International Journal of Law
ISSN: 2455-2194, RJIF 5.12
www.lawresearchjournal.com
Volume 2; Issue 5; September 2016; Page No. 01-06

Crime prevention through environmental design: A critical perspectives of environmental criminology

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Abstract
This paper examines an approach to crime reduction which differs from many others in that it focuses not on the offender or their reasoning for committing an offense but upon the environment in which an offense takes place. This approach also differs in its consideration of who should be held responsible for the reduction of crime, with a focus not solely upon the traditional criminal justice system agencies but also upon planners, architects, developers, and managers of public space. The approach is based on the presumption that offenders will maximize crime opportunities, and therefore, those opportunities must be avoided (in the first place) or removed (following the emergence of a crime problem). In the 2001 publication "Cracking Crime Through Design," Pease introduces the concept of design as a means of reducing crime, but more importantly the premise that it is the moral responsibility of many different actors and agencies to improve the lives of those who may fall victim to crime, those who live in fear of crime, and (less obviously) those who will, through the presentation of unproblematic opportunities, be tempted into offending. In the case of crime prevention through environmental design (CPTED), it is the planners, designers, developers, and architects who risk acting (as Pease paraphrases the poet John Donne) as the gateway to another man's sin.

Keywords: CPTED, defensible space, capable guardian

Introduction
If crime is rational and people choose to commit crime, then it follows that crime can be controlled or eradicated by convincing potential offenders that crime is a poor choice that will not bring them rewards but pain, hardship, and deprivation instead. Evidence shows that jurisdictions with relatively low incarceration rates also experience the highest crime rates [1]. Crime prevention through environmental design (CPTED) is an environmental criminology theory based on the proposition that the appropriate design and application of the built and surrounding environment can improve the quality of life by deterring crime and reducing the fear of crime. Security and crime prevention practitioners should have a thorough understanding of CPTED theory, concepts, and applications in order to work more effectively with local crime prevention officers, security professionals, building design authorities, architects and design professionals, and others when designing new or renovating existing buildings. This paper intended to provide the reader with the basic information required to understand and apply the theory and concepts of CPTED. I do not expect to make the reader an instant expert on crime; few people have a clear understanding about the true nature and causation of crime and criminal behaviour. However, CPTED is based on common sense and a heightened sense of awareness of how people are using a given space for legitimate and illegitimate criminal purposes

History of CPTED
Situational crime prevention was first popularized in the United States in the early 1970s by Oscar Newman, who coined the term defensible space. This term signifies that crime can be prevented or displaced through the use of residential architectural designs that reduce criminal opportunity, such as well-lit housing projects that maximize surveillance [2]. C. Ray Jeffery wrote *Crime Prevention through Environmental Design*, which extended Newman's concepts and applied them to non-residential areas, such as schools and factories [3]. According to this view, mechanisms such as security systems, deadbolt locks, high-intensity Street lighting, and neighbourhood watch patrols should reduce criminal opportunity [4]. In 1992 Ronald Clarke published *Situational Crime Prevention*, which compiled the best-known strategies and tactics to reduce criminal incidents [5]. Criminologists have suggested using a number of situational crime prevention efforts that might reduce crime rates. One approach is not to target a specific crime but to create an environment that can reduce the overall crime rate by limiting the access to tempting targets for a highly motivated offender group (such as high school students). Notice that this approach is designed not to eliminate a specific crime but to reduce the overall Crime rate. The subway system in Washington, DC, has used some of these environmental crime reduction techniques to control crime since it began operations in 1976. For centuries, historians and researchers have studied the relationship between the environment and behaviour. CPTED draws from a multidisciplinary base of knowledge to create its own theoretical framework including the fields of architecture, urban design and planning, landscape architecture, sociology,

