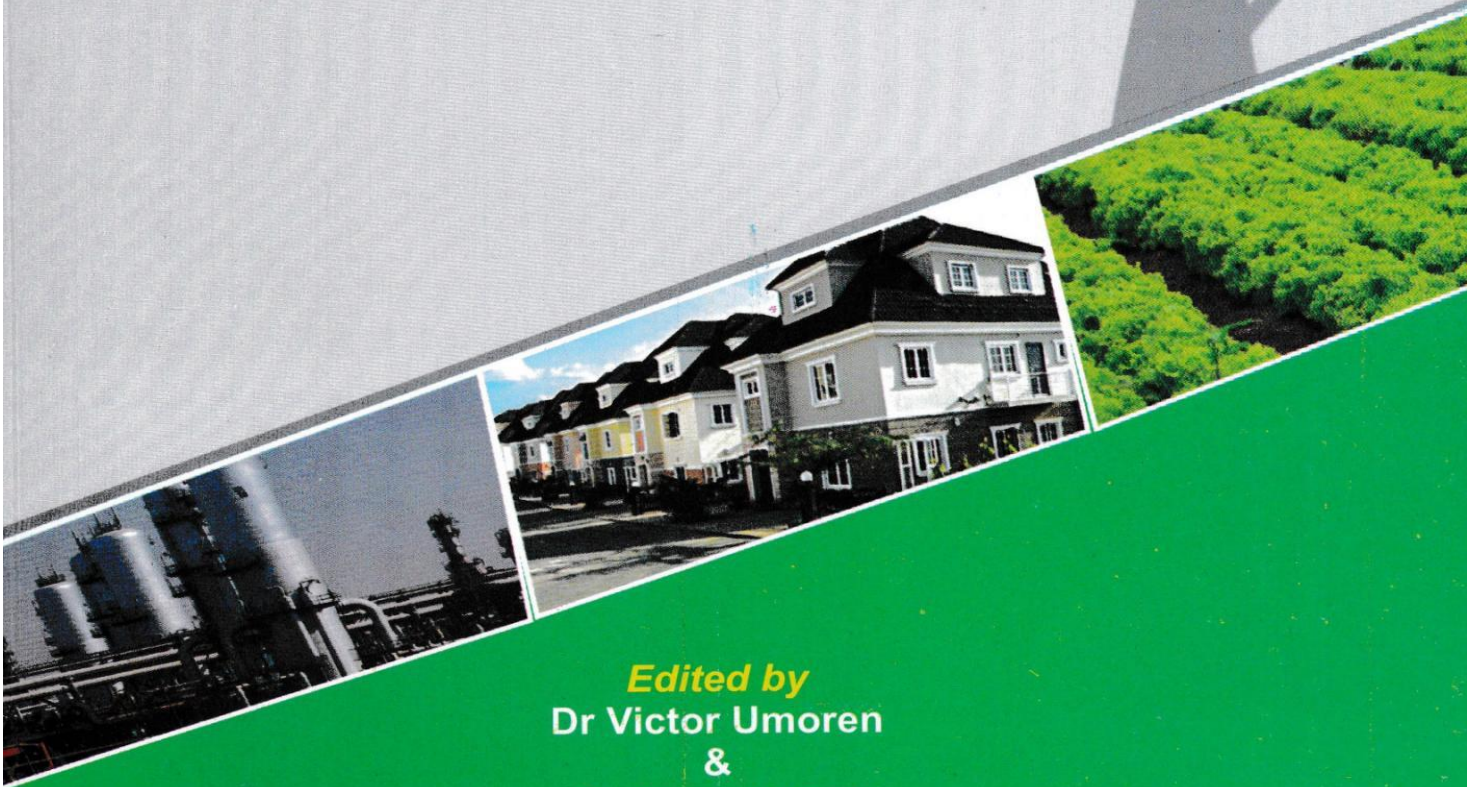




LAND USE MANAGEMENT & ENVIRONMENTAL SUSTAINABILITY IN NIGERIA



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A BOOK OF READINGS
*In Memory of Late Professor Joseph Uyanga
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CHAPTER THIRTY FIVE

