APPROPRIATE UTILIZATION OF CPTED PRINCIPLES IN CITIES OF IRAN (CASE STUDY: SELECTED STREETS OF SHAHREKORD)

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ABSTRACT

The use of CPTED principles in cities of Iran can lead to improved life quality and increased sense of security. From 1960s, different scholars have used these principles. These principles were taken into consideration when the levels of crime and number of societies were increasing. These solutions give the opportunity to city managers to control crimes with less cost, so that it minimizes direct intervention of security forces as well as complaints from residents. Shahrekord as a city surrounded by mountains can be a suitable sample to investigate these principles in different parts of the city. The main structure of this study consisted of descriptive and analytical method and determined options in previous studies. Comparing these streets and their qualities of interest shows that none of these areas has high quality in terms of CPTED principles and utilization of these principles in city management can improve the conditions. The results showed that some of streets had higher qualities, but these cases are not true for all parts and defined provisions.

1. INTRODUCTION

With the formation of human communities and cities, crime increased and by the expansion of these communities, crime increases and it is necessary to deal with it with appropriate planning toward crime prevention. Scholars of sociology with different perspectives studied crime and solutions to prevent it but the issue that should not be ignored is the effective role of human communities that is known as city management. Most of governmental organizations as the components of city management have determined obligations under general and specific regulations that any violation is considered as crime and is followed by punishment. Due to the regulations, these organizations have obligations that any violation leads to crimes. Municipality, Management of Agriculture, Department of Natural Resources, Department of Culture, Department of Physical Education, and other organizations have direct relationship with people and lack of appropriate planning in this regard has led to high levels of crime for these organizations. Design of buildings, attention to urban furniture and public parks, recreational areas in forests out of cities, determination of village boundaries, planning to prevent violations regarding farms and gardens, specifying national lands territory with warning signs, expanding sport spaces and managing sport facilities in non-profit mode, and holding national and religious ceremonies beyond leisure goals are among the measures that city management is responsible for that and its correct implementation can be effective in decreasing crime.

Urbanism and architecture have a direct relationship with crime. Therefore, some of countries in the field of crime architecture act practically and in designing buildings and cities, consider this issue that attention in this regard can prevent crime to a large extent. For example, if we look at court cases regarding south and neighborhood of Tehran, it is obvious that a significant amount of crimes caused by residents' conflicts is due to lack of parking for vehicles as well as lack of suitable alleys and streets consistent with standards. This issue has led to conflicts and finally crime and disturbing the social order.

Constructions of residential buildings at industrial and commercial places and increased industrial and manufacturing sites in residential areas have increased crime. On the other hand, constructions based on current methods without considering international standards such as distance between units have led to conflicts in residential complexes that should be prevented by surveillance regulations and considering punishments. In the field of urban development, the appearance of sidewalks and landscaping has a considerable effect on decreasing crime. Dark streets, abandoned places around the big bridges, and subways are suitable places to increase and intensify crimes such as murder, rape, extortion, gathering of addicts, and similar cases. By investigating the levels of crime in main streets of Tehran, it becomes clear that due to cultural and economic facilities and social surveillance and control in these areas, the level of crime is lower than neighborhood an area that is criminal ecology. Different parts of a country have specific characteristics regarding the occurrence of crimes. Also, changes in geographical areas can be effective in increasing or decreasing crime. In this regard and to deal with crimes, the characteristics of each area as well as the reasons for crime should be investigated. Considering this fact that city and building cannot be considered as

the factors for crime, there are circumstances in some areas that create crime and this issue should be taken into consideration.

2. REVIEW OF LITERATURE

Crime Prevention through Environmental Design (CPTED) is the most popular approach in decreasing crime level. This approach was started using user mixing in the town and the eyes on street in 1961 that were pointed out in the book "Life and Death of big Cities of the United States" by Jacobs.

