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The Future of Newman's Defensible Space Theory

Linking Defensible Space and the Routine Activities of Place

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ABSTRACT

This paper will highlight the evolution of defensible space theory – from Newman's original theoretical model to some of the subsequent theoretical and empirical developments that have been made in the past 35 years. By charting these developments in our understanding of the underlying mechanisms of defensible space, the aim of this paper is to illuminate the aspects of the theory that remain ambiguous and those that have been clarified to some extent by developments in criminological research. This paper will suggest that the most ambiguous of Newman's concepts is that of 'milieu'. It will be argued that this key defensible space concept draws on situational aspects of spatial layout and accessibility, land-use patterns and routine activities of place. With this in mind, this paper will attempt to re-conceptualize defensible space within the context of situational crime prevention theory by elucidating the effect that routine activities of place have on territoriality and the creation of defensible space.

KEY WORDS

Defensible Space / Routine Activities / Situational Crime Prevention / Territoriality.

Introduction

The creation of urban environments that are defensible against crime has been a focal point of criminological discourse from as far back as the 1960s, when sociologists discovered that certain places, like people, possess a higher risk of being victimized than others. 'How is it', Stark (1987: 893) asked, 'that neighbourhoods can remain the site of high crime and deviance rates *despite a complete turnover of their populations*?' With the view that neighbourhood population characteristics provide inadequate explanations of variations in crime rates, Stark (1987: 893) asserted that '*there must be something about places as such* that sustain crime'. Although much attention in criminology has rested on sociological explanations of the concentration of crime at place – such as social disorganization and control theories – many researchers have subsequently changed focus, looking to the built environment rather than the sociological context for causal explanations of crime (e.g. Jacobs 1961; Newman 1972; Jeffrey 1999). The central tenet of this school of thought is that the physical design and layout of urban living environments are a principal factor that determines why some places are more vulnerable to crime than others. With this principle, the crime–design thesis offered an exclusive selling-point, because it emphasized the fact that the built environment is more easily manipulable than the sociological context, making it a potentially more fruitful angle from which to tackle crime prevention at place.

The dominant theoretical framework put forward to explain the unique contribution that environmental design and layout play in creating opportunities for crime is Oscar Newman's (1972) defensible space theory. In fact, all contemporary approaches and discussions of the crime–design relationship use Newman's defensible space theory as a critical point of reference (e.g. Clarke 1992; Beavon et al. 1994; Taylor and Harrell 1996; Felson 1998; Jeffrey 1999; Mawby 2001; Feeley 2004; Baran et al. 2006). Newman's defensible space concept refers to the systematic way in which the physical design of urban residential environments can be manipulated in order to create spaces or places that are less vulnerable to crime by providing residents with more opportunities to control their space and defend it if necessary.

In spite of its durable contribution and continuing influence in the field of criminology, Newman's theory has been criticized as extensively as it has been influential. Since its birth, defensible space theory has come under severe attack by academics who have criticized Newman's methodology and his concepts on the grounds that they are too vague and ill defined to be empirically tested (e.g. Hillier 1973; Mawby 1977; Mayhew 1979; Taylor et al. 1980; Merry 1981). Although these criticisms have been

addressed, to some extent, by a few minor conceptual amendments to the original theory (e.g. Newman and Franck 1980), much of the conceptual ambiguity still remains, thus overshadowing any successful application of the theory. This perspective is best illustrated by Hillier and Shu's (2000) conclusion that Newman's defensible space is merely a 'fashionable consensus' rather than a set of empirically robust concepts that effectively prevent crime.

In spite of these criticisms from academics, Newman's 1972 theory became a huge sensation on the political front, as policy-makers in the US and the UK popularized the theory and used its principles as quality control standards for designing safe housing (Cozens et al. 2001). The popularization of the theory spawned the development of 'Crime Prevention Through Environmental Design' (Jeffrey 1999), 'Secured By Design' (Cozens et al. 2004) and the Dutch equivalent, 'Politiekeurmerk Veilig Wonen' (PKVW), all of which cite defensible space as a theoretical cornerstone of their practical guidelines for crime prevention. These initiatives have enjoyed great success because empirical research and evaluations have demonstrated many cases where physical re-design seems to have contributed to significantly lowering the incidence of crime and crime-related problems (Taylor and Harrell 1996; Brown 1999; Armitage 2000; Clarke and Eck 2005). However, these apparent successes have been eclipsed by the fact that little is understood about what processes actually enable the success of these initiatives, and what specific mechanisms underlie the creation of defensible space. It is for this reason that many critical evaluations of defensible space-based initiatives have called for clarification of the theoretical structure offered by defensible space theory (e.g. Brown 2001; Cozens et al. 2001, 2004; Ekblom 2006).

