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### The History and Development of CPTED – Major Contributors

Human settlements have always attempted to provide for the safety, security and well being of their citizens in terms of design and their location close to water, food and other vital resources. From early prehistoric cave-dwellers to medieval and modern cities, safety and security have been central issues. As technology evolved, settlements adapted to reflect new and emerging threats. Initially, topography (e.g. higher ground) and landscaping (e.g. ditches and mounds) were used in early hill forts and a variety of fortification designs for castles (e.g. walls and moats) occurred throughout the Middle Ages and thereafter. 'Others', assumed to exist beyond such perimeters represented the threat of attack, plunder and war. Intriguingly, Bronowski (1971) has referred to war as a highly planned form of theft.

In 1285 King Edward I enacted the Statute of Winchester to remove areas of concealment provided by ditches and vegetation along highways. Landowners were responsible for removing vegetation and ditches and were also held liable for crimes that may occur due to their negligence in not removing concealment opportunities. The gates of walled cities were also ordered to be closed from sunset to sunrise (Stubbs, 1903). Such developments demonstrate that using environmental design to influence human behaviour, and particularly security issues and crime, has a long tradition. Bottoms and Wiles (1997, p305) define environmental criminology 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 *spatially*, and in so doing are in turn influenced by *place-based* or *spatial* factors". The introductory chapter provides an overview of this discipline.

CPTED, also known as 'Designing Out Crime', is an acronym for crime prevention through environmental design which asserts that "the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and an improvement in the quality of life" (Crowe, 2000, p. 46). CPTED is a multi-disciplinary approach, drawing on criminology, planning and environmental psychology, and is specifically located with the field of environmental criminology.

CPTED (pronounced *sep-ted*) is concerned with identifying conditions of the physical and social environment that provide opportunities for criminality and the modification of those conditions in order to reduce such opportunities (Brantingham and Faust, 1976). Its objective is to proactively prevent crime, as compared to the reactive (and often ineffective) strategies of most criminal justice systems (police, courts, and correctional facilities (Wallis, 1980). Both crime and the fear of crime are not randomly distributed across urban space, and urban design and management are implicated as variables, which partially explain the complexities of crime. Indeed, Bottoms and Wiles (1997, p305) observe "environmental criminology would be of little interest - either to scholars or those concerned with criminal policy - if the geographical distribution of offences, or of victimisation or offender residence, were random". CPTED can be used to design or modify environments to reduce opportunities for crime and the fear of crime.

CPTED is based on studies conducted from the mid-twentieth century onwards including such as; Jacobs (1961), Wood (1961), Angel (1968), Jeffery (1969, 1971), Newman (1973), Brantingham and Brantingham (1975), Clarke and Mayhew (1980), Merry (1981), Wilson and Kelling (1982), Poyner (1983), Coleman (1985), Crowe (1991, 2000) and Saville and Cleveland (1997).

Although the term CPTED was originally coined by Jeffery (1971), much of the theoretical and practical developments in this area have been based upon Newman's Defensible Space (1973). Jeffery (1976) argues that three key sources can be traced. Firstly, from the academic community by way of a series of books on environmental design (Jeffery, 1971), the geography of crime (Harries, 1974), and the spatial analysis of crime (Pyle *et al.,* 1974). Secondly, from Britain, where since the early 1950's the British police (Koepsell-Girard, 1975) have been involved in crime prevention through the manipulation of the physical environment (Jeffery, 1971). The third source concerns architects such as Newman (1973) and Reppetto (1974). However, Del Carmen and Robinson (2000) argue that the use of CPTED predates the formal development of these ideas, highlighting the role of environmental design in the prevention of both crime and disease in the planning strategies of the nineteenth century public health era. Various commentators, theorists and researchers have contributed significantly towards the development of CPTED in the latter part of the twentieth and early twenty-first century.

### Wood - *Housing Design: A Social Theory* (1961).

The idea of CPTED began taking shape when Elizabeth Wood developed security guidelines while working with the Chicago Housing Authority in the 1960s (Colquhoun, 2004). An American sociologist, she focused on public housing units and on using physical improvements to enhance visibility. This was applied to the location of seating for adults around child play areas and in entrances to large blocks of flats used as lobbies, reception areas or meeting places. Wood's particular focus was teenagers and their lack of facilities. Somewhat ahead of her time, she recommended the use vandal-proof materials and designs for facilities and encouraged the use of a resident caretaker to liaise with housing management. Her approach suggested that design and 'surveillability' needed to be considered simultaneously.

### Jacobs – *The Death and Life of Great American Cities* (1961)

Jacobs' work was an indictment of urban planning that had developed after the Second World War. She criticised the separation and zoning of land uses in America arguing for more diverse and mixed land uses. Following observations in Boston, Jacobs (1961) recommended the clear demarcation between public and private space and clarifying the function of space to promote 'territoriality' and a sense of ownership of space by residents. She introduced the concept of 'eyes on the street' (surveillance) whereby residents have enhanced opportunities to 'self-police' the streets in housing configurations which are oriented to face each other and provide intervisibility of properties and of the streetscape. She observed that busy streets with a diverse mix of land-uses provided more 'eyes on the street' and this could potentially reduce opportunities for crime. However, although Jacobs' ideas were innovative for their time and have significantly influenced CPTED and planning policy and practice over the years, her observations were primarily anecdotal and were highly specific to inner city areas of one large American city. Crucially, she explicitly advised against applying these findings to small cities and suburbs.

**Angel - *Discouraging Crime Through City Planning* (1968)**

Angel (1968) refined some of Jacobs' assertions and introduced the concept of crime as a function of land-use intensity (see Figure 1). He argued that low land-use intensity resulted in low levels of crime since there are limited opportunities for the offender (zone 1). As land use intensity increases, the number of potential victims increases sufficiently to attract offenders, but there are insufficient 'eyes on the street' acting as guardians to potentially discourage offending. This scenario was identified as the 'critical intensity zone' (zone 2) and according to Angel, is when most crime takes place. When land-use intensity increases beyond this threshold, sufficient numbers of guardians are present to deter offenders (zone 3).