Jacobs believed that new image of cities has disturbed most of natural controls over criminal behaviors. According to the theory of eyes on the streets, for surveillance of streets, the eyes of residents are required. According to him, successful street includes three main qualities: clear demarcation between public and private spaces, eyes on the streets, and continuous use of sidewalks (Jacobs, 2007). CPTED for the first time was used by Jeffri in 1971 who was a criminologist from Florida State University. His work was based on the provisions of experimental psychology and this idea that by eliminating crime amplifiers, crime will not happen. At the same time, practical studies by Newman were conducted in late 1970s. In his book "defensible space: people and design in cities with high potential for crime", he based his theories on accurate statistics about the reported level of crime in residential areas with a different physical forms according to row houses until 36 floors blocks in New York. "Defensible space" by Newman is based on four main components: bordering, supervision, improved quality, and applied residential neighborhood with other facilities needed by people (Choay, 1996). Defensible space theory is consisted of two main components: first, space should give the opportunity to residents to see things and by ensuring observation, identification, and arresting criminal, fear of crime decreases. Second, due to the sense of ownership and interest in living environment, when a crime happens, the residents should report to police and show interest in this regard. When people feel secure in their area of residence, the possibility to create social relationships and intervention at the time of crime increases. Wilson and King (1982) proposed their theory "broken windows" about the effect of irregularity and residents' negligence toward buildings on criminal behavior. Their emphasis was on the role of preserving the environment as a physical index of social cohesion and non-official control of residents ,Denis et.al (2000).

In 1996, Housing and Urban Development of Washington asked Newman to write a thesis to modify his previous work with the title of "creation of defensible space"(Bauer and Raufer, 2003). He investigated the effect of housing types on residents' capabilities to control the environment. He did this by dividing different types of housing into single-unit houses, 2 or 3-floor houses, and apartments. Comparing these types, he concluded that with higher number of users in a space, it will be difficult for residents to consider that place as a territory or to consider a control over specific activities (Karamati, 2005).Therefore, residents will not find any option except walking and strangers will easily achieve it. Therefore, single-unit blocks create the smallest non-defensible space that is followed by 2 or 3-floor houses. Apartments create the biggest non-defensible space especially when they belong to low-income people (Newman, 2008). In the same year, the first international organization was formed to professionalize CPTED experience and development of this theory with the international association name of ICA CPTED with the supervision of Gregory Savin with activities at global level such as Florida, Britain, and Latin America "(Bauer and Raufer, 2003).

CPTED approach mainly concentrated on physical modifications of the environment and did not consider mental and social aspects of the environment. Therefore, in 1997, a group of scholars after investigating CPTED approach took mental and social aspects of the environment into consideration. These people introduced their approach as the second

generation of CPTED and called the previous approach as the first generation of CPTED. According to Savil and Klond, from the perspective of Newman, only physical design of a place is important. According to Newman, local people can control the environment that belongs to them and be responsible for that. Indeed, the main idea is that physical structure can influence the relationships between people, local culture, and social ecology. Collecting people with a mutual goal to create sense of place for them and informing criminals regarding punishment for crimes can decrease crime opportunities. Newman calls this concept as defensible space and second generation of CPTED (Cloveland & Saville, 2nd generation CPTED: an Introduction to 2n generation CPTED –part 1, 2003).

Savin, the former head of international society of CPTED, aimed to test security development model that was based on programs such as CPTED, secure city, and prevention of temporary crime ”(Bauer and Raufer, 2003).According to this model, residents are responsible to create security in the area and this can be achieved by the help of experts. These cases can be observed as Table (1) that is a reflection of different opinions by scholars in this context , (Mosavi, 1999).

Table 1 Theories proposed by scholars

Decade	Theorist	Recommendations
1960	Jacobs	Eyes on the street Bordering between public and private spaces Continues use of sidewalks Mixing the uses
1970	Jeffri	Publication of CPTED Decreasing crime through elimination of amplifiers
	Newman	Creating a sense of ownership for residents Natural surveillance Improving the appearance of buildings Proximity of housing with other facilities required by people Writing a new book to modify the previous work Minimum non-defensible space in single-unit blocks Having the maximum non-defensible space in apartments Easy control over public spaces for residents in apartments with fewer units
	Wilson & Kling	Protecting the area in terms of the existence of components such as broken windows, pollution, and similar aspects
	Savil and Keond	Creating second generation of CPTED and asking to consider social and psychological issues consistent with attention to physical environment to prevent crime in residential areas
2000	Savil	Introducing security development model that makes the residents responsible to create security with the help of experts