In light of this, the aim of this paper is to go back to the drawing board with Newman's defensible space theory in order to clarify its origin, how it has developed since its inception, and what aspects of the theory are most in need of clarification in order to move towards a more comprehensible theoretical framework for understanding the processes that enable the creation of defensible versus vulnerable places. Thus, this paper will focus on the major conceptual issues that have plagued Newman's theory. The main conceptual voids in the theory will be discussed, and those that have been filled in by subsequent theoretical developments and empirical research will be highlighted in order to illuminate the pieces of the puzzle that have yet to be disambiguated. Finally, this paper will attempt to fuse existing information regarding defensible space and its key underlying processes with concepts from situational crime prevention and routine activities theory. The paper will illustrate the points of correspondence between classic defensible space theory and the more contemporary routine

activity theory, with a view to merging the perspectives in order to usher defensible space theory into its next phase of development.

Newman's 'defensible space' theoretical framework

Newman's notion of defensible space can best be described as a system through which crime can be prevented by increasing the opportunities for residents to control and defend their space against crime, while simultaneously eliminating physical characteristics that attract offenders. Newman's theoretical framework implies that defensible space is activated through three critical components – territoriality, natural surveillance and image/milieu – all of which rely heavily on environmental design in order to function effectively as crime prevention tools. He reported that housing projects in New York City with defensible space characteristics suffered less criminal victimization than those without it (Newman 1972).

Territoriality

According to Newman (1972, 1996) the main effect of creating 'defensible space' is that it provides residents with a system that allows them to control areas surrounding their homes, including streets and grounds outside their premises, as well as common areas within shared premises such as apartment buildings. Newman defines territoriality as 'the capacity of the physical environment to create perceived zones of territorial influences' (Newman 1972: 51). Territoriality, therefore, is the cornerstone of Newman's theory, upon which all the mechanisms of defensible space rest.

Newman (1972) explains that the sub-division of space into zones of influence and control should result in a clear delineation between public, private and semi-private space. These zones of control are created through the use of barriers – both real and symbolic – that disrupt movement between public and private spaces. Newman (1972, 1973) suggested the use of fencing, gateways, burglar-proofing, locks and walls as examples of real, physical barriers that would reduce both crime and fear of crime in residential areas. These types of physical barriers work in conjunction with symbolic barriers, which do not physically restrict entry to an area but, rather, psychologically convey the message of private or restricted access. Symbolic barriers can be created through the use of plantings or landscaping around houses, territorial markings and signage (Newman 1972, 1973).

The creation of these boundaries results in the emergence of spheres of control, within which the behaviour of users of the space is limited by what residents (or controllers of the space) define as the norm (Newman 1972).

In this way, Newman argues that any behaviour (criminal activity, for example) that is outside the norms established by residents is easily detected. This type of control is exercised as a result of feelings of community as well as residents' perception of areas and spaces around them as their personal space, which can and should be defended (Newman 1972). Together, physical and symbolic barriers communicate a clear message to outsiders to 'keep out', according to defensible space theory. For Newman, therefore, territoriality is a critical mechanism for creating the impermeable residential environment that defensible space advocates, with the fewest possible entry/exit points, making it well contained and easier to monitor and control.

Natural surveillance

Embedded within Newman's concept of territoriality is the idea that natural surveillance is one of the keys to maintaining resident controls over their space. Newman (1972: 78) defines 'natural surveillance' as the 'capacity of physical design to provide surveillance opportunities for residents and their agents'. Newman suggests that windows and doors that are designed to face each other along a street have better visibility of the private and public space around residences. Thus, he argues that 'defensible space' can be created when houses or buildings are oriented to face each other and overlook public spaces. This increases the observability of an area, thereby increasing the probability that potential offenders would be spotted more easily or caught in the act. Newman goes on to add that lines of sight from residences should be clear and unobstructed in order to enable a good view of their surrounding area.

In theory, Newman's natural surveillance mechanism serves to reinforce territoriality, because it reduces fear among residents by generating the feeling that they are under constant observation by other residents (Newman 1972). The increased sense of security that is generated by fostering natural surveillance results in the more frequent use of space by residents, which in turn increases surveillance and improves the desire to defend that space.