**Figure 1. Crime as a Function of Land Use Intensity**
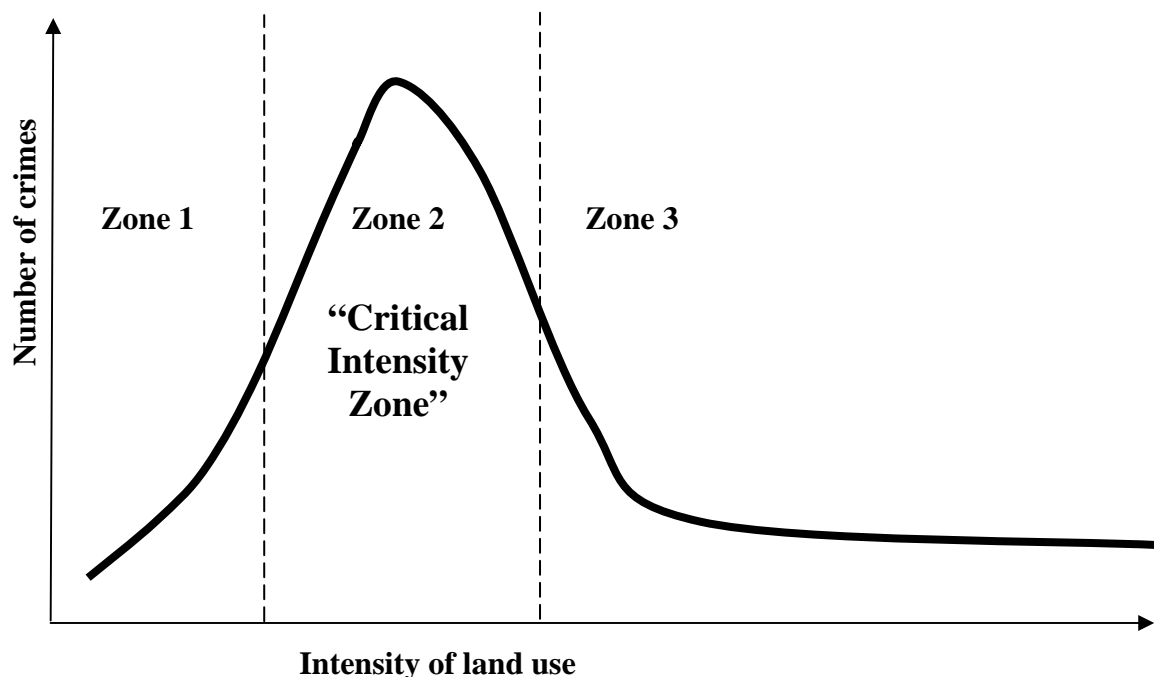


Source: Angel (1968, p16).

**Newman - *Defensible Space, People and the Violent City* (1973)**

Fundamental to CPTED is the work of Oscar Newman and his concept of Defensible Space (1973). Newman highlighted the problem of rising levels of crime in urban America and the limited and ineffective responses to the problem that suggested a pessimistic future. This was emphasised particularly by the exodus of a significant proportion of the middle-class community out of the (criminal) inner city to the (law-abiding) suburbs. As a teacher at Washington University in the 1960s, he observed the decline of Pruitt-Igoe, a high-rise (11 storey), public housing development of 2,740 units in St Louis, subsequently demolished within ten years of construction. The design followed the planning principles of Le Corbusier and the International Congress of Modern Architects. However, the 'river of trees' and abundance of undesignated communal interior and exterior grounds, unintentionally became the focus of litter, graffiti, vandalism and crime. Occupancy levels did not exceed 60% and the residents were predominantly single-parent, welfare families. Newman observed the better-functioning Carr Square development located adjacent to Pruitt-Igoe, which was inhabited by residents of similar social characteristics but was older, smaller and designed as

rows of houses. It was fully occupied and relatively trouble-free and Newman implicated the role of design in explaining the difference between these two contrasting residential developments.

In 1960s America, distressing increases in urban crime rates encouraged the President and Congress to pass the Safe Streets Act 1968 which subsequently provided funding for research into new crime prevention techniques. This funding underpinned the research, which is documented in Newman's Defensible Space (1973).

Newman, an architect, claimed: "this book is about an alternative, about a means for restructuring the residential environments of our cities so they can again become livable and controlled not by police, but by a community of people sharing a common terrain'" (Newman, 1973, p. 2). In his ideas, he acknowledges the contributions of Wood (1961) and Jacobs (1961) in addition to citing influences such as Fried and Gleicher (1961), Firey (1968), Rainwater (1959, 1966, 1970), Sommer (1969), Hall (1959) and Alexander (1964).

In Defensible Space (1973), the social housing projects of Brownsville and Van Dyke, in New York (considered similar, in social terms), are compared and analysed with regard to recorded crime rates (see Table 1).

**Table 1.           1971 Crime Data for Selected Housing Projects in New York**

| Housing Project | Crime Index/1000 population |
|---|---|
| Van Dyke (14 storey) | 54.1 |
| Brownsville (6 storey) | 28.2 |

Source: Kaplan (1973, p8)

According to the New York City Housing Association (NYCHA) police statistics, the high-rise blocks of the Van Dyke project experienced crime rates far higher than the low-level buildings of Brownsville. The NYCHA also provided a range of demographic and socio-economic statistics for both tenant populations. Higher crime rates in the Van Dyke project were apparent, and since the tenant populations were considered broadly socially similar, Newman posited his explanation of this finding. The influence of the environmental design of buildings is suggested as a causal factor to explain the differing crime rates in the two housing projects. Newman states, "the physical form of the urban environment is possibly the most cogent ally the criminal has in his victimisation of society" (Newman, 1973, p2).

At the time Newman's study was considered by many to be scientific and empirical and some have suggested that Newman's work operationalised Jacobs' themes (Jeffrey and Zahm, 1993). Indeed, Newman (1973, pxvi) recognized many potential sources, but acknowledges that 'they bring little more than extensive personal experience and naturalistic observations". Defensible Space was different in that it both highlighted problems and suggested solutions in a pragmatic and scientific approach, uncommon for the period.

Defensible Space promotes the use of design to enhance territoriality and promote a 'sense of ownership' and delineating between private and public space using real and symbolic barriers. Building and site design to increase surveillance and 'eyes on the street' and the image of housing was also central to Defensible Space. The wider environment (geographical juxtaposition as Newman termed it) was also important to these ideas. The concepts of Defensible Space are discussed in more detail later in this chapter.

However, Newman's theory is not without its detractors and critics, particularly for neglecting the role of social factors (Merry, 1981; Smith, 1986, 1987; Taylor *et al.*, 1980) and for making unjustified and unscientific generalizations (Adams, 1973; Hillier, 1973; Kaplan, 1973; Bottoms, 1974; Mawby, 1977; Mayhew, 1979). Later publications by Newman (Newman, 1980; Newman and Frank, 1982) acknowledged that the characteristics of the residents were stronger predictors of crime levels than design features.

**Brantingham and Brantingham (1975, 1976)**
Simultaneous to developments in Defensible Space, Paul and Patricia Brantingham (1975, 1976) explored the distribution of offences in Tallahassee, Florida, revealing considerable difference between and within neighbourhoods in terms of levels of recorded burglary. Border blocks, or 'the skin' of a neighbourhood had higher levels of burglary than inner areas. They also developed theories to explain the search and selection processes that burglars may use and they developed Crime Pattern theory, which considers how people and objects associated with crime move about in space and time (see Chapter 5). These ideas stimulated the emergence of environmental criminology (Brantingham and Brantingham, 1981, 1991) where CPTED and Defensible Space are located.

**Jeffery (1969, 1971)**
The originator of the term 'crime prevention through environmental design' was criminologist C Ray Jeffery (1969, 1971, 1999). He argued that sociologists had overstated the social causes of crime, neglecting both biological and environmental determinants. He proposed a broad, holistic, systems-based approach to criminology drawing on social, behavioural, political, psychological and biological systems. He argued that the internal environment of the brain was as important as the external physical environment in determining criminality. Indeed, Jeffery (1999) wrote on the subject of CPTED, claiming that Newman's ideas were adopted up by the US Federal Government via the Law Enforcement Assistance Administration, private corporations (i.e. the Westinghouse Corporation) and by academics. He argues 'these efforts at crime prevention were based upon Newman's concepts and not mine" (Jeffery, 1999, p1).