Six principles can be used in specific environmental situations that are effective in preventing crimes. These principles are as follow:

2.1. Territory

Territory is a concept that specifies the distinction between private space and semi-private space and creates sense of ownership. Therefore, the owner creates an environment where the presence of strangers is clear and is easily defined by the following methods:

 a. Enhancing the sense of ownership based on improving existing natural surveillance in access control strategies by symbolic or social factors.

b. Designing space to allow continuous use as well as goals of interest.

c. Use of sidewalks, landscaping, visual arts (painting, sculpture), signs, and terraces determine space ownership (Salehi, A).Territory has a significant role in ownership space; for example, in apartments we have peripatetic ownership debate and in agricultural lands, the boundaries between two properties can be pointed out.

2.2. Natural Surveillance

Natural surveillance is a design concept that takes intruders into consideration. Natural surveillance creates an environment that brings numerous opportunities for normal behavior of people Funk et.al (2009). Spaces can be designed in a way that will be observable by the following methods:

1. Designing physical characteristics by maximizing view.

2. This can include orientation of windows, entrance and exit, parking, sidewalks, security gates, trees and vegetation, use of terraces, signs, and other physical barriers, (Petrella, 2004).

3. People or activities to maximize surveillance.

4. Minimum repair and maintenance standards for lightening during night for parking, sidewalks, entrance and exit, and other areas to create a secure environment, (Fallahi, 2005).

2.2. Access control

Access control is a concept in design that is basically done to decrease access to crimes and means natural access control and increased natural surveillance to limit crimes, especially in areas that cannot be observed (Farzam ,2007).Therefore, intruders are identified more easily according to the following cases:

a. Using sidewalks, sidewalk, gates, lightening, and landscaping to inform people about entrances and exits.

b. Using gates, terraces, landscaping, and lightening to prevent people's access to dark areas or areas without surveillance.

Natural territory is enhanced using buildings, terraces, sidewalks, signs, lightening, and landscaping to specify owner and define private and semi-private spaces.(Hamidi,1992).

2.3. Supporting activities

Supporting activities means people are involved in an activity and this is a part if natural surveillance system. Examples are as follow:

a. Placing dangerous activities in areas that will not allow any disturbance and increase natural surveillance over these activities and sense of security for normal users and feeling of danger for intruders.

b. Placing dangerous activities at more secure areas to dominate vulnerability of these activities using natural surveillance and control access.

c. Placing social spaces in locations that enjoy from natural surveillance or access control.

d. Modification of spatial planning for effective utilization and create suitable density for acceptable behaviors.

2.3. Repair and maintenance

Repair and maintenance of landscapes, lightening, and other cases can enhance territory and facilitate natural surveillance and natural access control. These cases are as follow:

a. Appropriate repair and maintenance of lightening facilities according to the standards.

b. Identification of these fundamental concepts can help owners, architectures, planners, and designers in environmental design.

A multi-floor building with a lobby, elevator, and information center has been designed and are supposed to be a self-service. After a while, crimes occur in lobby such as sabotage. The owner of the building has installed a camera to observe the situation (Frank and Marli, 2007). Finally, some people were employed to observe the cameras. People in this place feel insecure and all the time are seen by the cameras and for this reason, a full-time security guard should be employed because they do not feel good, (Salehi, 2008).

Physical security: about most of building projects this fact exists that those who design the project cannot understand crime and the way it occurs. The unpleasant result of this condition can be easily observed in theft level in commercial areas (installing metal detectors).

Smart physical security planning can significantly affect the successes of projects. Proper use of safety software and removing security weaknesses from structural point of view can have important effects on future crime issues.

2.3. Lightening

Suitable lightening is one of the most effective barriers of crime. When lightening is effectively used, it creates fear for criminal activities and expands natural surveillance facilities and leads to decreased fear of darkness.

The lightening quality is different in various conditions, but the goals in all cases are uniform: lightening should be sufficient during night (Razavian, 2002).Net level of light that provides minimum vision has less importance compared to light homogeneity. Vulnerable areas and those that can hide strangers show receive more light compared to other areas that are designed for normal activities (Abdi, 2011).The project should clarify crimes without any victims. Lightening has a role in creating territory for people. A bright and cheerful environment is more favorable compared to dark and dead environments, (Taherkhani, 2002).