AN OVERVIEW OF CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

Samuel O. Ebong and Jenny Ntamark

Introduction

Every country experiences in one form or another crime, violence and victimisation. Developing countries according to Natarajan (2016) record the greatest number of serious crime problems and only slight attention is paid to crime problems in developing countries by criminologists and other professionals compared to the colleagues in developed countries. Crime, a major social issue, affects thousands of lives each year (Ekong and Ebong, 2008). Crime is illegal activity or action that is punishable by law (Longman Dictionary of Contemporary English, 2005). It is defined as illegal actions by Oxford English Dictionary (2007). Crime in the context of this paper means illegal activities and actions that involve stealing from others using any physical means (illegal entry, violence and threats), damage and destruction of property and assault. How crimes play themselves out depends on the prevailing political, economic and social conditions and the configuration of the environment.

Burdett and Sudjic (2011) maintain that urban areas attract more and more people because of their financial power, economic opportunities, wealth, places of interest and job opportunities that offer a better standard of living, and/or the life style that offers promise. Karimi and Azizi, (2015) argue that the urban space assumes an important role in providing people identity and a sense of comfort. Consequently, the urban society, because of its promising nature, attracts to it people of diverse backgrounds in search of potential and actual opportunities available among various institutions, organisations and groups. This has also produced opportunities for criminal behaviours by providing the anonymous setting for crime (Agbola, 1997). If there is an absence of options crime becomes a means of survival especially in large cities.

Sociologists, penologists, and criminologists focus on the offenders, their characteristics and causative factors of crime and societal response to crime (sentence to a prison term), while ignoring or paying little attention to the physical environment where the crimes occur. Researchers such as Jeffery (1971) and Brantingham and Brantingham (1981) advocate wider criminological studies that examine broader knowledge about crime and criminals. This has led to interests in studying the physical relationship of the environment and crime and to an increased interest on crime prevention approach that emphasises the use of design and planning with less emphasis on the characteristics of the offender. Since

crime issues are dynamic, the aim of this chapter is to review the level of continuing actions, both in research and practice, aimed at responding to changing urban environment and security dynamics, concerns and realities.

The Concept of Crime Prevention through Environmental Design

Crime prevention through environmental design (CPTED) is considered to be a method of preventing and discouraging criminal activities to reduce fear of crime and increase the sense of community. Its strategies are aimed at influencing a would-be offender's decision before a criminal act (Crowe, 2000; Atlas, 2013). It is focused on manipulating the built environs to deny criminal opportunities by increasing the risk and reducing the ease and reward factors. This is based on the premise that the environment emits some cues that influence the offenders' target selection process. It is also intended to make citizens feel safer by reducing the fear of crime. CPTED is now a universal term that has under it concepts and theories such as Defensible Space, Secured by Design, Safer Cities and Situational Crime Prevention among others.

The physical character of a location signals to offenders whether it is a secure or insecure and a convenient or inconvenient target (Lee and Lee, 2008). According to Atlas (2013), Timothy McVeigh who bombed the Oklahoma City courthouse leaving 168 people dead, claimed that he selected the building because he considered it to be architecturally more vulnerable. The decision to commit or not to commit a crime is influenced more by the perception of the risk of apprehension. The fear of being apprehended acts as a key deterrent factor to help in reducing the number of criminal actions taken by an offender. Based on this premise, CPTED strategies stress the heightening of the risk of detection, location and apprehension. This crime prevention strategy is endorsed by the United Nations (United Nations Human Settlement Programme, 2007) and governments in European nations, United States, Canada, Australia, New Zealand, as well as many Asian countries such as Singapore, United Arab Emirates, Japan, Malaysia; it is practiced in South Africa and in some South American countries like Brazil and Chile (Ekblom *et al.*, 2013; Cozens and Love, 2015). CPTED principles and concepts have been internalized in building and planning codes, regulations and standards in many countries (Atlas, 2013). Several design guides have also been published based on it. It has also shaped policy directions in many countries.