Image and milieu

Newman argues that image and milieu are also a central component of defensible space, defining this as 'the capacity of design to influence the perception of a project's uniqueness, isolation, and stigma' (1972: 102). This element of Newman's defensible space concept suggests that the appearance of residential space creates an image of the area that symbolizes the lifestyle

of inhabitants. When the image of an area is a negative one – i.e. when an area is perceived as being isolated, dilapidated and neglected – it becomes negatively differentiated from surrounding areas, making it vulnerable to criminal activity (Newman 1972). If, from its outward appearance, an area appears to be well maintained, Newman suggests that a message is communicated to offenders that an area is well cared for and controlled by residents, and this serves as a symbolic deterrent to potential offenders.

The image of an area is also reinforced by the territorial attitudes of its inhabitants. When the design of an area creates a positive image, this bolsters inhabitants' sense of pride and their desire to maintain their environment (Newman 1972). On the other hand, when the image of an area is negative, it increases fear and discourages inhabitants from spending time in their space and managing it as their own. This breaks down the territorial mechanisms of control and influence, and also results in the deterioration of the effectiveness of natural surveillance. According to Newman, the aesthetic image of residential areas is also generated, in part, by the types of areas and facilities that adjoin it. Newman argues that, 'if urban areas, streets or paths are recognized as being safe, adjoining areas benefit from the safety in a real sense and also by association' (1972: 108).

Although Newman does not state this explicitly in his conceptual definitions, it is clear from his description that natural surveillance, image and milieu function as components of territoriality. The relationship among them, therefore, appears to be one where the central concept is territoriality and natural surveillance, image and milieu are all mechanisms that facilitate territoriality, because they all function as tools that are vitally important in bringing an environment under the control of its residents (see Hunter and Jeffrey 1997). Thus, the relationship between territoriality and its three core mechanisms seems interactive in Newman's description, where feedback from each of them results in either the strengthening or the weakening of territoriality and, in turn, ultimately determines whether the outcome is the creation of defensible space or indefensible space.

Conceptual ambiguities and conflicting empirical findings

Conceptual critiques

Newman's theory came under heavy criticism from academics following its publication, with arguments that the architect's method of investigation was flawed and that his unscientific concepts were rooted in conjecture and deprived of any rigorous empirical testing (e.g. Hillier 1973; Mawby 1977; Taylor et al. 1980). Much of the criticism was levelled at Newman's conceptualization of defensible space and was directed predominantly at his neglect

of basic social, psychological and behavioural processes as critical underlying mechanisms in the creation of defensible space. Mayhew (1979) challenged the simplistic behavioural assumptions of Newman's defensible space theory, which take for granted the universality of perception. She argued that although some potential offenders might be deterred by natural surveillance and the increased risk of detection, others – who may be under the influence of drugs or alcohol – might not be deterred by such features at all and might, in fact, perceive environmental cues in an entirely different way from that presupposed in Newman's theory.

Mawby (1977) criticized Newman's conceptualization of his defensible space categories on the grounds that they each contained contradictions in themselves, because they consist of dimensions that can both encourage and jeopardize security. He argued, for example, that territoriality could reduce the possibility of crime committed by 'outsiders' but could also increase the risk of crime at the hands of fellow residents or 'insiders'.

The most dominant conceptual critique aimed at Newman's defensible space, however, was stimulated by the apparent physical determinism implied by his model and its failure to account adequately for the social processes that underlie his concepts – particularly that of territoriality. Merry (1981) argued that the physical defensibility of an area does not ensure that it will be defended, since a space can be made unsafe as a result of an unstable social climate, even though it is designed to be architecturally secure. As such, she claimed that environmental design can translate into 'defensible space' only when the social conditions are optimal (Merry 1981; see also Atlas 1991). Newman himself acknowledged the importance of social factors in later supplements to his theory (Newman and Franck 1980).