**UK's Home Office – *Designing Out Crime* (1980)**
In the UK, escalating crime levels and the issue of 'problem', 'difficult', or 'run-down' local authority housing estates became a political issue during the 1970's. Rock (1988) claims Newman's Defensible Space galvanised many of the responses since there was an affinity between his ideas and those being developed at the Home Office Research Unit (Clarke, 1980, 1982; Poyner, 1983). The Home Office has conducted many studies into how specific crimes can be prevented since the 1970s. Rock (1988 p101) notes how the work of Clarke, (1982), Poyner (1983), Wilson (1978), Coleman (Coleman, 1985) and the National Association for the Care and Resettlement of Offenders (NACRO) (Osborn, 1986) "were all influential in lending structure to the spate of British initiatives and they all acknowledge their borrowings from Newman's work". Indeed, Pascoe and Topping (1998, p164) wrote that "much of the crime-specific research carried out in Britain was based on defensible space".

Clarke and Mayhew (1980) formulated many of the early principles of Situational Crime Prevention, which extends beyond environmental design to focus on specific crimes and issues relating to the management and use of space (see Chapter 13). In *Situational Crime Prevention: Successful Case Studies* (Clarke, 1992, 1997) he presents opportunity-reducing

techniques aimed at increasing the risk and effort to commit an offence and reducing the rewards and excuses associated with such offending.

### Merry (1981) and Atlas (1991)

Defensible is defined as 'capable of being defended' (Collins English Dictionary, 1999, p411). However, Merry (1981) identified 'undefended space' where cultural and social factors influence the likelihood for resident action and self-policing to such an extent that it becomes space which is not actively or routinely defended by residents. Social conditions may nurture fear, reduce the inclination to intervene and result in the withdrawal of the individual into the home, which becomes heavily fortified, resulting in 'undefended space'. Crucially, it is not just town planners, designers and police officers that have successfully used the principles of Defensible Space. Atlas (1991, p. 65) observes how 'offensible space' may exist where drug dealers and criminals utilise CPTED principles to create "safe" space within and from which they may carry out their criminal activities protected from detection by CPTED principles. The concept of 'indefensible space', which is incapable of being defended, has also been raised (Cozens, 2000; Cozens *et al.,* 2002) and refers to spatial conditions such as extreme urban decay, urban riot and war.

### Wilson and Kelling - *Broken Windows* (1982)

Perhaps one of the most influential of theories to be developed within the confines of CPTED is Wilson and Kelling's 'Broken Windows' thesis (1982). In summary, the theory contends that physical deterioration gives rise to safety concerns in residents and the community may cease to self-police an area. Further delinquency and vandalism occurs, along with increased deterioration and community withdrawal. Finally, potential offenders from elsewhere may then be attracted by the perceived vulnerability of the area. Therefore, what began as one broken window escalates to culminate in physical deterioration and social breakdown (see Chapter 12). However, in Defensible Space (1973), Newman explicitly discusses the concept of image and milieu and recognises the importance of the management and maintenance of the urban fabric. The prompt removal of graffiti and rapid repair of vandalism are examples of routine maintenance and this is a significant aspect to the development of Defensible Space and CPTED ideas.

### Coleman - *Utopia on Trial*: *Vision and Reality in Planned Housing* (1985, 1990)

At the Land Use Research Unit (LURU), King's College, London, Alice Coleman's work was influential in the development of designing out crime principles. The publication *Utopia on Trial: Vision and Reality in Planned Housing* (Coleman, 1985, 1990) was highly controversial, but significantly, received much support from the then Prime Minister Margaret Thatcher. The work of Coleman (1985), was perhaps most important in popularising and developing Newman's ideas in Britain. Her ideas were well-received; stimulating the multi-million pound Design Improvement Controlled Experiment (DICE), carried out by the LURU to put her theories into practice on a number of housing estates in London. Coleman's study of 4099 blocks of flats and maisonettes in two London boroughs (Tower Hamlets and Southwark) reported sixteen design features (all linked to Defensible Space), which were problematic for residents and housing managers alike (see Table 2). She reported that for locations with concentrations of these defective design features, higher levels of litter, graffiti, vandalism, excrement and urination were found.

**Table 2. Coleman's Sixteen Features of Design Disadvantage**

| | |
|---|---|
| Overhead walkways | Corridors |
| Blocks per site | Vertical routes |
| Spatial organisation (amount and type of private / public space) | Interconnected exits |
| Access to the site | Stilts and garages |
| Play areas | Position of the entrance |
| Number of storeys in the block | Types of entrance |
| Number of dwellings in the block | Types of door |
| Dwellings served by each entrance | Storeys per dwelling |

Source: Coleman (1990, p181/2).

The willingness of housing authorities to act on Coleman's findings and her ability to attract considerable financial resources for the 'DICE' programme is testament to the influence of Newman's ideas. Indeed, "Coleman became a star in the 1980s, employed by the conservative Westminster Council to rehabilitate the massive and troubled Mozart Estate, and well resourced in her research by the Government" (Campbell, 1993, p316). However, as with Defensible Space, criticism has focused upon a lack of scientific rigour and many reject her claims that design alone determined behaviour (Smith, 1986). Owens (1987, p87) observes that "however erroneous her methods, the enthusiasm of politicians for simple … solutions to the complex question of housing has given her ideas an influence many of her opponents might envy".

**Poyner and Webb - *Crime Free Housing* (1991)**
Poyner and Webb (1991) studied suburbs and new towns in Britain, and put forward twelve design features that were purported to reduce crime – all arguably variations or adaptations of Defensible Space (see Table 3).

**Table 3. Requirements for 'Crime Free' Housing**

| | |
|---|---|
| Moderate locking security | On-curtilage car parking |
| Facing windows | A garage at the side of the house |
| High fences at the sides and the rear | Limit access roads |
| Front access to a secure yard | Avoid through pedestrian routes |
| Visible access for deliveries | Surveillance of access roads |
| Space at the front (garden) | Green spaces outside housing areas |

Source: Poyner and Webb (1991, p97-101)

Pascoe and Topping (1998, p163) have recently noted "in the U.K., Coleman and Poyner have explored defensible space in depth (Poyner, 1983; Coleman, 1985; Poyner, 1986; Poyner and Webb, 1991)". They argue that design modifications can reduce crime while Coleman opines that design can actually *cause* anti-social behaviour, and is therefore more deterministic in her opinion (Coleman, 1998).

**Crowe - *Crime Prevention Through Environmental Design* (1991, 2000)**
Criminologist and former Director of the American National Crime Prevention Institute (NCPI), Tim Crowe developed and conducted numerous CPTED training programmes providing a practical training kit for police. The publication of Crime Prevention Through Environmental Design (Crowe 1991, 2000) provided a solid foundation for CPTED to progress into the 1990s and beyond.