1. George Rengert, "Spatial Justice and Criminal Victimization," Justice Quarterly 6 (1989): 543–564.

2. Oscar Newman, Defensible Space: Crime Prevention through Urban Design (New York: Macmillan, 1973).
3. C. Ray Jeffery, Crime Prevention through Environmental Design (Beverly Hills: Sage, 1971).
4. See also Pochara Theerathorn, "Architectural Style, Aesthetic Landscaping, Home Value, and Crime Prevention," International Journal of Comparative and Applied Criminal Justice 12 (1988): 269–277.
5. Ronald Clarke, Situational Crime Prevention: Successful Case Studies (Albany, NY: Harrow and Heston, 1992).

psychology, anthropology, geography, human ecology, criminology, and criminal justice. The first widely published studies of crime and the environment were done by a group of University of Chicago sociologists (Park, Burgess, Shaw, and McKay). The researchers viewed the social disorganization or lack of community control found in specific inner-city districts as generating high crime rates, which decreased in concentric circles away from the central business district [6]. In making this case, the University of Chicago sociologists rejected the tenets of early criminological theory that had focused on the characteristics of individuals as causal agents in crime. After the early works of Burgess, Park, Shaw, and McKay, urban planner Jane Jacobs (1961) developed the *eyes-on-the-street* theory [7]. Using personal observation and anecdote, Jacobs suggested that residential crime could be reduced by orienting buildings toward the street, clearly distinguishing public and private domains and placing outdoor spaces in proximity to intensively used areas. Jacobs's book *The Death and Life of American Cities* gave police and planners the awareness of the value of eyes on the street as a crime prevention tool. But having eyes (or windows) on the street is not enough to stop crime if there is no sense of community or involvement.

Contemporary Criminological Thinking on Crime, Criminals, and Potential Targets

The term *crime prevention through environmental design* first appeared in a 1971 book by criminologist and sociologist C. Ray Jeffrey. Inspired by Jacobs's work (1961), Jeffrey (1971) challenged the old guard of criminology theory to take an interdisciplinary approach to crime prevention. In this work, Jeffrey analysed the causation of crime from an interdisciplinary approach, drawing from criminal law, sociology, psychology, administration of justice, criminology, penology, and other fields. He also drew from relatively new fields at that time—including systems analysis, decision theory, environmentalism, behaviourism, and several models of crime control. Although different crimes are affected in different ways by the environment in which they occur, almost every type of *street crime*, crimes against persons or property, is influenced in some way by physical design, layout, or situational factors such as the presence of a victim or target, the lack of capable guardianship, and the lack of surveillance opportunities. Theories of crime, such as environmental criminology, focus specifically on analysing the environmental factors that provide opportunities for crime to occur. For this reason, most theories of crime can also be classified as *crime opportunity* theories. Environmental criminology, rational choice, situational crime prevention, routine activity, opportunity model, geography of crime, and hot spots of crime are all examples of criminological theories that explain factors that provide criminal opportunities (Sorensen *et al*., 1998). Studies conducted in the 1970s through 1990s (primarily by the National Institute of Justice in the United States) demonstrated that certain environments tended to encourage informal social gatherings and contacts, crime, and raised the fear of crime. These environments include poorly lighted areas, high-rise buildings with inappropriate tenant mix, and apartment buildings with large numbers of units that shared one primary entrance, and very heavily trafficked streets. Conversely, researchers found that the presence of community centres and well-maintained public parks, and so on, increased social interaction, natural surveillance, and other informal social controls, thus reducing both crime and the fear of crime. According to the *rational choice* theory approach, criminal behaviour occurs when an offender decides to risk breaking the law after considering personal factors (the need for money, cheap thrills, entertainment, revenge) and situational factors (potential police response, availability of target, lighting, surveillance, access to target, skill, and tools needed to commit the crime). Before committing a crime, most criminals (excluding drug-stupid impulse crimes, acts of terrorism, and psychopathic criminals) will evaluate the risks of apprehension, the seriousness of expected punishment, the potential value of gain from the crime, and how pressing is the need for immediate criminal gain. The decision to commit a specific type of crime is thus a matter of personal decision making based on an evaluation of numerous variables and the information that is available for the decision-making process. Burglary studies have shown that burglars forgo a break-in if they perceive that the home is too great a security challenge, that the value or rewards of the goods to be taken are not worth the effort, and the target might be protected by guards, police, *and capable guardians* [8]. The evidence suggests that the decision to commit crime, regardless of substance, is structured by the choice of:

1. Where the crime occurs
2. The characteristics of the target
3. The means and techniques available for the completion of the crime

In addition to crime prevention theory, security professionals should also understand contemporary criminological views on how criminals pick their targets and how criminal choice is influenced by the *perception of vulnerability* that the target projects

Target Selection

Studies of professional and occasional criminals have suggested that they choose their targets with a rational decision-making process. Criminals take note of potential targets every day: keys left in cars, open or unlocked residential or commercial establishments, untended homes while on vacation, etc. Studies of burglary indicate that houses located at the end of cul-de-sacs, surrounded by trees, make very tempting targets [9]. Some research indicates that street criminals use public transportation or walk so it is more likely they will gravitate to the centre of a city, particularly areas more familiar to them that also provide potential targets in easily accessible and open areas [10]. The environment shapes the factors, or cues that contribute to development of criminal

6. Robert Park and Ernest Burgess, the City (Chicago: University of Chicago Press, 1925).
7. "The Death and Life of Urban Design: Jane Jacobs, the Rockefeller Foundation, and the New Research in Urbanism, 1955-1965," Journal of Urban Design, 2006.
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10. Brown B, Bentley D (1993) Residential burglar's judge risk: the role of territoriality. J Environ Psychol 13:51–61.

opportunities, and to the formation of specific patterns of opportunities. Once the patterns of opportunities are created, patterns of crime soon follow. The crime prevention specialist analyses those opportunities, patterns of opportunities, and patterns of crime to devise and implement appropriate situational and crime-specific prevention measures. The Brantinghams' research hypothesized that criminal choices are influenced by the *perception* of target availability and vulnerability. The Brantingham's posited that individual criminal events must be understood as confluences of offenders, victims, criminal targets, and laws in specific set-tings at particular times and places. Criminals often choose certain neighbourhoods for crimes because they are familiar and well-travelled, because they appear more open and vulnerable, and because they offer more potential escape routes. Thus, the more suitable and accessible the target, the more likely the crime will occur.

Potential Offenders' Perspective

Research has shown that the features of the physical environment can influence the opportunity for crime to occur. The physical surroundings clearly influence the potential offenders' perceptions and evaluation of a potential crime site. Part of this evaluation also includes determining the availability and visibility of natural guardians (residents, passer-by, dogs, etc.) at or in close proximity to the site under consideration. Offenders, when deciding whether or not to commit a crime in a location, generally do so after considering the following questions *assuming* a *rational offender* perspective:

- How easy will it be to enter the area?
- How visible, attractive, or vulnerable do the targets appear?
- What are the chances of being seen?
- If seen, will the people in the area do something about it?
- Is there a quick, direct route for leaving the site after the crime is Committed?

Thus, the physical features of a site may influence the choices of potential offenders by altering the chances of detection and by reshaping the public versus private space in question. If a potential criminal feels the chances of detection are low, or if a criminal is fairly certain that he or she will be able to exit without being identified or apprehended, the likelihood of crime increases. In effect, if a location lacks a capable guardian, it becomes a more likely target for crime.

Concept of Capable Guardian

Routine activity theory suggests that the presence of capable guardians may deter crime. Criminals will generally avoid targets or victims who are perceived to be armed, capable of resistance, or potentially dangerous. Criminals will generally stay away from areas they feel that are aggressively patrolled by police, security guards, nosy neighbours, or live-in family members like grandparents. Likewise, criminals avoid *passive barriers* such as alarm systems, fences, locks, barking dogs, or related physical barriers. This avoidance is intuitively logical to the experienced law enforcement or security practitioner. Criminals will look for the easiest path rather than expose themselves to greater risk or challenge, unless they perceive the risk is justified enough to override their perception. The concept of natural surveillance and capable guardians are very powerful tools for reducing the *perceived and actual vulnerability* a site poses to a potential criminal. CPTED strategies employ the concept of capable guardians within the *organizational* (people) classifications of strategies

Criminal Choice

Criminals or potential criminals are conditioned by personal factors (Pezzin, 1995) that may lead them to choose crime. Research also shows that criminals are more likely to desist from crime if they believe:

- Future earnings from criminal activities will be low.
- Other attractive but legal income-generating opportunities are available.