Conflicting empirical findings

The most compelling evidence of the conceptual vagueness at the heart of the theory is the mass of conflicting empirical findings that tests of the theory have yielded. Taylor et al. (1984) assessed the relative effects of defensible space, territorial functioning and local social ties on block crime and fear of crime. They reported that both crime and fear were lower on blocks with defensible space features, although not as low as expected. They defined and measured defensible space features in terms of physical barriers, symbolic barriers and surveillance opportunities, completely omitting measures of image and milieu. Perkins et al. (1992) also measured the relative effects of defensible space features (e.g. visibility, property barriers, street lights), symbols of territoriality (private plantings, decorations) and symbols of physical incivilities (vandalism/graffiti, abandoned buildings). In doing

so, they drew a conceptual distinction between symbols of defensible space, symbols of territoriality and symbols of incivilities, when in fact, according to Newman's defensible space theory, symbols of territoriality and disorder are explicitly described as defensible space variables directly associated with his concepts of territoriality and image. As such, Perkins et al. (1992) conceptualized defensible space in terms of physical design variables separate and distinct from image and territoriality.

Booth (1981) conceptualized defensible space in yet another radically different way, measuring natural surveillance in terms of 'opportunities to observe' and measuring territoriality, image and milieu together to construct the variable 'accessibility'. Territoriality was measured by the presence of physical barriers and landscaping, image by signs of 'debris, defacement and wear', and milieu as the extent to which an area is 'bounded by public facilities'. These variables were compared using a sample of burglarized/vandalized households and a sample of non-victimized households. Results showed no support for defensible space, indicating no difference between the samples with respect to these defensible space measures.

It is clear that part of the reason for these inconsistencies in the definition of defensible space is that Newman's theory leaves a great deal of room for various subjective interpretations of what defensible space and its various components actually are. As a result, we are left with a mass of conflicting empirical results and broad conclusions about the viability and effectiveness of Newman's defensible space theory, when what has actually been measured in these empirical studies is different fragments of the theory that have been operationalized in very different ways. The end result is a chaotic body of findings that misleadingly purport to measure the same 'defensible space' concept. To date, there have been very few tests of Newman's defensible space theory in its entirety. Rather, mostly partial tests of the theory have been conducted with only one or an incomplete combination of defensible space elements being investigated. It will be argued that these fractional tests of the theory have led to only limited and unbalanced conclusions about its validity.

The unit of analysis in 'defensible space'

Some of the conceptual ambiguities of 'defensible space' also seem to be a direct consequence of a failure to identify, define and measure the territoriality concept and its mechanisms at consistent spatial units. One of the obvious issues related to this problem is that Newman's original theoretical framework was based primarily on observations of high-rise apartment complexes, whereas the theory was put forward as one that explains the mechanisms that are effective in bringing any residential environment under

the control of its residents (Newman 1973). What Newman means by 'space' or 'residential environment' is open to interpretation – it could be an apartment complex, a residential street or a neighbourhood representing a collection of streets – and, very often, these very different units of analysis are used interchangeably within his theory, contributing to the confusion around the defensible space concept and measurement. Newman claims that his 'defensible space can be made to operate in an evolving hierarchy from level to level in a collective human habitat – to extend from apartment to street' (1972: 9), but how the concepts operate differently at these different spatial units remains unclear.

The problem seems to be that Newman's overall concept of territoriality refers to an unspecified level of 'space', which seems mysteriously born out of some unexplained combination of territoriality at the level of individual residential premises, shared semi-public grounds and public streets. How the territorial definition of individual premises, for example, affects that of the semi-public and public spaces in a residential area remains obscure within Newman's theoretical framework. Ratcliffe (2003) elucidated this issue in his explanation of the way territoriality can be perceived at different units of analysis. He concurred with Newman on the point that 'collective' territoriality reflects the care and control of the residential street as a whole, but he hastened to add that 'individual' territoriality does not translate automatically into 'collective' territoriality. In this case, Ratcliffe suggested that offenders assess each property on a site-by-site basis because of the impression that there is little 'collective' territoriality. Exactly how territorial definition at these varying levels of space translates into the 'defensible space' mechanism of territoriality remains unclear and requires further investigation.

The social processes in territoriality

One of the most durable criticisms of Newman's defensible space concept is its neglect of the complex underlying social processes that determine territorial functioning. Newman subsequently addressed this issue by focusing on the social variables necessary for encouraging territoriality, and he highlighted the importance of homogeneity of residents and maintaining a manageable number of people who share usage of space along with other socio-demographic variables such as the percentage of families on welfare. He concluded that the social characteristics of residents in projects are stronger predictors of crime than design (Newman 1976).