**Popularity and Development of Defensible Space and CPTED**
The increasing disillusionment in Britain and America, with existing frameworks for tackling crime, arguably provided a window of opportunity for Newman and his followers. The necessity to be seen to be intervening and attempting to address the problem in political terms cannot be understated. The highly visible nature of implementing design modifications as a potential solution was certainly an attractive characteristic. Indeed, Mawby (1977, p169) notes that Defensible Space "almost immediately caught the imagination of the press and television, not only in America but also in Britain". Newman's theory was explicitly directed at high-rise developments, thereby gaining support from the ever-growing number of critics of such developments.

The US Department of Housing and Urban Development and the US Department of Justice both expressed interest in the early writings of Newman (Newman, 1973; 1975a, 1975b; Newman, 1980; Newman and Franck, 1980, 1982). Since the 1970s, Cisneros (1995, p. 5) claims "he has applied it in many locations and explored its applicability in considerable detail (Newman, 1980; Newman and Franck, 1982)".

In discussing the criticisms of Adams (1973), Bottoms (1974), Hillier (1973), Kaplan (1973) and Mawby (1977); Mayhew (1979, p152), comments that; "despite these criticisms (which are perhaps not particularly well-known) Newman's ideas have had great appeal". Various reasons are suggested for this situation. Firstly, the ideas inherent within the theory of Defensible Space can be located firmly within the domains of contemporary thought. "For academics, they fit in happily enough with a current emphasis - within psychology … and criminology itself – on the importance of the environment in determining behaviour" (Mayhew, 1979, p152). Labs (1989) claims that apart from Jeffrey's publication 'Crime Prevention Through Environmental Design' (1971) "…criminologists …had neglected …the physical environment as a factor in criminal behaviour until they felt the commotion caused by Newman's breach of professional turf" (Labs, 1989, p100).

On a general level, in comparison with earlier works such as Jacobs (1961), Angel (1968) and Jeffrey (1971), Newman's views appeared to be infinitely more attractive, in that they did not involve major, urban reorganisation. In addition, such views were "highly persuasive and have the respectability of being backed by seemingly extensive empirical research" (Mayhew, 1979, p152).

Newman's theory (and CPTED) was and arguably remains amenable to politicians across the ideological spectrum (Smith, 1987). It is attractive to those on the 'right' "because environmental engineering provides immediate, visible and unambiguous evidence of a commitment to stamp out deviance" (Smith, 1987, p147). Furthermore, it does not make any demands to reorganise the social structures of society. For politicians on the 'left', it provides "a more acceptable scapegoat for today's supposed demise of law and order than the stereotypical vandal, the unemployed working-class youth" (Smith, 1987, p147). For any political party, such an approach represents visible, tangible and positive action being pursued.

In 1976, Reppetto noted that the CPTED has received considerable attention in recent years; however, this has "to a large extent, been ignored by criminologists" (Reppetto, 1976, p275). Bottoms and Wiles (1988) concur, "traditionally, criminologists have shown relatively little interest in the housing market, or housing-based crime prevention programmes" (Bottoms and Wiles, p85). Reppetto (1976) argues that in spite of numerous studies linking crime and urban design; " … the criminological community has tended to reject or ignore design theory" (Reppetto, p280). Indeed, as Mawby (1977) notes, the theory of Defensible Space is "not by a criminologist but by a planner" (Mawby, p169). Clarke (1989) has observed that Newman's ideas did not concur with most contemporary criminologists since criminology (particularly in America) is an offshoot of sociology and thus social factors are seen as most important in explaining causation. Newman was not a social scientist and seemed ignorant of the findings of traditional criminology.

The field of planning and architecture provides the most committed support for urban design theory, however; "this is a discipline that has no tradition of interaction with criminology" (Reppetto, 1976, p281). This situation suggests; "it is therefore understandable that criminologists would find designers' methodology weak and the discussion of various criminological problems deficient or non-existent" (Reppetto, 1976p281). For Reppetto, scepticism of CPTED by criminologists is understandable on a theoretical level, but it is another matter to simply ignore its potential policy pay-offs.

Incorrect perceptions of the nature of CPTED have also contributed to its rejection. For Reppetto (1976), "negative connotations of a deeply segregated community" (Reppetto, p283) have evolved from a misreading of the theory and an overemphasis on policies such as target hardening and fortification. Furthermore, he claims that attempts to view urban design theories, as forms of government pacification are not supported in the writings of Newman.

The third reason suggested for the rejection of CPTED by criminology involves the practical problems of implementing design changes. Construction costs are involved in remodelling or new building projects and delays often occur in the planning, approval and construction cycle. Dislocation of businesses and industry is common, and unknown 'sunkcosts' can occur. These concern physical changes, which are later proven ineffectual and subsequently prove costly to amend. Thus, urban design "may cost a million dollars, take two years, disturb several hundred people and produce no guarantee of success" (Reppetto, 1976, p285). While additional police patrols are seen as quicker, cheaper, more visible and dislocate no one, they too offer few guarantees of success.

Together with some disappointing results from early CPTED experiments, these criticisms justified rejection and neglect (Clarke, 1989). The US federal government also lost interest in

CPTED for around fifteen years between the beginning of the 1980s and the mid-1990s. Clarke (1989) cites several developments from the early 1980s, which have significantly altered this situation:

- increasing evidence on the importance of the role of opportunity in crime;

- the development of new criminological theories such as rational choice and routine activity theory, which assign a more significant role to environmental determinants of crime;

- a growing number of case studies demonstrating substantial reductions in crime following environmental modification; and

- the displacement of crime following CPTED modifications has not been demonstrated to the extent that critics claimed. Rather, a diffusion of the benefits of CPTED to surrounding areas has been observed.

Coleman also argues that Newman's work was not, at first, well received in Britain. A Home Office Study conducted by Sturman and Wilson (1976) studied 52 housing estates in London and the findings largely supported Newman's work. However, they discovered that one socio-economic factor was more important than design - the density of children in the environment. British housing authorities and councils began to note this finding and reduce child densities while "there was an unfortunate neglect of design modification" (Coleman, 1985, p17).

In common with the American experience, Defensible Space in Britain did not always perform as positively or effectively as anticipated. The riot-prone territories in the UK of the 1980's, such as the Broadwater Farm Estate, seemed to vindicate the 'design-affects-crime' approach. This Estate was a series of twelve high-rise and deck-access flats interconnected via overhead pedestrian walkways. Residents were socially deprived, the estate was poorly maintained and its design was characterised by dangerously isolated areas, which became hotspots for crime and robbery, providing easy escape routes for criminals. However, in recent years, community initiatives and increased community participation along with some £33m for redesigning the estate's layout has transformed the estate, which now has significantly lower levels of crime. Improvements included giving each block a unique identity, demolishing the intimidating walkways and installing concierge lobbies, landscaped gardens, a health centre and an enterprise centre.

The Scotswood Estate in the North East of England, did not conform to the design-affects-crime prediction, where the suburban "dwellings were a monument to the Coleman model of defensible space" (Campbell, 1993, p316). Here, there were few high-rise blocks (traditionally associated with high crime rates and therefore considered as representing 'bad' design) yet it still experienced relatively high crime rates and eventually, riot. According to Campbell (1993) this example showed that the problems were "not manifest in buildings but in social relations" (Campbell, p316). She also notes that by the onset of the riots in 1991, almost four hundred households had relocated due to feelings of endangerment. It was therefore apparent that effective and ongoing environmental management procedures are required to maintain Defensible Space – as Newman had suggested (Newman, 1973; Heck, 1987), if only in relation to the high-rise developments in his original study.