Some of scholars have considered the role of urban lands in urbanism and influencing crime prevention and increasing security level. In this regard, JaneJacobs, the writer of death and life of great American cities can be pointed out who proposed new solutions by critiquing contemporary urban planning. He considers streets and sidewalks as the main public areas of the city and believes that streets and sidewalks are responsible to provide security for the city. According to him, to attract passerby and create inherent safety factor, urban streets should have three fundamental factors:

a. Correct distinction between public space and private space.

b. Some eyes are required for surveillance.

c. Sidewalks should be used without any stop.

This is the only possibility to increase eyes on the streets and attract those who are in the buildings. Then, he points to the number of stores and public places along the sidewalks and streets and states that some of these places should be open during night. Attempts to create security through inner courtyards and covered lands not only is not useless, but is helpful and in this regard, stores and restaurants will have real responsibilities in providing security of sidewalks, (Keynia, 2003)).The results of previous studies in Philadelphia shows that crimes have tendency toward specific uses of lands. For example, assaults were almost seen around

high schools and shopping centers. Environmental criminologists interpret the field of crime in these places as the result of opportunities and activities that attract a large number of criminals, (McCord and Ratcliffe, 2009).

In another study about the land use, street network, and crime patterns in the United States, in was specified that crimes do not happen by accident. Certain places in environment indicate characteristics that attract criminals. In a place, it is likely that various types of land uses exist that facilitate crimes. These uses attract people who can contribute in creating crimes in the city

Moreover, recent studies show that street networks are important factors in creating crimes. The results point out that both street network and land use contribute in issues related to crimes (Giordano, 2008). The results of another study in the United States showed that land use predicts difference in individual crimes and level of violence. Some of non-residential uses are related to both high levels and low levels of crimes (Stucky and Ottensmann, 2009). The results of a study conducted in Tehran showed that with the existence of more active operations in formation and distribution of land use, it is expected that with increased social surveillance, higher levels of security will be provided, (Salehi, 2009).

The results of conducted studies approve the relationship between land use and crimes and insecurity in some of countries. From theoretical point of view, the common point of solutions by planners and urban designers regarding crime prevention is that changes in physical environment structure and influencing the way people use environment can decrease crimes. Therefore, using design and planning mechanisms, it is possible to prevent or at least decrease crime is societies (Abdollahi, 2003).

3. METHODOLOGY

This study is a descriptive and analytical research with survey approach. First, library sources and opinions of experts and researchers were investigated. Then, necessities and regulations regarding each part were studied. Finally, comparing the results, findings were concluded.

4. RESEARCH FINDINGS

At the end of the last century, Shahrekord was selected as a center of political and administrative affairs and rapidly developed to an urban area. Indeed, the development of Shahrekord and its rapid growth was dependent on political aspects and selecting it as a center of political and administrative center of the area. Although these factors still are important, the importance of geographical location and economic role of the city are dominant by now. Especially Khozestan Road and Airport have freed the city from geographical deadlock and improved its status.