Nevertheless, this attention to the combined effect of socioeconomic and design variables on crime was not sufficient to elucidate the role social factors play either in Newman's conceptual definitions or in the

mech-anisms underlying his concepts. Within Newman's theoretical frame-
work, residents' territorial attitudes and behaviours represent a determining
factor in the creation of 'defensible space'. In fact, Newman's defensible
space cannot be created without residents who have the desire or the abil-
ity to exercise control and influence over their surroundings. His model has
been criticized, therefore, for blindly assuming fully engaged and willing
residents (Hillier 1973; Taylor et al. 1980) and not shedding much light on
the social and psychological processes that shape territorial functioning.

In order to improve the definition of the defensible space concepts and
clarify their dimensions and the many levels at which they interrelate to
create defensible or non-defensible space, it seems necessary first to fuse the
existing, relevant knowledge to take stock of what contributions have been
made to our understanding over the past 35 years of the processes that enable
and hinder defensible space. Owing to the various social, psychological,
sociological and spatial processes that spatial defensibility involves, it seems
prudent to draw on theoretical developments in these various fields in order
to flesh out these diverse processes involved in the defensible space
framework.

Defensible space theory development

Since the publication of defensible space theory, there have been many the-
oretical advancements in the fields of psychology, sociology and environ-
mental criminology that can help fill in some of the missing pieces of
Newman's defensible space puzzle. It will be argued that much of the infor-
mation that has been accumulated in these fields over the years can be
applied to illuminate various underlying processes that are relevant to our
understanding of the mechanisms that buttress Newman's defensible space
framework. This paper will first focus on attempts that have been made to
develop Newman's defensible space theory, with particular focus on the
re-conceptualization of territoriality. The two most significant models put
forward as developments of territoriality and defensible space came from
Brown and Altman (1981) and Taylor et al. (1981). Both models addressed
some of the major criticisms of Newman's original formulation by incor-
porating the social functioning of residents as a vital building block in the
creation of defensible residential environments.

Re-conceptualizing territoriality

The inclusion of social factors in a model of territoriality has been justified
by findings from community and social psychology that depict human

territoriality as a social-behavioural construct (Altman 1975; Brower 1980; Brown and Altman 1983; Taylor et al. 1984), dependent on a series of underlying social mechanisms – the most vital of which are a strong sense of community or strong social bonds with other residents. This is created when residents are able to reinforce each other's self-concepts, thereby creating a unit with shared trusts, needs and commitment to meeting those needs (McMillan and Chavis 1986). These unified attitudes and desires are believed to sustain optimal levels of human territorial functioning, which Taylor et al. (1984: 308) described as 'an interrelated set of attitudes and behaviors' concerned with (1) who has access to particular bounded spaces, (2) what activities are permissible in those spaces, and (3) who has responsibility for the people, conditions and activities in those spaces. A strong sense of community, therefore, can strengthen both the desire and the ability of residents to work collectively to exercise control and influence over their space (Chavis and Wandersman 1990); without it, territoriality breaks down. A weak sense of community can have the opposite effect, resulting in neglect of the residential environment and the deterioration of social cohesion (Wilson and Kelling 1982; Chavis and Wandersman 1990; Schweitzer et al. 1999).

Informal residential control model

These social aspects of territoriality were incorporated into Taylor et al.'s (1981) re-conceptualization of territoriality. Their model illustrates how informal control over the residential environment can be generated only when the physical and social potential for control are maximized by residents. Aside from their inclusion of social elements, their conceptualization of the physical potential for control resembled Newman's very closely. According to Taylor et al. (1981), the physical potential for control increases when signs of ownership, civility and defensible space features increase. The social potential for informal control is maximized as homogeneity and the strength of social ties increase. Their model suggested that physical and social potential have both a direct effect on crime-related outcomes and a mediating effect through their influence over territorial attitudes and behaviours.

Based on Newman's perspective, we are led to believe that design alone can generate the perception of highly territorial space (even though Newman acknowledges the interaction between design and socioeconomic factors in influencing crime). The critical conceptual question that the preceding arguments raise is: Are strong social ties necessary in the generation of highly territorial residential areas, or are physical design measures alone sufficient to create the perception of high territoriality and control in

residential environments? Taylor et al. (1984) put the tenets of this debate to the test, using their reformulated model to test the relative effects of defensible space features, local social climate and territorial functioning on crime and related outcomes. The results showed that the territorial variables had the strongest direct effects in predicting crime and related outcomes. Social ties also had a strong effect, as they were shown to boost territorial functioning and diminish fear of crime. Physical defensible space features, on the other hand, had substantial but insignificant direct effects on crime and related outcomes compared with the territorial and social variables. They did, however, significantly enhance residents' neighbourhood identification.