For practitioners operationalising procedures to create Defensible Space was an attractive feature of Newman's thinking, which Mayhew (1979) considers may have influenced the continuing federal governments' financial sponsorship of his work, within the American research programme entitled 'CPTED'. It was adopted by the Westinghouse Corporation (1976, 1977a, 1977b) where research extended the Defensible Space concept to educational and commercial sites, with disappointingly results. Jeffery (1977, p45) argues that this may be because territorial behavior is less natural outside residential settings. Subsequently, government and research interest in CPTED wavered in the 1980s and 1990s. Nevertheless, CPTED has been widely used as a practical training tool for police, associated with the work of Crowe and his associates (Crowe, 1991, Crowe and Zahm, 1994).

However, Defensible Space, in the guise of CPTED in America, Canada, Australia and Holland, and SBD in Britain, is once again becoming contemporary and fashionable. "Today the pendulum seems to be swinging back to an increasing recognition that, in the right places, physical design does have a role to play in crime reduction" (Cisneros, 1995, p1). Newman's work has stimulated a "surge of new research and experimentation" (Cisneros, 1995, p3) culminating in the establishment of the International Crime Prevention Through Environmental Design Association (ICA), which has now been followed by the UK's Designing Out Crime Association (DOCA), E-DOCA in Europe, the Asia/Pacific CPTED Chapter launched in May 2000 and a Chapter based in Latin America in 2004.

**Defensible Space concepts**
Defensible Space, for Newman ". . . is a surrogate term for the range of mechanisms; real and symbolic barriers, strongly-defined areas of influence, and improved opportunities for surveillance; that combine to bring an environment under the control of its residents" (Newman, 1973, p3). There are four elements of Defensible Space according to Newman, which act individually and in concert to assist in the creation of a safer urban environment:

- the capacity of the physical environment to create perceived zones of territorial influence;

- the capacity of physical design to provide surveillance opportunities for residents and their agents;

- the capacity of design to influence the perception of a project's uniqueness, isolation, and stigma; and

- the influence of geographical juxtaposition with 'safe zones' on the security of adjacent areas (Newman, 1973, p50).

The four elements of Defensible Space can translate the latent territoriality and sense of community of residents into a responsibility to secure and maintain a safe, productive and well-maintained neighbourhood.

For Newman, the impersonal character of large high-rise housing estates (see Figure 2) or their 'anonymity' affected crime rates. The number of people using the same entrance rather than population density per se and the number of storeys in the block were the important factors.

**Figure 2. High Rise Flats, Pendleton, Salford (UK)**



Source: http://www.geograph.org.uk

Drawing on Jacobs' concept of delineating between private and public space, Newman (1973) claimed that the extent to which grounds and communal areas around buildings are shared and defended by different households also affects anonymity in that it increases as the number of shareholders increases (see Figure 3). Secondly 'surveillance' (Jacobs' terminology referred to this as "eyes on the street") involves visibility. The presence of internal corridors (invisible from the street) and the position of the entrance and building in relation to the street are important aspects. Finally the existence and character of 'alternative escape routes' can prompt criminals to become more audacious. Inter-accessible lifts, staircases and exits are identified and it is claimed that as these multiply, so does crime and the potential for crime. Where a block in Newman's study combined all three of these "alienating mechanisms" (Coleman, 1985, p16), crime would be at its highest. In addition, Newman went on to establish a causal link such that if one or more of the implicated design features was ameliorated, the crime rate would subsequently decline.

The high-rise flats in Newman's study (1973) were characterized by a maze of angled corridors and public areas that provided limited opportunities for surveillance. Significantly, more than half of all crimes were committed in these less visible locations of concealment. The design of high rise public housing estates also provided offenders with a warren of alternative access and escape routes.

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**Figure 3. Hierarchy of Defensible Space**
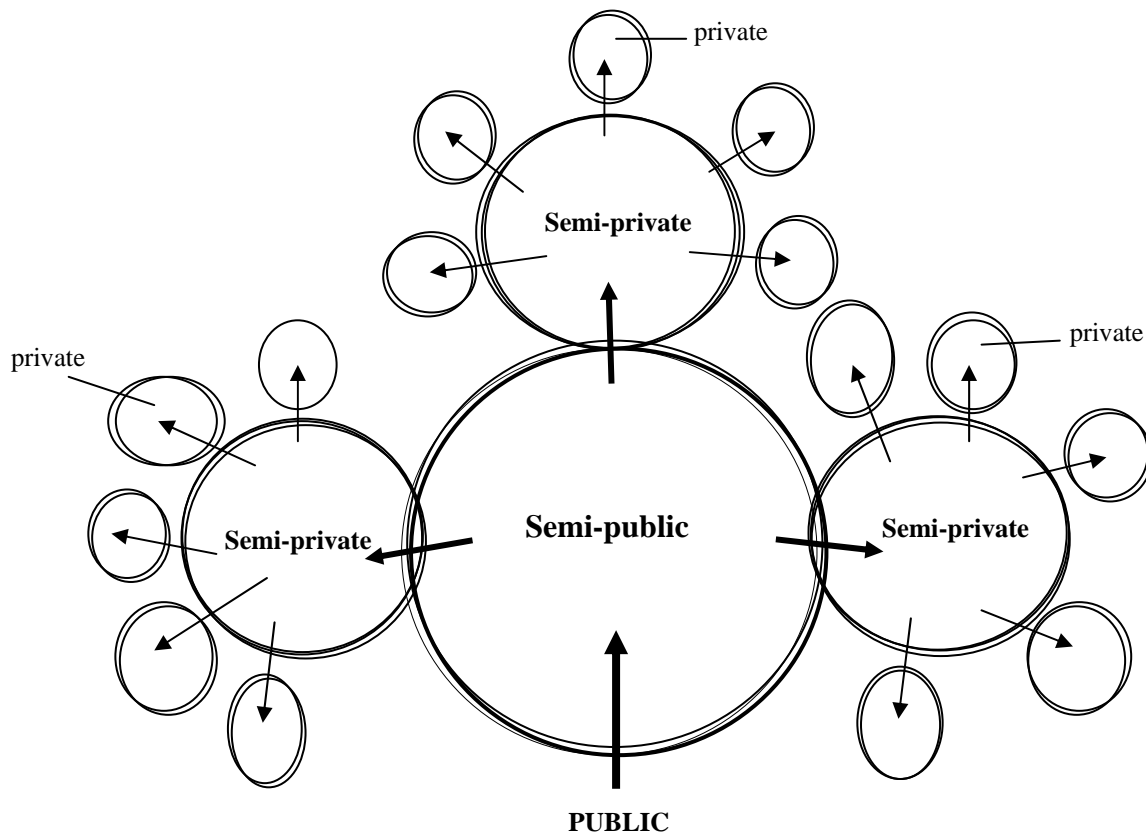


Source: Newman (1973, p9): arrows indicate entrance and exit points at different levels of the hierarchy.