Theoretical Development of Crime Prevention through Environmental Design

This term was originally conceived and articulated by C. Ray Jeffery, in his 1971 book 'Crime Prevention through Environmental Design' while a lecturer at the Florida State University. Architect Oscar Newman, then a lecturer at Washington University at St. Louis, developed the theory of defensible space which was published in his 1972 book 'Defensible Space' (Newman, 1996). These were based on earlier works carried out by Elizabeth Wood, Jane Jacobs and Shlomo Angel (Crowe, 2000). Jeffery's book was generally overlooked and made very little impact throughout the 1970s. Newman's work, though of limited approach was more practical and the principles he expounded were widely adopted. Newman later revised his work to include other approaches. This improved approach enjoyed broader success which led Jeffery to re-examine his work. Other models later

developed were based on the success of Newman model. These include models by Timothy Crowe, Ronald Clarke, and Britain's Association of Chief Police Officers. These later models were expanded to include methodologies such as physical security, target hardening, activity support and procedural security measures (Crowe, 2000). These strategies and principles are complementary to other crime prevention approaches. The theoretical development of CPTED is credited to the work of Elizabeth Wood. Wood developed guidelines for residential security when she was working on housing projects for the Chicago Housing Authority. She emphasised the use of design features that enhanced surveillance of the area by residents (Robinson, 1999). According to Newman (1972) her idea of collectively controlling residential neighbourhoods was hinged on residents' ability to naturally monitor their surroundings. The following works/discussions form the foundation for the theoretical development of CPTED:

Death and Life of Great American Cities (Jacobs, 1961): This has been regarded as the founding text that triggered off the intellectual discourse on the connection between the environment, urban planning and crime. The work argues that the design and construction of cities made it difficult to create the social context required by the public to effectively police itself. This was because the new urban environment as it was then designed did not allow for controls on criminal behaviour which involves the ability of people to watch the streets and their surroundings. The absence of this traditional guardianship promoted crime. Crime flourished when there is little or no meaningful interaction of people with their neighbours leading to difficulty in spotting an intruder with criminal intent out to either survey the environment for potential target or victims or to carry out a criminal act (Paulsen and Robinson, 2004). Furthermore, Jacobs claims that a safe environment can be created with high levels of natural and informal surveillance. Jacobs' work was primarily focused on making urban streets and neighbourhoods safer. The book states that three key qualities were needed for safer city streets: (i) a clear delineation of communal and private space, (ii) diverse use of the street, and (iii) constant use of the pedestrian walkway, which translates to "eyes on the street" (Paulsen and Robinson, 2004). The book's idea of the physical environment and crime risks relationship is based on the social control theory. Jacobs was the editor of *Architectural Forum* magazine from 1952 to 1964. Her work greatly influenced subsequent writers on examining the connection between the environment and crime.

Discouraging Crime through City Planning (Angel, 1968): Angel followed the example of Jacobs to study street crime in the city of Oakland, California. The study stresses that the physical environment has a direct positive or negative influence on crime locations by (i) the way territories are defined, (ii) creating or removing boundaries and movement systems to affect accessibility by criminals, and (iii) aiding surveillance by the people and the law enforcement agents. It opines that proper use of surveillance could solve the problem of incursion of criminals into residential buildings (Agbola, 1997). It also asserts that when activities thin out in the commercial environment it becomes more vulnerable, making it easier for crimes to be committed. This shows an inverse association between crime and level of activities in the street. Angel also published crime prevention through design concepts in 1970 supported by the United States Department of Justice.