Some of crime reasons and opportunities such as uniform uses, density, irregularities, inappropriate distribution of services, and non-organized perspective in providing solutions are rooted in inaccuracy and failure of urban planning. However, by accurate planning it is possible to improve life quality of residents. This is somehow possible through influencing different aspects of intervention variables such as how to use the land. In this study, the effect of three important urbanism mechanisms are investigated to prevent crime in cities that include change in land use, observing place criteria in urban activities, criteria, and regulations that their theoretical foundations are stated based on the ideas of experts and scientists in Figure (1).
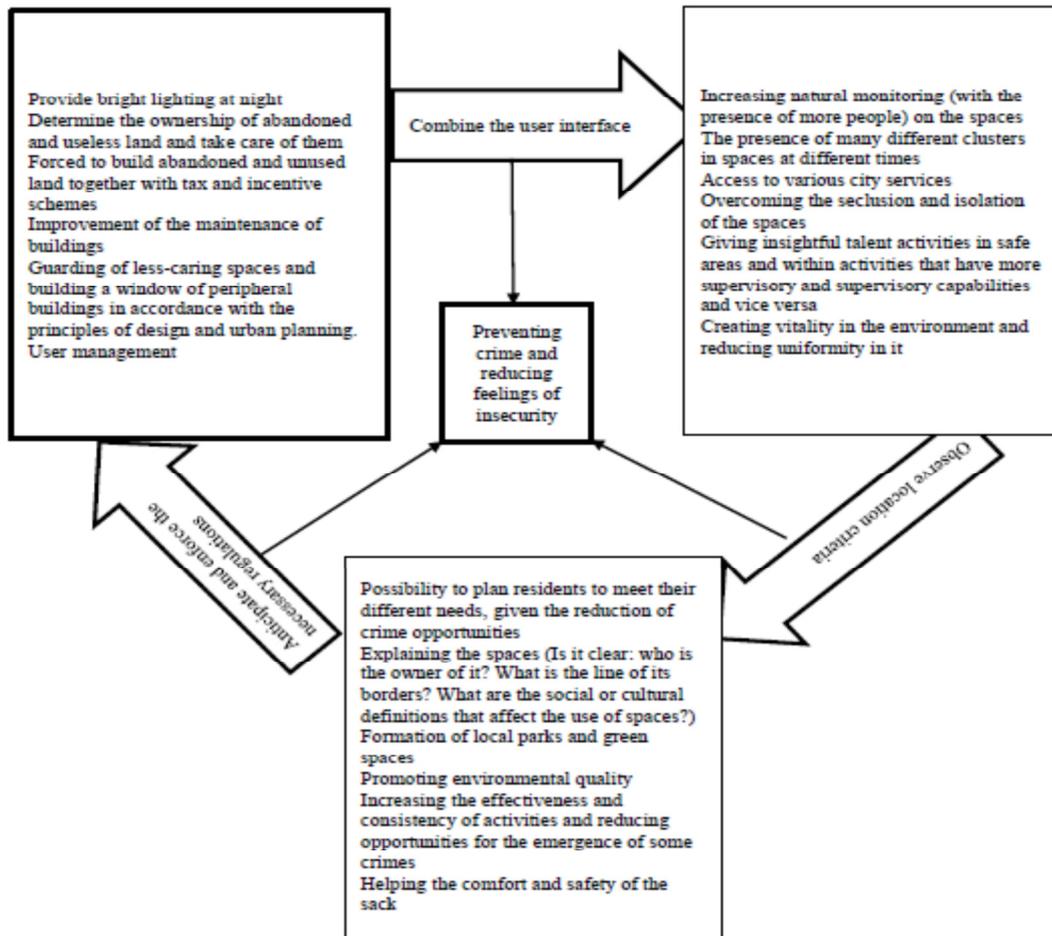
Figure 1 Effective urbanism mechanisms in preventing crime and decreasing insecurity

Appropriate distribution of urban land use according to the needs of people leads to the satisfaction of residents and facilitates physical and mental aspects of residents. As a result, security levels are enhanced and resident take responsibility to maintain security that increased levels of security lead to decreased insecurity. In Table (2), classification has been done based on scale between 0 and 100 where priorities are determined based on numbers and 25, 50, 75, and 100 were unfavorable, average, good, and favorable, respectively. In Figure 2, these results are graphically provided that can facilitate comparison.