**CPTED Concepts**

As with Defensible Space, CPTED draws heavily on behavioural psychology, and is concerned with the relationships between people and the environment. The way people react to an environment is commonly influenced by environmental cues, which are variously perceived and decoded. Elements that make normal or legitimate users of a space feel safe (e.g. being visible to others) may discourage abnormal or illegitimate users from pursuing undesirable behaviours (such as robbery or theft from motor vehicles). CPTED requires that natural strategies be incorporated into human activities and space design. Crime prevention has traditionally relied almost exclusively on labour intensive (e.g. security guards and police patrols) and mechanical devices (e.g. security cameras, locks and fences) which increase existing operating costs for personnel, equipment and buildings. Traditionally, the three most common CPTED strategies are territorial reinforcement, natural surveillance and natural access control.

Territorial reinforcement is a design concept directed at promoting notions of proprietary concern and a "sense of ownership" in legitimate users of space thereby reducing opportunities for offending by discouraging illegitimate users. Early CPTED ideas now referred to as First-Generation CPTED, considered territorial reinforcement as the primary concept from which all the others are derived. Different forms include symbolic barriers (e.g. signage) and real barriers (e.g. fences or design that clearly defines and delineates between private, semi-private and public spaces). Access control and surveillance will also contribute

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towards enhancing territoriality by promoting legitimate users' informal social control. CPTED emphasises crime prevention techniques that reduce the opportunities in the environment "both to naturally and routinely facilitate access control and surveillance, and to reinforce positive behaviour in the use of the environment" (Crowe, 2000, p. 37). These strategies are not independent of one another, and they act in concert to use physical attributes to separate public, public-private and private space, to define ownership (e.g. fences, pavement treatments, signs, landscaping and artwork) and define acceptable patterns of usage, in addition to promoting opportunities for surveillance.

Natural surveillance is a traditional concept that has long been used in crime prevention. Opportunities for residents' self-surveillance as facilitated by windows and design can be promoted by physical design and surveillance is part of capable guardianship (Painter and Tilley, 1999). If offenders perceive that they can be observed (even if they are not), they may be less likely to offend, given the increased potential for intervention, apprehension and prosecution. Other forms of surveillance include formal or organised (e.g. police and security patrols) and mechanical surveillance strategies (e.g. street lighting and CCTV).

Natural access control is a CPTED concept focused on reducing opportunities for crime using spatial definition to deny access to potential targets and creating a heightened perception of risk in offenders. Formal or organised access control (e.g. security personnel) and mechanical access control (e.g. locks and bolts) strategies were not generally considered as part of the early definitions of CPTED. Refinement of CPTED has added several other strategies including activity support, image / space management and target hardening.

Activity support involves the use of design and signage to encourage intended patterns of usage of public space. Crowe (2000) notes how within reason, activity generation and support seeks to place inherently "unsafe" activities (such as those involving money transactions) in "safe" locations (those with high levels of activity and with surveillance opportunities). Similarly, "safe" activities serve as magnets for ordinary citizens who may then act to discourage the presence of criminals. This approach clearly contains elements of territoriality, access control and surveillance. Although increased numbers of pedestrians may provide additional "eyes on the street" and potentially discourage some offences, this may also actually encourage and provide potential targets for crime (e.g. pick-pocketing).

Space management, promoting a positive image and routinely maintaining the built environment ensures that the physical environment continues to function effectively and transmits positive signals to all users. The significance of the physical condition and "image" of the built environment and the effect this may have on crime and the fear of crime has long been acknowledged (Lynch, 1960; Newman, 1973; Wilson and Kelling, 1982; Perglut, 1983) and an extensive body of research now exists (Eck, 2002; Kraut, 1999; Ross and Mirowsky, 1999; Ross and Jang, 2000). Indeed, Vacant premises have been found to represent crime "magnets" (Spelman, 1993).

Target hardening increases the efforts that offenders must expend in the commission of a crime and is the most long-established and traditional approach to crime prevention. However, there is much disagreement concerning whether or not target hardening should be considered as a component of CPTED. It is directed at denying or limiting access to a crime target through the use of physical barriers such as fences, gates, locks, electronic alarms and security patrols. Such ideas are often considered as elements of access control at a micro scale (e.g. individual buildings). Crucially, excessive use of target hardening tactics can create a 'fortress mentality' and imagery whereby residents withdraw behind physical barriers and the

self-policing capacity of the built environment is damaged, effectively working against CPTED strategies that rely on surveillance, territoriality, image and the legitimate use of space. This fortressification of space is typified by private developments such as gated communities, which appear to be increasingly popular throughout the World.

For Moffat (1983, p23) "CPTED is divided into seven related areas where Defensible Space is at the root of the concept". Figure 3, adapted from Moffat and Newman (1973) illustrates the key components of CPTED.

**Figure 3. CPTED – Key Principles**
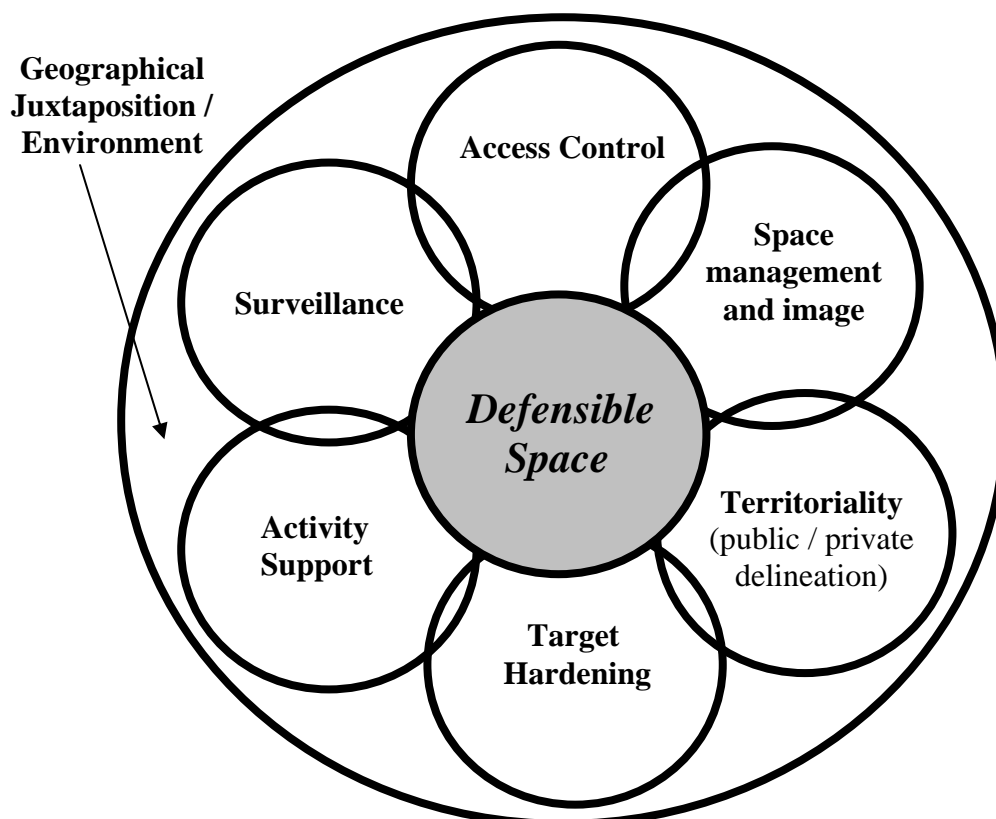


Source: Adapted from Moffatt (1983, p23) and Newman (1973).