Agnew (1995) believes people more likely to choose a life of crime over conformity to socially acceptable behaviour demonstrate the following personality traits:

- They lack typical social constraints and perceive freedom of movement, even in areas and spaces where they are uninvited or unwelcome.
- They have less self-control and do not fear criminal punishment.
- They are typically facing a serious personal problem that they feel forces them to choose risky behaviour (similar to the classic white collar criminal). At any given time, there are individuals who are capable of criminal behaviour, and will take advantage of vulnerable targets, whether they are people, buildings, or other facilities, and that the perception of vulnerability drives the criminal choice, in terms of which actual target they attack.

CPTED as Defensible Space

Oscar Newman published his study of CPTED in residential areas (1972) and demonstrated how design layout and architecture contributes to victimization by criminals in his work *Defensible Space, Crime Prevention through Urban Design*. In this work, Newman explored the concepts of human territoriality, natural surveillance, and the modification of existing structures to effectively reduce crime. Newman argued that physical construction of residential environment could elicit from residents a behaviour that contributes in a major way toward insuring their security [11]. The form of buildings and their groupings enable inhabitants to undertake a significant self-policing function. The primary function of defensible space is to release latent attitudes in the tenants, which allow them to assume behaviour necessary to the protection of their rights and property. Defensible space 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 the environment under the control of its residents. Newman's work became the foundation for what we know today as CPTED. Oscar Newman coined the term *defensible space* as he studied the relationship between particular design features and crime that occurred in public housing developments in New York. The four components of Newman's study were:

- Defining perceived zones of territorial influence
- Providing surveillance opportunities for residents and their guests
- Placing residential structures (public areas and entries) close to safe areas

[11] Newman O (1973) Defensible space: people and design in the violent city. Architectural Press, London.

- Designing sites and buildings so those occupants are not perceived and stigmatized as vulnerable

Those sites and buildings that were perceived as most vulnerable and isolated had similar characteristics:

- Unassigned open spaces that were unprotected, uncared for, and provide opportunities for residents and outsiders to engage in illegitimate activities
- An unlimited number of opportunities to penetrate the site with uncontrolled access—the multitude of entry points provided offenders with easy entry and numerous escape routes
- The lack of territoriality and boundary definition that discouraged the legitimate residents from claiming space and taking control of the site—residents were often unable to recognize strangers from legitimate users
- Lack of opportunities for natural surveillance and supervision
- Design conflicts between the incompatible uses and users—incompatible activities are located next to one another

Newman used his theory to modify housing developments by implementing some of the most basic elements of CPTED design: high fences, designated paths, architectural treatment to distinguish private, semiprivate, semi-public, and public spaces, and improved lighting. Defensible space design should link territoriality and surveillance by creating designs where the observer feels the area under surveillance is under their sphere of influence, and part of their responsibility to actively prevent crime. The environment of the building should be designed so that the observer can recognize or identify the victim or target as part of their property and the observer has a vested interest to intervene and prevent the crime from occurring. Increased legitimate traffic of people and vehicles are positive experiences that are characteristic of a safe place. People who live, work, and play in an area will tend to feel a certain ownership and responsibility, and will try to protect an area. Proximity to areas with high volume of legitimate usage encourages the same sense of territoriality, responsibility, and effective surveillance. Newman's work came under criticism for methodological weakness, and academicians viewed his work as architecturally deterministic (Atlas, 1983) [12]. Architecture does not force people to engage in certain behaviours, but the environment and social controls can exert a strong influence on how people respond to their spaces. Not everyone in a slum is a criminal, and not everyone in an upper-class gated community is an outstanding citizen. Part of the problem of the Defensible Space theory was the assumption that the illegitimate users or criminals could be easily identified by the legitimate residents, but the reality was that the residents were often unwilling or unable to determine who legitimately belonged on the property, because of the high turnover in residents, and the additional challenge that many of the criminals were often residents, or their neighbours' children (Merry, 1981). Subsequent CPTED demonstration projects in the 1970s by the Westinghouse Corporation were generally unsuccessful as they attempted to extend the Defensible Space concept to school, commercial, residential, and transportation environments where territorial behaviour is much less natural than in the multifamily residential context.