Table 2 Comparing the scores in selected streets of Shahrekord

| Name of location	Bordering	Access control	Environmental quality	Natural surveillance	Capacity threshold	Collective culture	Social solidarity	Connection with outside the neighborhood	Security sustainability
Mellat street	75	75	25	75	25	25	50	25	75
Khajenasir street	50	50	50	75	25	25	25	50	50
Ayatollah Kashani street	50	50	75	75	75	75	25	75	50
Sa'di street	50	50	50	75	75	75	25	75	50
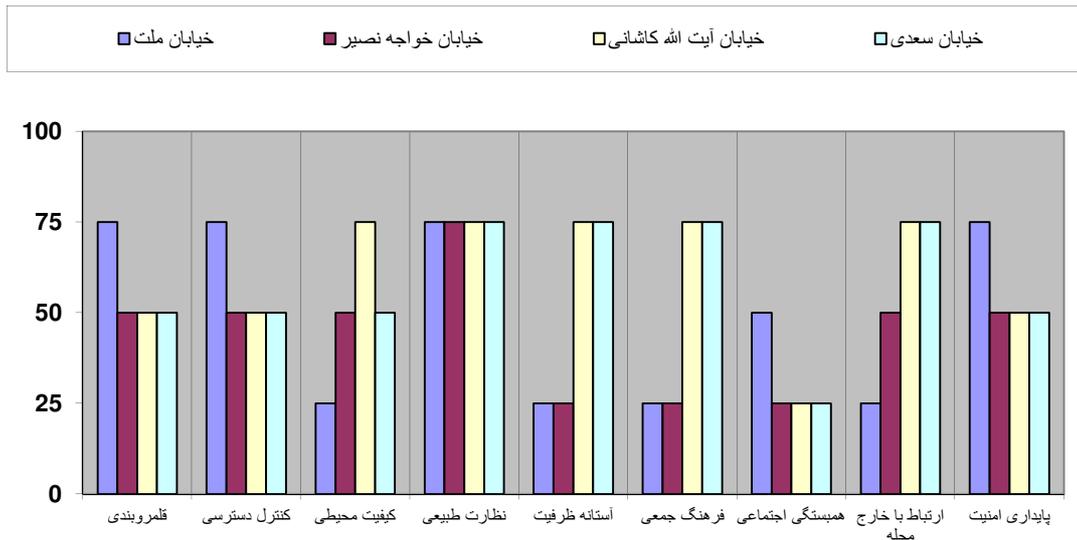
Figure 2 Graphical comparison of weaknesses and strengths of selected streets

5. CONCLUSION

According to the results of this study, it is observed that none of selected streets were perfect and it is necessary to implement CPTED approach with more accuracy to improve efficiency and satisfaction of users.

The results of this study show that the existing qualities in selected streets of Sharekord that are located in different areas, are different compared to each other. To have a comprehensive overview regarding the qualities in this section, Table (3) is presented as follow.

Table 3 Comparing weaknesses and strengths of selected streets of Shahrekord

Space	Weaknesses	Strengths
Mellat street	Winding alleys prevent direct surveillance Weak lightening leads to decreased security Old buildings and abandoned places gather homeless people According to the densities in some areas, irregularities can be found that lead to crime Lack of defining spaces such as local parks and public exercise places lead to decreased public surveillance Lack of defined social places in neighborhoods and lack of suitable furniture consistent with public culture Proximity to main Bazar of Shahrekord and presence of people from other areas that influence people (lack of parking, different cultures) Lack of suitable infrastructure according to the role of location in economy According to the economic aspect of this street it is always crowded and some classes such as goldsmiths are protected by police. This condition has increased crime in this area	Cultural components such as mosques and shrines Particular cultures are preserved in some areas The quality of sidewalks in bazar has led to more public participation as well as surveillance in residential areas due to old constructions
Khajenasir	Winding alleys prevent direct surveillance	According to the location of the

street	Weak lightening leads to decreased security Old buildings and abandoned places gather homeless people According to the densities in some areas, irregularities can be found that lead to crime Immigrants with different cultures that lead to lack of cultural cohesion and public participation Small residential context in some routes existence of empty and dark lands Commercial context around car sales and after-sale services	street, many people can be seen during the day
Ayattolah Kashani street	Lack of cultural centers Inappropriate lightening for sidewalks, especially in administrative regions Lack of defining stops in commercial areas leads to accumulation of unfavorable people	Defining new commercial centers that leads to the presence of many people as well as public surveillance
Sa'di street	Weak lightening leads to decreased security Lack of defining stops in commercial areas leads to accumulation of unfavorable people Lack of cultural centers Lack of local parks Existence of alleys with nonlinear routes that prevent any surveillance Existence of routes for pedestrians and suitable routes for cars in the alleys Lack of public parks that lead to pressure on residential context	Dense residential area that has increased to population Increased presence of people due to the location Police stations Commercial centers attract many people Healthcare centers that lead to the presence of many people

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