CPTED argues that by optimising opportunities for surveillance, clearly defining boundaries (and defining preferred use within such spaces) and creating and maintaining a positive 'image', urban design and active management can discourage offending. This is explained by the fact that offenders are potentially more visible to "law-abiding" others, and therefore, perceive themselves to be more at risk of observation and subsequent apprehension. Additionally, a well-maintained and appropriately used environment can signify that a sense of "ownership" and proprietary concern exists within the community and offenders may perceive that residents are more vigilant and more likely to intervene during the commission of a crime.

The '3 D approach' in CPTED asserts that space requires some *designated* purpose which is subject to social, cultural, legal or physical *definitions* prescribing desired and acceptable behaviours which can be supported by *design.* This approach asks questions such as;

- Does the space clearly belong to someone?

- Is the use clearly defined?

- Does the design match the intended use?

- Does the design facilitate access control and promote surveillance?

CPTED pioneers for Saville (1998) include those such as Angel (1968), Jeffery (1969, 1971), and Newman (1973), with Jacobs (1961) attributed as highlighting the issue of the design of urban places and the possible link with crime.

Schneider and Kitchen (2002) provide a useful illustration setting out the connections between Defensible Space and CPTED, which are adapted from Newman (1973) and Crowe (2000) and are presented in Table 3.

**Table 3. Connections Between Defensible Space and CPTED**

| **Defensible Space (Newman, 1973)** | **CPTED (Crowe, 2000)** |
|---|---|
| Territoriality and boundary definition | Border definition of controlled space |
| Territoriality, boundary definition and access control | Clearly marked transitional zones |
| Surveillance and access control | Attention directed to gathering areas |
| Image and milieu and geographical juxtaposition | Place safe activities in unsafe areas |
| Image and milieu andgeographical juxtaposition | Place unsafe activities in safe locations |
| Boundary definition and access control | Reduce use conflicts with natural barriers |
| Geographical juxtaposition | Better scheduling of space |
| Surveillance | Increased perception of natural surveillance in spaces by design |
| Geographical juxtaposition | Overcome distance and isolation by communication |

Source: adapted from Schneider and Kitchen (2002, p102).

Both CPTED and Defensible Space derive theoretical support from the criminological perspectives of opportunity theory such as rational choice theory (see Chapter 2) and routine activities theory (see Chapter 4). Routine activity theory (Cohen and Felson, 1979) seeks to explain how the environment can provide criminal opportunities with the convergence of a "likely" offender, a "suitable" target and the absence of a "capable guardian" at a specific time and place. Rational choice theory asserts that all crime is purposive behaviour performed to

benefit the offender (Cornish and Clarke, 1986). Offending is directed at achieving particular 'wants', such as cash, peer approval, excitement, sexual gratification or domination of others. In deciding to commit a crime, the offender balances the perceived effort, risks and rewards with the perceived costs and benefits of legitimate methods of achieving these outcomes.

**The Application of CPTED**

CPTED has been applied in a range of diverse environments, including; residential, commercial / retail, schools, universities, hospitals, car parks, offices, convention centres, stadiums and public transport (Crowe, 2000). La Vigne (1997) discusses how the design, management, and maintenance of Metro, Washington's subway station has contributed to the system's safety, security and appearance. Designed using CPTED principles the station has significantly lower levels of crime than other stations and the local environment in which it is located.

A study of railway stations in the UK (Cozens *et al*., 2003a) used CPTED principles in the regeneration and redesign of a local rail network. Figures 4 and 5 illustrate a railway station 'before' and 'after' CPTED design modifications were executed. Clearly, the surveillance of the station platform and waiting areas has been enhanced and the station now provides minimal opportunities for concealment.

**Figure 4. Railway Station Before CPTED Modifications**



Source: Author

**Figure 5. Railway Station After CPTED Modifications**



Source: Author

The installation of signage has clearly designated and defined this space as an operating railway station and the design of the transparent shelter allows the station and passengers to interact with the local community. Additional way-finding information also enhances passengers' sense of personal safety. Significantly, the rail network has witnessed an increase in annual passenger flows and reduced levels of crime and fear of crime. It would not be inappropriate to suggest that a significant proportion of this increase in patronage is attributable to the passenger-led CPTED station improvement programme. Indeed, the new high visibility shelters not only reduced fear of crime but appear to have also produced higher levels of traveller confidence, and in the short term, higher levels of patronage.

The UK's Secured By Design scheme uses CPTED principles in the design of urban environments. Studies by Brown (1999), Pascoe (1999) and Armitage (2000) report significant reductions in crime and the fear of crime (see Cozens *et al*., 2004 for a review). There is a growing body of evidence that CPTED is an effective crime prevention strategy (Eck, 2002; Cozens *et al*., 2005). Figure 6. Illustrates a residential design which uses CPTED principles and a design which does not.

**Figure 6. CPTED in Residential Design**
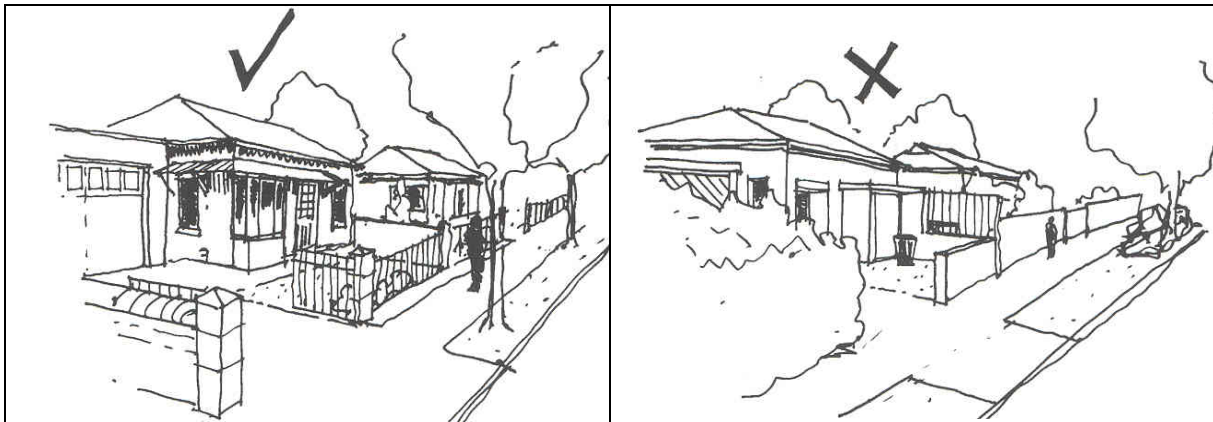


Source: Launceston City Council (2003) drawn by Mary Black

**CPTED – Current Status and Future Directions**

The traditional focus of CPTED has emphasized physical design, although, as with Defensible Space, it has expanded to encompass affective, psychological, sociological, environmental design known as Second-Generation CPTED (Saville and Cleveland, 1997).

