions (treatments) without understanding the spatial and temporal dynamics of the local crime problems (diagnosis).

Evidence and theories from environmental criminology are presented here to challenge the assumptions about safety from crime underpinning the support for permeable streets, mixed-use developments and higher densities. This criminological evidence is relatively unknown to planners (Brantingham and Brantingham, 1998; Cozens, 2008b) and it is presented in order to highlight contradictions and sponsor interdisciplinary dialogue on how best to create and maintain good quality, healthy, sustainable built environments and urban spaces which are safer and more secure from crime and the fear of crime. It will also help to craft interdisciplinary frameworks and tools, which are more specifically contextual, reliable and potentially less contradictory.

Crucially, if safety from crime is such a fundamental dimension to interdisciplinary and multidisciplinary frameworks for improving the functioning of urban spaces and the communities within it, one might question why such a dearth of knowledge exists within planning, on the patterns of crime, which are an integral part of the mosaic of our cities.

CONCLUSIONS

Increasingly, research evidence from the field of environmental criminology (e.g. Brantingham and Brantingham, 1993; Kinney *et al.*, 2008) unequivocally indicates that permeable street configurations, mixed-used developments and high population densities are associated with higher levels of recorded crime. 'Activity nodes' attract large numbers of people and can act as 'crime generators', while special activity nodes can become 'crime attractors' (Kinney *et al.*, 2008). These draw on the opportunity theories discussed above, and particularly routine activities theories and following empirical investigation of land-uses and crime rates, indicate that the pulse of human activity (including crime) is influenced by the land-use structure of the city. Crime is a function of the city such that "the concentration of crimes depends on the normal activity patterns within the city and the location of major attractor nodes" (Kinney *et al.,* 2008, p64). The detailed mosaic of the city, with its patterns of activities and land uses as they relate to crime are therefore crucial to understanding how the city functions successfully or fails to perform in different places at different times and as a whole entity.
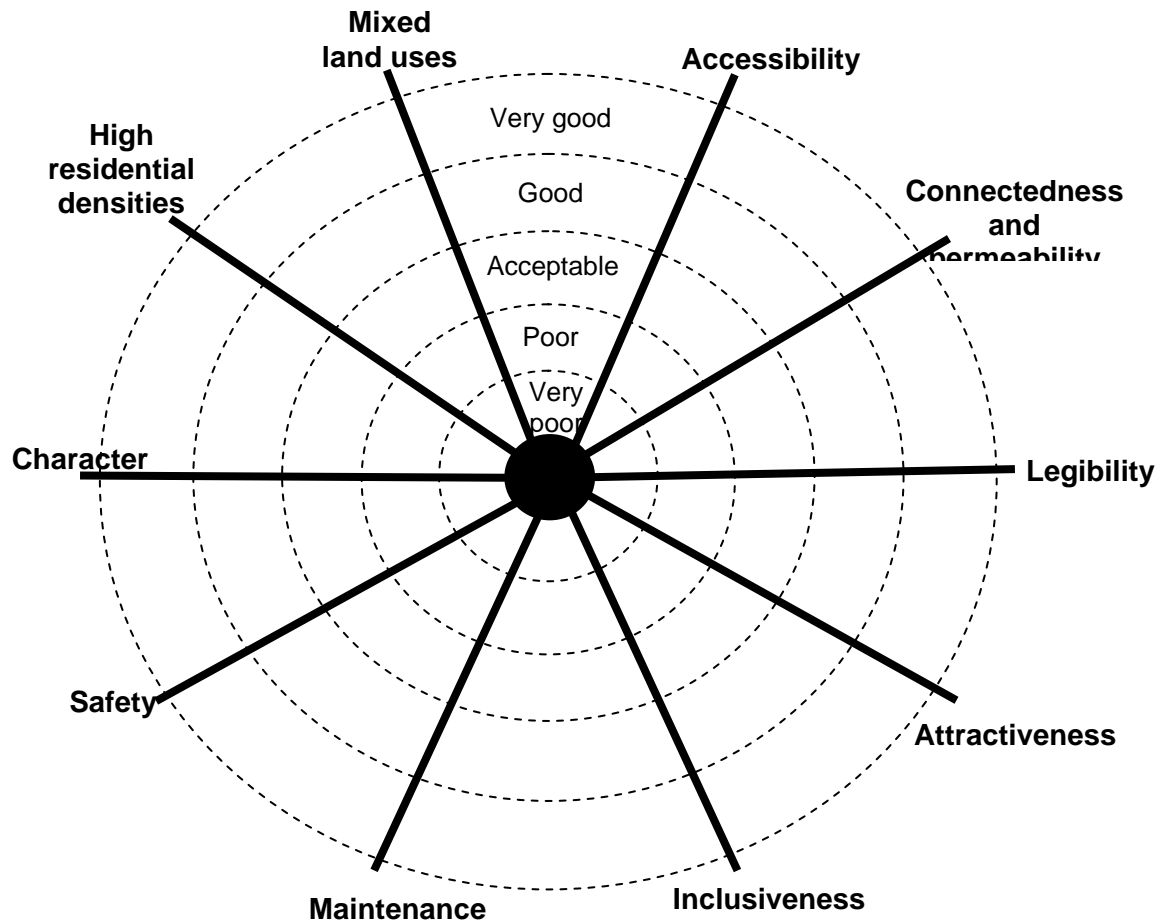
Moreover, this paper has argued that crucial knowledge about crime patterns and land-uses in the city are not commonly known to most planners and that this knowledge can contribute towards creating a new dialogue for creating safer, more sustainable cities and to underpin more evidence-based decision-making. It has also been argued "crime is rarely identified as a serious problem that we have to *know* more about in order to be able to know what to do" (Wikstrom, 2007, p60). Indeed, if research and development is the core technology for successful crime prevention (Reiss, 1992), then those who are responsible for planning, designing, building and maintaining our cities need to be aware of such research. The evidence and perspectives from environmental criminology discussed in this paper should also be considered within the