Crime site selection model

Brown and Altman (1981) also built on Newman's theory, using an improved conceptual framework for understanding territoriality by fusing Newman's territoriality concept with Altman's (1975) theory of territorial behaviour and privacy. Although Brown and Altman (1981) did give attention to the social factors involved in creating territoriality, they focused more on the boundary-regulation aspect of territoriality – the motivations for the use of territorial boundaries in residential environments and the conditions that give rise to the violation of these boundaries. They extended Altman's (1975) concept of privacy (as the critical motivating force behind territoriality) to explain the role that territoriality plays in a burglar's decision to offend at a particular location. They argued that, 'implicitly or explicitly, a burglar makes successive decisions about the likelihood of successfully traversing various boundaries to enter a given residence' (1981: 65). Therefore, the assumption is that burglars assess territoriality at different units of space – at the neighbourhood, street and individual level. If a high level of territoriality is perceived at the neighbourhood level, it is unlikely that burglars will proceed to the street level, making it unlikely that houses in that neighbourhood would be selected as targets (Brown and Altman 1981). Consistent with Newman's conceptualization, Brown and Altman argued that this assessment involves an examination of both environmental and behavioural cues that communicate the extent to which residential communities and homes are accessible to outsiders.

It remains clear, therefore, that researchers have picked up where Newman left off, providing us with a better picture of the social processes underlying informal resident control, as well as the psychological processes involving the perception of environmental cues that affect residents' feelings of safety and their territorial behaviour. Additionally, we have ascertained some of the ways in which these expressions of territoriality by residents

may affect the perceptions of offenders, thus influencing their evaluation of crime opportunities and their ultimate selection of a suitable target. It has been demonstrated that all of these processes have an effect on an area's defensibility/vulnerability and, therefore, must be located in any theory of spatial defensibility.

Although the advancement of defensible space theory over the years remains incontrovertible, charting these developments has served to illuminate the many conceptual issues that have yet to be addressed. Among the most critical that have been elucidated are: (1) the ways in which the social and physical contexts interact to produce defensible spaces, and (2) the mechanics behind the perception of defensible space by outsiders, specifically the role that the unit of analysis plays in the perception of territoriality. Before these issues are tackled, however, we must first resolve the most fundamental of the conceptual issues at hand – that of the relationship between Newman's defensible space components. In the following section, therefore, we will discuss the relationship among the key concepts of image, milieu and natural surveillance in order to clarify their effect on territoriality. We will argue that the relationship between the concepts can best be understood and explained in terms of spatial accessibility and the routine activities of place. This line of reasoning will be presented from the perspective of territoriality as a manifestation of the level of guardianship in residential areas.

The future of defensible space theory

Accessibility and territorial control

One critical void that requires further examination is the effect that an area's accessibility has on residents' ability to exercise territorial control over their space. Newman explains how natural surveillance is one of the mechanisms used by residents to keep their environments under their control. The main focus is on internal residents as the only source of natural surveillance of a residential area, but he also acknowledges the potential for external sources of natural surveillance. This brings us to the current criminological debate about the role of strangers or outsiders in crime prevention. This contentious issue revolves around whether outsiders weaken an area's defensibility or whether they act as a protective surveillance mechanism against crime by functioning as extra 'eyes on the street'. Newman's defensible space concepts treat outsiders as potential offenders, whereas Jacobs (1961) and Hillier (2004) conceived of strangers as potential guardians. From the defensible space perspective, the issue is accessibility. The more accessible an area is, the greater the opportunity for outsiders to

utilize the space; the more outsiders who use the space, the more ripe the opportunity for victimization. The premise behind this theory is that higher activity levels make it more difficult for residents to distinguish those who belong from those who do not, making it more difficult to identify offenders and provide effective surveillance of the area (Roncek 1981). Based on the standpoint of defensible space, therefore, street accessibility may have a negative effect on the natural surveillance provided by residents and, by extension, on their ability to exercise control over their environment.