Socio-economic and demographic dynamics can reduce or enhance the efficacy of CPTED strategies. Realizing the importance of this fact was one of the driving forces behind the creation of Second-Generation CPTED in the late 1990s (Saville and Cleveland, 1997). Indeed, these authors asked the question "have we forgotten that what's significant about Jacob's 'eyes on the street' are not the sightlines or even the streets, but the eyes?" (Saville and Cleveland, 1997, p1). Saville (1998, p8) claims renewed interest in CPTED has resulted in "a more comprehensive, ecological approach for reducing crime niches". Second-Generation CPTED uses risk assessments and a consideration for displacement of criminality, which may occur. For Saville (1998, p8), "it begins with environmental modifications to set the stage for reduced opportunities for crime niches, but it depends on additional social changes to maintain the impact of those modifications".

Similarly, Taylor and Harrell (1996) identify the development of Second-Generation Defensible Space theory, which is modified by the need for local resident / community support and involvement, as well as management assistance. Second-Generation Defensible Space introduces social and cultural features in the setting and "more realistic assumptions about territorial behavior and cognition" (Taylor and Harrell, 1996, p7). Saville and Cleveland (1997, p1) comment on the emergence of "Second-Generation CPTED recognizes the most valuable aspects of safe community lie not in structures of the brick and mortar type, but rather in structures of family, of thought and, most importantly of behavior".

Developments in CPTED have involved 'community building' to support physical design modifications (Sarkissian and Walsh, 1994; Sarkissian, Cook and Walsh, 1997; Sarkissian and Perlglut 1994; Saville, 1995). The term 'Community CPTED' has also been coined (Plaster-Carter, 2002) and examines the interaction of selected physical, social and economic conditions and "uses the details of the built environment and social behavior to create healthy, self-regulating communities".

Displacement has been a major criticism levelled at CPTED. Hakim and Rengert (1981) claim that there are five types, where the implementation of crime prevention measures in one area can "displace" existing crime in terms of location, time, tactics, targets and type of crime. However, research suggests that displacement can be utilised as a positive tool, rather than as a negative side effect and the diffusion of benefits has been observed in areas adjacent to the locations where CPTED strategies have been operationalised (Barr and Pease, 1990, 1992; Clarke, 1994; Saville, 1998; Clarke and Weisburd, 1994).

The ecological threshold or "tipping point" (Saville, 1996) of a neighbourhood is the notion that like any natural ecosystem, it has a limited capacity for certain activities and functions. Environmental decline and increasing rates of vacancy in a given neighbourhood may breach the "tipping point" and result in the out-migration of residents, social capital and economic resources and set in motion a vicious spiral of decline. This concept of neighbourhood capacity and the tipping point is one of the four principles of Second-Generation CPTED, the other three being community culture, cohesion, and connectivity (Saville and Cleveland, 2003a, 2003b).

The Designing Out Crime Association's logo is 'context is everything'. A significant criticism of the application of CPTED is the common use of generic principles in a 'one-size-fits-all' approach, which ignores local context. The type, extent and location of crime risk require systematic consideration before strategies are implemented. Failure to do so is analogous to a medical practitioner prescribing treatment before any illness has been diagnosed. For example, improved lighting can assist in reducing fear of crime and crime in the community. However, in spaces, which are illegitimately used by congregating youths and are not overlooked, turning off the lights is often a more appropriate and effective response. Indeed, according to Crowe (2000, p6) "CPTED is a process for improving planning decisions …not a belief system."

The growth of crime victimisation surveys in the UK and America influenced the emergence and popularity of the study of fear of crime, as distinct from crime itself. Crucially, Newman's Defensible Space (1973, p50) clearly highlights this perceptual dimension, specifically in two of his principles. Firstly, "the capacity of the physical environment to create *perceived* zones of territorial influence" and "the capacity of design to influence the *perception* of a project's uniqueness, isolation, and stigma". Researchers in the field of environmental psychology have contributed much to CPTED in recent years (e.g., Brower *et al*., 1983; Brown and Altman, 1983; Vrij and Winkel, 1991; Brown and Bentley, 1993; Brantingham, and Brantingham, 1993; Fisher and Nasar, 1992; Nasar and Fisher, 1993; Nasar *et al*., 1993; Nasar, 1994; Perkins *et al*., 1990, 1992, 1993; Perkins and Taylor, 1996). Indeed, Fisher and Nasar, (1992) have introduced a threefold grouping of physical features; prospect (for the user), refuge (for the potential offender) and escape (for the user and potential offender) into CPTED theory and Taylor and Harrell (1996, p. 9) conclude; "research confirms that fear [of crime] is higher in locations that offer good refuge for the potential offender but low prospect and escape for the user". Crucially, much of Defensible Space and CPTED relates to perceptions, of offenders, victims and potential guardians. Indeed, research probing different stakeholder perceptions of crime and the built environment are making significant contributions to the field (McDonald and Gifford, 1989; Harris and Brown, 1996; Tijerino, 1998; Ham-Rowbottom *et al*., 1999; Cozens *et al*., 2001; 2003b).

The influence of Defensible Space in modern CPTED thinking is clearly evident. "Most have become commonplace in jurisdictions where Crime Prevention Through Environment Design (CPTED) is incorporated into the planning process, such as in Florida, British Columbia, Canada and the Netherlands" (Saville and Sarkissian, 1998, p361). This is also evident in Europe, the UK, South Africa, Australia and New Zealand. Saville and Sarkissian opine that Newman considered CPTED to be a component of Defensible Space but suggest this is just a case of semantics.

In terms of future directions CPTED is increasingly being linked with urban sustainability (Du Plessis, 1999; Dewberry, 2003; Cozens, 2002; 2007) whereby it is being used as a planning tool. Premises liability cases, where landlords are found negligent in the provision of adequate and 'reasonable' security and CPTED features on their facilities, have also increased in recent years (Kennedy, 1993; Gordon and Brill, 1996). In these increasingly litigious times, such a trend is likely to accelerate.

For Schneider and Kitchen (2007, 24) "CPTED, as it is known and practiced today, is therefore a closer adaptation of Newman's defensible space than of Jeffrey's original concept, even though it blends elements of both." It has evolved over the last quarter of a century, merging with other place-based strategies such as situational crime prevention and environmental criminology. Schneider and Kitchen (2007) discuss place-based crime prevention and claim there are four major theories, defensible space, CPTED, SCP and environmental criminology. They all developed largely independently of each other but "the theoretical strands have become increasingly woven together by practice, experience and empirical research" (Schneider and Kitchen, 2002, p114-116). This situation is arguably confusing and is referred to as "inappropriate complexity masquerading as simplicity" (Ekblom, 2006, p2). Some suggest CPTED requires rebuilding, conceptually and scientifically and is in need of clarification in terms of definitions and scope (Ekblom, 2006). This chapter has provided an overview of CPTED, a brief discussion of the major contributors and examples of CPTED applications. The re-examination and rebuilding of CPTED will certainly be a challenging task and represents a future chapter in the history and development of CPTED.

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