Crime Prevention through Environmental Design (Jeffery, 1971): The book emphasised that the physical environment can change behaviour. The central idea of the book is that crime would not occur if the features that reinforce it are removed. The work outlined four important factors in crime prevention that still hold true. These are: (i) the extent to which a crime opportunity can be manipulated, (ii) criminal motivation, (iii) the risk involved in committing the crime and, (iv) the history of previous crime acts of the person intending to commit the crime. Jeffrey's work received little attention in the 1970s. The explanation is that the work, theoretical in nature, identified different crime prevention tasks needed to address design and management issues at a time when practical prescriptive design solutions was needed. Jeffrey subsequently reviewed the book in 1977 to provide a behavioural framework to predict how altering a criminal's exterior and interior environment affects his criminal behaviour.

Defensible Space (Newman, 1972): This crime prevention philosophy has attracted and gained considerable worldwide attention. In the book Newman placed emphasis on specific architectural and urban design features and includes extensive discussion on the relationship of crime to residential housing. The publication of the theory of defensible space greatly influenced the discourse on crime prevention and design. In United States of America large federal funding was made available for further research, demonstration and training of people in defensible space concepts (Newman, 1996; Paulsen and Robinson, 2004). Newman's defensible space emphasises that the design should encourage natural surveillance. This will expectedly reduce the worry over crime as a criminal can easily be detected, recognised and arrested or deterred from committing the crime. It also encourages territorial ownership and control by creating a hierarchy of spaces – private, semi-private and public spaces. Newman also suggests that functional location of spaces can aid in mitigating residential crime. He emphasises access control. In 1973 Newman revised the defensible space approach to include other environment approaches supported by Jeffrey's CPTED.

Situational Crime Prevention (Clarke, 1980): Situational Crime Prevention (SCP) analyses specific contexts of crime events and introduces relevant changes to minimise opportunities for occurrence of crime events. It lays emphasis on the crime location in order to create a less attractive and more risky setting for crime (Clarke, 1980). Cromwell *et al.* (2008) gave the following twenty five techniques of SCP under the following: Increase effort, increase risk, reduce reward, reduce provocation and remove excuses. Table 1 shows the different methods that could be adopted in each of the techniques.

Table 1: Techniques of Situational Crime Prevention

Increased Effort	Increased Risk	Reduce Rewards	Reduce Provocation	Remove Excuses
Target hardening Control access	Extend guardianship Assist natural surveillance	Conceal targets Remove targets	Reduce frustration and stress Avoid disputes	Set rules Post instructions
Screen Exits Deflect offenders Control tools	Reduce anonymity Utilize place managers Strengthen formal surveillance	Identify property Disrupt markets Deny benefits	Reduce emotional arousal Neutralize peer pressure Discourage limitation	Alert conscience Assist compliance Control drugs/alcohol

Source: Cromwell et al, 2008

Environmental Criminology (Brantingham and Brantingham, 1981): In the book the authors identify four essential elements that must be present before a crime can take place. These are; a law to make the crime illegal, a criminal, a target and a location. These are referred to as the “four dimensions of crime.”

Broken Windows (Wilson and Kelling, 1982): This model explores impact of visible deterioration and neglect of buildings and neighbourhood on behaviour. Criminals are attracted to neglected areas. Abandoned properties have been known to become criminal hide-outs. From this theory property maintenance and pride of ownership have been added as CPTED strategies.