[12.] Paul-Alan Johnson, the Theory of Architecture: Concepts, Themes, and Practices, 1994.

Basic Crime Prevention Assumptions

The need for CPTED in the design and planning process is based on the belief that crime and loss prevention are inherent to human functions and activities, not just something that police or security people do. What we do right or wrong with our human and physical resources produces a lasting legacy. Once the building concrete, brick, mortar, and glass is set, it becomes infinitely more difficult and expensive to make structural changes that would allow security to be designed into the building and site. CPTED is a specialized field of study focusing on:

1. ***Physical environments*** such as a building park office space, apartment, and so on. The physical environment can be manipulated to produce behavioural effects that will reduce the fear and incidence of certain types of criminal acts.
2. ***Behaviour of people*** in relationship to their physical environment. Some locations seem to create, promote, or allow criminal activity, incivilities or unruly behaviour, whereas other environments elicit compliant and law-abiding conduct.
3. ***Redesigning or using existing space more effectively*** to encourage desirable behaviours and discourage crime and related undesirable conduct. It is through the insight and framework of CPTED, which serves to develop and ensure a better-designed and used environment. CPTED practice suggests that crime and loss are by-products of human functions that are not working properly. Crowe suggested that CPTED involves the design of physical space in the context of the needs of the legitimate users of the space, the normal and expected (or intended) use of the space, and the predictable behaviour of both the legitimate users and offenders. In this regard, not only the proper function must match a space that can support it, but also the design must assure that the intended behaviour has the opportunity to function well and support the control of behaviour. In general, Crowe (1991) suggests that there are three basic *classifications* to CPTED measures:

- ***Mechanical measures*****:** Also referred to as target hardening, this approach emphasizes hardware and technology systems such as locks, and security screens, windows, fencing and gating, key control systems, access control systems, closed circuit television (CCTV), and similar physical barriers. Mechanical measures must not be relied solely on to create a secure environment but, rather, be used in context with people and design strategies.
- ***Organizational or human measures*****:** Aocus on teaching individuals and vested groups steps they can take to protect themselves, or the space they occupy, at home or work. Organizational methods of CPTED include block watches, neighbourhood watch, security patrols, police officer patrols, concierge stations, designated or capable guardians, and other strategies using people as the basis of security with the ability to observe, report, and intervene.
- ***Natural measures*****:** Designing space to ensure the overall environment works more effectively for the intended users, while at the same time deterring crime. Natural methods of CPTED use good space planning and architecture to reduce user and use conflicts by planning compatible circulation patterns. An example of natural design is the use of *security zoning*. By dividing space into zones of differing security levels, such as unrestricted, controlled,

and restricted, sensitive areas can be more effectively protected. The focus of access control strategies is to deny access to a crime target and create in offenders, a perception of risk and detection, delay, and response. Within these three CPTED classifications, there are several key concepts that allow CPTED to be implemented according to Crowe: natural access control, natural surveillance, and territoriality.

Displacement

Displacement was cited early on as one of the biggest problems with CPTED; however, long-term analysis of crime patterns shows that CPTED measures eliminate some activity and may displace other activities; however, the totality of displacement is usually significantly less than the original crime conditions. Consequently, it is a myth that CPTED merely moves crime from one place to another, offering no real solution to neighbourhood problems. On the contrary, a Meta study of U.S. Department of Justice crime prevention studies (Guerette and Bowers, 2009) showed that in nearly half the instances of CPTED interventions, crime was reduced without displacement of the crime activity to adjacent areas. This same Meta study showed that when crime was displaced, it was typically less crime in the adjacent area than the original location, so a net benefit is yielded. Further on displacement in the past decade criminal justice research has shown that displacement is not as damaging as previously thought. In fact, five different forms of displacement have been discovered and any one of them can be either positive or negative, depending on how they are used.