This view stands in direct opposition to that of Jacobs (1961), who argued that natural surveillance is provided not only internally by residents but also externally by all users of space. For this reason, Jacobs argued against the segregation of spaces into uni-functional areas. Instead, she called for diverse land usage, with a mix of residential, commercial, entertainment and institutional uses as a means of attracting a continuous flow of people at different times of the day. According to Jacobs, this constant flow of people provides consistent surveillance of space. Thus, Jacobs focused on the presence of 'strangers' as the critical source of surveillance, rather than residents. With this perspective, Jacobs denounced the creation of segregated residential areas because she theorized that their isolation would encourage potential offenders and increase the likelihood of criminal activity in those areas. This view has been supported by Hillier (2004), who argued that street accessibility actually reinforces natural surveillance since the mere presence of strangers acts as a natural 'police' mechanism.

The debate between these fundamentally differing perspectives has recently been fuelled by empirical evidence that provides support for the view of outsiders as potential guardians. Jacobs' (1961) theory and Hillier's (2004) conclusions are supported by results from space syntax analyses of burglary events. These studies were based on Hillier and Hanson's (1984) space syntax methodology.[1] The space syntax approach sets out to classify the accessibility of streets and street segments in terms of their geometrical and geographical configuration, for which various characteristics are proposed and analysed. One of these is the local integration value, a measure that indicates how easily accessible a street is from various others in the same area. This technique has been applied to study the relationship between spatial configuration and the occurrence of crime (Hillier 1998), with most interesting results. In direct opposition to Newman's defensible

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[1] Space syntax has been described as 'a configurational approach to study the built environment' that allows the examination of environmental structure and patterns, and how these affect human decision-making and behaviour (Hillier 1998).

space theory, several space syntax studies have shown that crime incidents, particularly residential burglary, tend to be clustered in the less accessible, hence less busy, spaces that Newman's theory advocates (see Jones and Fanek 1997; Hillier and Shu 2000; Shu 2000; Shu and Huang 2003).

These findings that support Jacobs' theory, however, are not without their own setbacks. One of the main causes for speculation over the space syntax results is its definition and measurement of accessibility. Within space syntax, integration is essentially a measure of how reachable a street is in comparison with all other streets within a network structure. The local integration measure is said to correlate highly with the estimated number of users of the street (Hillier 1998). There is a growing body of empirical evidence that crime is higher in more accessible and highly utilized areas of a street network (Beavon et al. 1994; Popkin et al. 1995; Newman 1996). These conflicting findings are a clear indication that further research needs to be done in this area for clarity regarding the effect of accessibility on the defensibility of residential areas.

The routine activities of place

The kernel of this debate that emerges clearly is that the accessibility of an area has an effect on the competency of the area's guardians. What has yet to be established is what specific factors mediate the effect of accessibility on guardianship and under what conditions the effect is positive and negative. In its original formulation, routine activity theory explains that a crime event occurs when a motivated offender and a suitable target converge in time and space in the absence of a capable guardian (Cohen and Felson 1979). Although the theory has typically been applied to explain how the routine activities of individuals determine their risk of becoming victims of crime (e.g. Miethe et al. 1987; Wittebrood and Nieuwbeerta 2000), Sherman et al. (1989: 32) explained that places, just like people, have routine activities that also determine their risk of becoming crime targets. The routine activities of a place can therefore be viewed as 'the social organization of behaviour at a particular place', which is affected by the accessibility of the place and, in turn, affects the efficacy of guardianship therein. In order to provide some clarification of these processes, therefore, we suggest a fusion of the concept of defensible space with that of routine activities.

Newman's defensible space framework reflects the idea that the routine activities of a place and its adjacent areas have a direct effect on the creation of secure environments. Newman's image/milieu mechanism suggests that the control residents have over their environment is reflected

in the image of their space. Within defensible space theory, the functional commercial, industrial, entertainment and institutional facilities that adjoin residential spaces, and the street networks that border and pass through them, are presented as elements of milieu that affect the defensibility of an area (Newman 1972), because they can be either risky facilities that encourage crime or safe facilities that discourage crime opportunities (Clarke and Eck 2005). This parallel between Newman's defensible space theory and routine activity theory is further elucidated by Newman (1972: 108–9) as he explains that 'certain sections and arteries of a city have come to be recognized as being safe – by the nature of the activities located there; by the quality of formal patrolling; by the number of users and extent of their felt responsibility; and by the responsibility assumed by employees of bordering institutions and establishments'.