Opportunity Theoretical Bases of Crime Prevention through Environmental Design

Crime prevention through Environmental Design originates in architecture and planning and draws on many crime-related theories to strengthen and elaborate its concepts and practices (Ekblom, 2013). An understanding of the factors responsible for criminal tendencies alone does not clarify how crimes occur. To explain crime it is imperative to understand the relationship between criminal tendencies and opportunity. Criminal disposition must interact with opportunity for a crime to occur. The aim of CPTED is, therefore, to reduce these criminal opportunities. Opportunity-based theories are also known as situation-based theories or theories of the crime event. While the theories of crime and criminality deal with the individual’s tendency to commit a crime, the opportunity-based theories are concerned with the actual crime event and the environment and circumstances within which the crime occurs. The criminal is an element, together with the victims, bystanders, environmental factors, in the crime chain. The Home Office (2016) notes that conclusive evidence indicates that the availability of opportunities to commit crime increases the incidences of crime. This justifies the assertion that crime prevention is effective when opportunity to commit crime is removed. All the opportunity-based theories maintain that environmental characteristics impact in various degrees on the occurrence of a crime because of the opportunities created for a motivated criminal. In other words, it is the environmental features that provide the needed opportunities such as, easy access, attraction, poor asset protection and others, for crime to occur. These theories stress the interaction between the criminal and the place (environment and location) that the crime is committed. The following theories have been identified to form the current theoretical base of CPTED.

Crime Pattern Theory: This theory examines the configurations of activity of a place in terms of ‘paths’ (roads and other linkages), ‘nodes’ (activity areas) and ‘edges’ (outlying areas) to determine places that are crime generators or crime attractors (Brantingham and Brantingham, 1984, 2008; Andresen, 2014). A lot of crimes are known to take place because a lot of people pass through a place or are drawn to it because they consider the place to be of low risk, less difficult to operate and more rewarding to criminal activities (Ekblom, 2013). From the perspective of crime pattern theory, a criminal may find it difficult to commit a crime if a physical barrier prevents him from familiarising himself with the area beyond the barrier (Clare *et al.*, 2009). Therefore, physical barriers could make an area beyond the barrier an uninviting target.

Routine Activity Theory: This explains how routine activity in a place can lead to more or less crime. Changes in an environment can affect the number of targets or capable protectors against crime can affect crime positively or negatively. This theory is supported by a study of the burglary rate in the United States in the 1970s (Cohen and Felson, 1979). The rise in crime rate correlated with increase in the number of suitable targets (light and easy-to-carry VCRs and TVs) and the reduction in the number of capable guardians (the women who had to work and therefore were no longer at home during the day). The routine activity theory's concept of guardianship has been an important theme of environmental and urban design theorists and practitioners because it provides the necessary natural surveillance required to expose crime.

Rational Choice Theory: This explains the criminal act from the perspective of the criminal who seeks to commit a crime by asking questions about the reward, the method to be used, the ease, the risks involved and alternative crime if prevented from committing the crime. It is more concerned with the thinking process of the criminal and how he evaluates the opportunities available for the crime. This theory helps in considering the different methods of reducing criminal opportunities. The situational crime prevention methodology draws from this theory with four major objectives for preventing crime. These are, increase the difficulty of committing crime; make it riskier to commit crime; make smaller the anticipated proceeds; and eliminate justifications for crime (Cornish and Clarke, 1986). Studies reveal that criminals who engage in violent crimes often make decisions before they act, even under the influence of drugs and alcohol (Clarke, 2008; Felson, 1996). This theory fails to take into consideration the fact that human beings are not always rational nor do they always make rational choices, especially under the influence of substances. There are several issues competing with reason such as severe hunger and peer and economic pressures which should be controlled for. However, since architecture can influence behaviour (Lockton, 2011; Ebong, 2017) it is reasonable to specify and integrate crime prevention measures into architectural designs and buildings with the expectation that majority of the people with criminal intentions will be influenced to abandon their crime targets. In cases where these place and opportunity-based strategies do not stop crime, it may provide delay and monitoring measures that allow for response and apprehension. These opportunity theories have made substantial contributions to the understanding of the application of crime prevention measures in design and construction and their implications on the act of crime and fear of it.