The five forms of displacement are:

1. *Place displacement*—a problem is moved from one place to another.
2. *Time displacement*—a problem is moved from one time to another.
3. *Target displacement*—The offender changes the target, while keeping the time and place the same, such as robbing drug dealers versus robbing seniors out for a walk.
4. *Method displacement*—the offender changes the method by which the problem is caused, such as displacing gun robberies to strong-arm robberies.
5. *Offense displacement*—an offense changes from one type (robbery) or another (burglary) [13].

An example of positive displacement would be displacing teens out of a schoolyard where vandalism is occurring, over to a nearby recreation centre where programs are established for them and the kids are supervised. If displacement is controlled, it can be the CPTED practitioner's best tool. The displacement of crime serves as a powerful crime prevention tool because it disrupts the flow and location of the criminal business enterprise. Patrons buying drugs known to go to certain people at certain locations. Signals, cues, and signs are used to advertise that drugs or criminal activity are available. With the continual shifting of drugs and crime, they are never able to root long enough to take over an area. Thus, crime displacement is an effective tool to disrupt the availability of crime activity by moving it to the next house, the next neighbourhood, the next city. The continual movement weakens the sustainability of the criminal behaviour

Applications of Situational CPTED

Applying CPTED requires a knowledge and understanding of basic crime prevention theory and practice. There are a number of operating assumptions for crime prevention officers that are relevant to security personnel and others engaged in loss and crime prevention planning and implementation, which are also relevant to CPTED:

- Potential victims and those responsible for their safety must be assisted to take informed actions to reduce their vulnerability to crime.
- The actions potential victims can take to prevent crime are limited by the control they can exert over their environment.
- Focus must be given to the environment of the potential victim rather than that of the potential criminal.
- Crime prevention is a practical versus a moralistic approach to reducing criminal motivation by reducing the opportunities to commit crime.
- Punishment and rehabilitation capabilities of courts and prisons, police apprehension, and so on can increase the risk perceived by criminals and have a significant, but secondary, role in criminal opportunity reduction.
- Law enforcement agencies have a primary role in the reduction of crime by providing crime prevention education, guidance, and information to the public, institutions, and other community organizations.
- Crime prevention can be both a cause and effect of efforts to revitalize urban and rural communities.
- Crime prevention knowledge is continually developing and is interdisciplinary in nature; thus, there must be a continual analysis of successful practices and emerging technologies and the sharing of this information among practitioners

Conclusion

While CPTED may lack some consistency in process and application, research suggests that the principles upon which it is based can work both alone and combined with other interventions, to reduce crime and the fear of crime and to maximize social, environmental, and economic sustainability. In moving forward, CPTED must evolve, but in the words of Ekblom (2009), it must lose its historical baggage first. While there is always room for further research, the CPTED community can begin to confidently challenge some of the debates which have dominated this field and which extensive, independent, and methodologically rigorous research has clarified. Attention should now be focused upon building upon examples of good practice both in terms of by whom and how CPTED is delivered on the ground. Implementation should be adapted to context and designed to suit the social and economic challenges of different communities. Future thinking should focus upon new models of delivery which can be implemented with limited public funding and within political environments which favor restricted legislation, regulation, and governmental interference. CPTED must also adapt to changing concerns regarding crime. The traditional focus upon acquisitive crime must widen to address public concern regarding low-level crimes and antisocial behavior and also governmental priorities such as terrorism and violent extremism. But these challenges can be seen as opportunities. Where there are problems, there is

[13] Robert Barr and Ken Pease, "Crime Placement, Displacement, and Deflection," in Crime and Justice, A Review of Research, vol. 12, eds. Michael Tonry and Norval Morris (Chicago: University of Chicago Press, 1990), pp. 277–319.

scope to develop solutions, and CPTED is a practical, cost-effective crime reduction measure which, research has shown, can adapt too many different problems and contexts.

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