In this way, both defensible space theory and routine activities theory are unified in the shared principle that opportunities for crime are dependent as much on the types of activities that occur in an area as on the environmental characteristics of a place. Roncek (1981) provided further clarification of this link between defensible space and routine activities theory by explaining that the types of activities and the physical and social characteristics of a place not only determine the types of crime opportunities that are available there but also influence the probability of detection, intervention and/or apprehension. Although we have developed our understanding of the physical and social characteristics necessary to create defensible space, we have yet to elucidate how the types of routine activities specific to a place interact with these physical and social characteristics to affect the vulnerability/defensibility of place.

The fusion of the defensible space theory with the routine activity perspective reveals that the physical design and layout of an area, along with its accessibility and the extent of the local social ties there, all have an effect on the nature and type of routine activities that occur. The nature of these routine activities determines the type of image of the area that is reflected. These routine activities and the image they generate affect residents' attitudes towards their territory and their territorial behaviour in the form of guardianship. Residents' ability to create defensible space by acting as capable guardians who discourage crime is, therefore, directly influenced by these routine activities. If an area is highly accessible to outsiders, for example, and highly attractive because of the types of facilities located within it, this makes it much more difficult for residents to exert control over the semi-public and public spaces because of the high number of external users of the space that now become part of the equation. Crime attractor facilities and high numbers of outsiders diminish residents' informal control by making it difficult to distinguish outsiders from residents, thus affecting

the effectiveness of natural surveillance as a crime prevention tool (Roncek 1981; Felson 1987; Roncek and Maier 1991). In their model of the relationship between the degree of urbanization and criminality, Wikström and Dolmen (1990) reinforced this perspective, explaining that weaker social control generates more motivated offenders and greater opportunities for crime.

With the merging of the defensible space and routine activities perspectives we see the emergence of many interesting relationships within the defensible space framework that have yet to be explored. This reformulation suggests that the effect of all physical, social and spatial factors on territoriality is mediated by the routine activities of a place. It is hypothesized that the routine activities of a place will have a direct effect on the physical defensible space features in an area and vice versa. If a place is highly accessible and attracts high volumes of outsiders, it is likely that the presence of physical barriers, such as walls, fences or gates, would be greater in these areas. We see evidence of this on through streets, as houses on these streets tend to be characterized by high walls and landscaping to create privacy and resist penetration by intruders. But what of the effect of physical defensible space features on the routine activities of a place? Do physical defensible space features have an effect on the type and nature of the routine activities that occur in an area? This type of interaction has yet to be explored theoretically or empirically. Perhaps an even more interesting manifestation of this fusion of defensible space and routine activity theories is the interaction between the social structure and its routine activities. How does the social structure of a place interact with its routine activities to affect territoriality and guardianship? Further development of a dynamic model of defensible space requires extensive analysis of this relationship.

Conclusion

The development of defensible space theory has major implications, not only for our understanding of the processes that facilitate the interaction between crime and the environment, but also as the theoretical cornerstone of crime prevention initiatives. In order to ensure that these defensible space-based initiatives are more effectively and uniformly implemented and evaluated, we have gone back to the drawing board with Newman's 'defensible space' theory to examine the ways in which some of the missing links have been filled in and to highlight those that remain problematic. It is not sufficient to be pleased with the successful interventions of '*Secured By Design*' and '*Crime Prevention Through Environmental Design*' without a

systematic understanding of what mechanisms and processes are responsible for the positive effect on crime. Too many questions and uncertainties surround the creation of defensible space, some of which have been highlighted in this paper. In addition to the core concept of territoriality, the other conceptual pillar that emerges from Newman's defensible space is the concept of spatial accessibility and attractiveness, which unifies the concepts of image, milieu and natural surveillance by outsiders or strangers, and also feeds back into the concept of territoriality. With this view, what remains to be examined is the extent to which area accessibility and attractiveness affect the level of guardianship as it is reflected through territoriality, natural surveillance, image and milieu.

The paper has highlighted the parallels between defensible space theory and concepts from the situational crime prevention approach – specifically, that of routine activities – the fusion of which reveals key relationships within the defensible space framework that have yet to be explained. At the heart of these relationships is the contribution made by spatial accessibility and the way in which it interacts with social and physical defensible space features. This paper suggests that the mediating factor in the relationship between spatial accessibility and crime is the routine activities of place. It is recommended, therefore, that the next stage in the development of defensible space theory lies in illumination of the ways in which spatial accessibility and the routine activities of place can determine an area's potential for defensibility.

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