multidisciplinary frameworks for conceptualizing, planning and designing quality built environments and for promoting urban sustainability. Failure to do so, not only undermines the 'quality' built environment feature of 'safety' itself, but it may also potentially exacerbate these contradictions when it is packaged within a range of interdisciplinary applications.

Dempsey (2008) claims that many of the key features associated with quality environments are assumed to be socially beneficial but are not supported by empirical evidence. These features include high residential densities, mixed land-uses, accessibility, connectedness and permeability, legibility, attractiveness, inclusiveness, maintenance, safety and character. This paper has focused on the safety from crime aspects and analysed the three features of high residential densities, mixed land-uses and permeability, in terms of key criminological theories and evidence. This paper suggests knowledge of crime opportunity theories and crime patterns is not common within planning and urban design. This finding raises the possibility that assumptions relating to the other 'quality' features of the built environment could potentially be founded upon incomplete knowledge and that further contradictions could exist within interdisciplinary thinking and frameworks such as CHESS, the Five C Principles and the concept of sustainability itself.

Carmona (2007, p12) calls for "an explicitly local (as well as national) approach to [the] measurement of a holistic view of outcome quality" and presents a model to profile community quality, which it is argued, might be used to measure planning and sustainability outcomes at the local level. This has been adapted to include Dempsey's (2008) features of a 'quality' built environment (see Figure 1).

Figure 1. Quality Features of the Built environment

Source: Carmona (2007, p10).

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Brantingham and Brantingham (1998, p 53) claim "proactive crime prevention calls for the active movement of environmental criminologists into the development of more directed models for use in urban planning and then into a knowledge transfer role". This paper has attempted to disseminate such knowledge and foster dialogue across the disciplines of planning, public health and criminology. Figure 1 is proposed as another potential interdisciplinary model, but one which provides the scope for measuring local and contextual features of a 'quality' built environment in a more holistic approach.

Although the criminological evidence suggests that permeability, mixed-uses and high densities provide increased opportunities for crime, this does **not** imply that those involved should stop building vibrant communities, such as those proposed by New Urbanism. Rather, it suggests planners should know what trade-offs they are making. For Schneider and Kitchen (2007, p53) "if people are not informed of the possible consequences of their residential choices, at the very least they should not be actively misled by over-enthusiastic designers into believing that, like the snake oil of bygone days, New Urbanism (or any other broadly based design ideology) will prevent crime and heal society's ills."

In conclusion, the responses to the conflicts and contradictions discussed in this paper are firmly located in understanding local contexts, balancing a range of planning issues, placing performance above formulaic certainty and in avoiding a 'one-size-fits-all' approach.

RECOMMENDATIONS FOR RESEARCH AND POLICY

- To work towards defining and measuring 'mixed-use' as a 'quality' built environment feature and conduct empirical research concerning its impacts on human behaviours such as walking, social integration and crime;
- To work towards defining and measuring 'high density' as a 'quality' built environment feature and conduct empirical research concerning its impacts on human behaviours such as walking, social integration and crime;
- To engage with the evidence from across disciplinary boundaries, particularly environmental criminology;
- To systematically review the quality of evidence as it applies to other built environment features which are currently simply assumed to be socially beneficial;
- To promote inter-agency and inter-disciplinary collaboration concerning research which considers placed-based factors and attitudinal dimensions to understanding the dynamics of the people-place relationship;
- To undertake an empirical and contemporary review of Jane Jacobs' ideas, including 'eyes on the street' (1961) as this may relate to a range of different types of crimes and different environmental settings in the twenty-first century.
- Develop models for urban planning, public health and urban sustainability which more appropriately reflect the current knowledge in environmental criminology, and;
- Apply good design principles and 'quality' features of the built environment contextually, rather that in a 'one-size-fits-all' approach.

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