Crime Prevention through Environmental Design Concepts

Traditional CPTED Concepts: Crime prevention through environmental design schemes are grounded exclusively on the principle that suitable and informed design and construction can contribute to improved lifestyle by reducing crime and the fear of it (Crowe and Fennelly, 2013). This principle relies on the use of design to influence decisions against criminal acts. The main strategies of CPTED drawn from literature include territoriality, natural surveillance, access control, target hardening, image/maintenance, activity support, and organisational strategies. These are elaborated below.

- i. *Access control* strategies are intended to increase the effort and deny criminal access to targets by generating an awareness of risks to the intruder.
- ii. *Natural surveillance* strategies are aimed at making intruders easily observable and maximising visibility of people, building entrances, parking areas, and street zone. Crimes are rarely committed in places in which a criminal knows that he can easily be recognised or observed.
- iii. *Territorial reinforcement* strategies are intended to create and/or extend areas or spheres of influence that help users to cultivate a sense of ownership and territorial control. Criminals can become aware of this as strangers are easily noticed. This becomes a criminal deterrence because offenders are discouraged from carrying out criminal activities. Defined property lines and clearly distinguished hierarchy of spaces promote this strategy.
- iv. *Activity support* strategy uses architectural design to clearly define activity areas and designate the purpose of defined spaces and structure. Surveillance and lighting are also used to encourage legitimate activities. These measures can help to discourage illegitimate and problem activities.
- v. *Target hardening* concept and methods emphasise the use of architectural hardware such as locks, burglary proof fixed in openings, reinforced doors and windows; design features such as gates, fencing, reinforced walls, roof and ceilings, technological systems such as CCTV, alarm, key control systems and other security technologies.
- vi. *Image and maintenance*: A well designed, attractive and well maintained building and environment give people a sense of pride in their surroundings leading to a feeling of safety and comfort and a sense of mutual rights and obligation (Association of Chief Police Officers, 2004). A poorly maintained property presents an image of neglect which can attract trespassers and those with criminal intent. The key to maintenance is property management.
- vii. *Organisational* strategies rely on people (individuals and assigned groups) to provide the necessary access control and surveillance functions. Organisational procedures use people inside (receptionists, security guards and others) and outside (police, neighbourhood security) who can observe, report and/or intervene in illegal activities around or within a premises. For example, the provision of CCTV in a property is of no use if there is no one to monitor it and report undesirable and illegitimate activities.

Second Generation CPTED: CPTED concepts have evolved since the 1970s and have been refined by researchers, practitioners and policy makers to position it to be more practical and effective. The recognition of the importance of socio-economic and demographic dynamics and conditions led to the addition of the social dimension in the 1990s that addresses social characteristics of the community, social cohesion and communal effectiveness (Saville and Cleveland, 1998). This was in response to criticisms of the

neglect of important social factors. This extended the boundary of CPTED to include social programmes, community participation and community policing (self-policing). Reynald (2011) argue that to properly position it, the idea of 2nd Generation CPTED need to be properly clarified. The strategies need to be properly defined and articulated as was the case with the original CPTED. Its effectiveness is yet to be empirically well-tested with evidential results (Cozens and Love, 2015). The four concepts of the 2nd generation CPTED are:

- i. *Social Cohesion*: This involves recognition and appreciation of community diversity to share a common vision and sense of belonging. It involves putting up relevant social structures to nurture an environment that helps to develop positive relationships between people of different backgrounds. This is the core of 2nd generation CPTED.
- ii. *Community Connectivity*: This concept emphasises forming partnerships for co-ordinated programmes and activities for community integration to produce a strong sense of place. This is critical in community policing.
- iii. *Community Culture*: The emphasis of this concept is to encourage residents with shared values to create a strong sense of community that produces a positive outlook, and crime prevention and security culture within a community.
- iv. *Threshold Capacity*: This is a concept that recognises and manages the local community ecosystem by promoting human-scale and pedestrian-oriented land uses and activities (Cozens and Love, 2015). The aim is to ensure that the community's threshold capacity is not exceeded. The threshold capacity is exceeded when the size, nature and density of development support anonymity. Where there is inconspicuousness of community members self-policing becomes difficult. When this happens the functionality of the community is affected and the result will be increased criminal activities and fear of crime.

Third Generation CPTED: The Third generation CPTED is at the early stages of development. It seeks to expand the Traditional and Second Generation CPTED by creating a new theory that integrates human motivation and aspirations within neighbourhood liveability hierarchy (Mihinjac and Saville, 2019). It leans heavily on cognitive, behavioural and environmental sciences models to undergird it. These models address residents' perception of the environment, satisfaction from the environment and response to crime and safety. The central issue is the concept of liveability. Gough (2015) describes community liveability as the sum of the physical and social characteristics experienced in a place that makes up a community's quality of life. Liveability is not just providing basic infrastructure but also providing opportunities for personal development to achieve individual aspirations and improve the quality of life. This concept also addresses issues of public health and sustainability. Cozens (2016) argues that there is need for a wider consideration of CPTED within planning to incorporate it with public health and sustainability and merge crime risk and crime impact assessments with other environmental evaluations.

Effectiveness of Crime Prevention through Environmental Design

CPTED strategies have been known to record successes in many projects involving its use. Studies show that CPTED initiatives in the United States are noted to have reduced robberies between 30% and 84% and have been found very effective in cutting the cost of preventing crime (Casteel and Peek-Asa, 2000). Rogerson and Armitage (2014) indicate that successful CPTED approaches can be identified at neighbourhood levels, the individual residential buildings and with retrofitting prevention mechanisms to existing houses. CPTED measures have been known to lessen the fear of crime and increase the feeling of security (Agbola, 1997; Ekong and Ebong, 2008; Sakip *et al.*, 2012). The application of CPTED methods and techniques has also been linked with sustainability, and public health and well-being programmes (Armitage and Gamman, 2009; Cozens, 2016; Lee *et al.*, 2016; Mihinjac and Saville, 2019), and positive outcomes in improving property value, business and industrial profitability (Crowe and Fennelly, 2013). Evidence from studies have also shown that using physical security for crime prevention could be effectively achieved through site design and layout, building design and specification and environmental components (Brandon and Farrington, 2007; Cozens *et al.*, 2005; Harris, 2013). CPTED is also effective in addressing anti-terrorism issues. Figure 1 shows anti-terrorism CPTED practice at Federal Ministry of Foreign Affairs, Abuja.



Figure 1: Fixed bollards and Engineered Blocks used as vehicle barrier and also to channel traffic.

Armitage (2014) submits that CPTED principles and measures work as stand-alone or in combination with other concepts to minimise crime, fear of it and to contribute to overall societal sustainability. Figure 2 shows an access control mechanism.

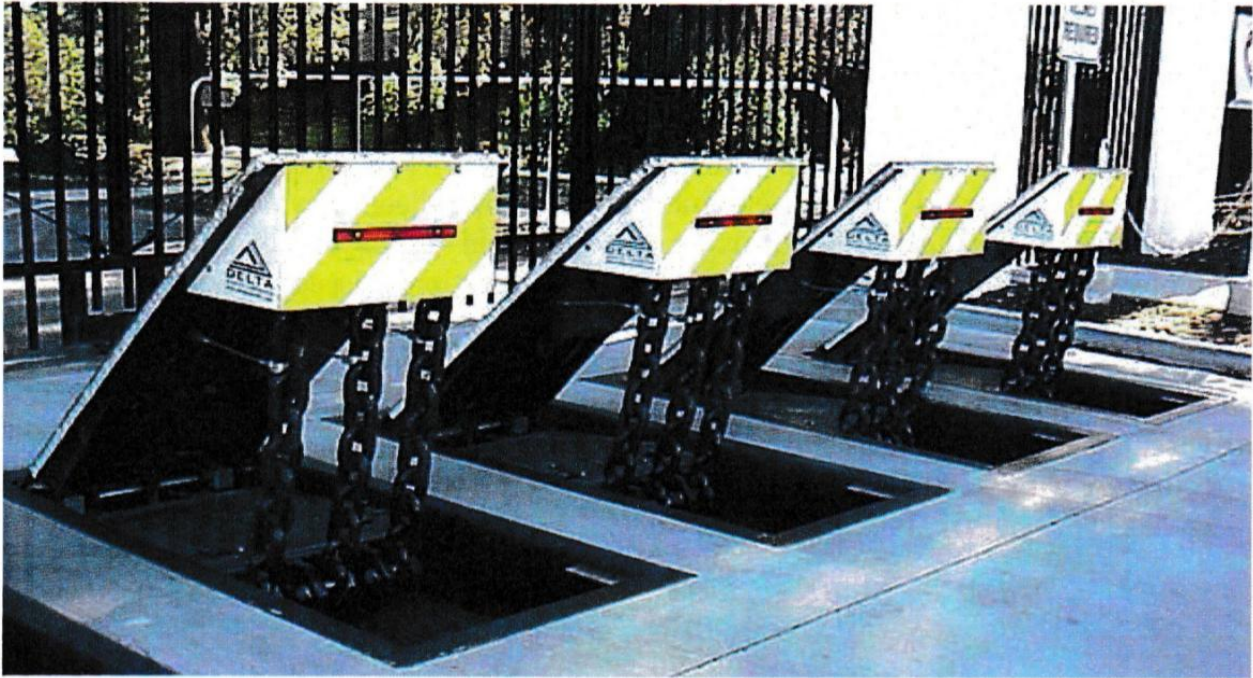


Figure 2: Rising wedge high security barricade for perimeter access control positioned in front of the gate as a vehicle arrest system. Source: Delta Scientific Corporation

A number of studies carried out in a variety of settings indicate that there is ample evidence that improved street and external lighting are effective in reducing property crime significantly (Welsh and Farrington, 2006 and 2009). Other evidence suggests that it is not very effective on violent crimes (Levy *et al.*, 2014). Security lighting permits security guards to visually monitor an area at night (US Department of the Army, 2001).

Criticisms of Crime Prevention through Environmental Design

O'Grady (2011) argues that CPTED practitioners only see crime prevention as a one-dimensional solution and that the guiding principle and assumption of CPTED are simplistic, thereby questioning their validity and effectiveness. Another criticism is that CPTED does not conclusively prevent crime; instead, its strategies act as deterrence. Some commentators suggest that there is limited proof that the installation of gates, CCTV and defensible space strategies make communities safer, cohesive and more trusting (Minton and Aked, 2013). As a result of their field study on a Peabody Trust Estate in Southwest London, they conclude that the use of CCTV has undermined people's responsibility for each other's safety which could increase fear of non-residents. It is the opinion of the author that not all CPTED strategies are going to stop criminals from criminal behaviour especially if they are determined and under the influence of any substance. It should also be noted that CPTED is still evolving. There is, therefore, the need to apply a multi-disciplinary approach to its practice. However, whatever are the criticisms of CPTED, it remains the only major civil input to solving the problem of crime and the associated fear.

Conclusion

Crime prevention through environmental design has been recognised as a very important civil approach to solving the problem of crime. Its effectiveness is hinged on the premise that the crime act takes place within a setting that provides an opportunity for it. This calls for a holistic integration of physical security measures into the design of site and building functions as a single process. This could be achieved by providing a set of tools that encourages designers of the built environment to plan, collect relevant information and collaborate with relevant professionals for an appropriate design solution. However, it has been observed that planners and designers pay little attention to issues of crime and crime prevention in their designs (Home Office, 2016). Crime prevention through environmental design has a central part to play in making urban environments secure and safe by addressing concerns and worries associated with insecurity. Similarly, the right designs and crime prevention policies and programmes for the built environment are necessary for effective crime prevention solutions.

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