

Study the Role of Architecture and Environmental Design in Crime Prevention with Emphasis on CPTED Approach

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ABSTRACT: Nowadays, on the one hand with rising crime statistics, especially in the urban environments and awareness of crime prevention before the outbreak on the other hand, is expected to experts of environmental design and architecture have special attention to approaches that focused on reducing and deterring crimes through the interdisciplinary and communicative nature among various sciences which are involved in the town and its management. Accordingly, crimes prevention approaches throughout environmental designing have been considered by planners and designers of the field of architecture and urban planning. This paper is pointed the main and base role of designers and architectures in reducing and deterring urban crimes in CPTED approach after noted that introduction of theoretical motivation and necessity in the field of urban public safety, and is briefly mentioned the concepts, principals, paradigms, and strategies of this approach. Methodology of present research is analytical and attributive which will focus on content explanation and efficiency mechanism of this approach in our current urban environments. Finally, results indicate that can be emphasized on this point which is reduced the rate of urban crime occurrence through environmental design and architecture. This point will be discussed in terms of strategic and operational approaches.

Keywords: Security, Defensible Space, CPTED, Crime, Environmental Design

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INTRODUCTION

It can be said that safety is the fundamental right and prerequisite for survival and promoting people welfare and health. Safety based on needs theory in Maslow Pyramid (American psychologist) is considered as one of the essential and basic needs for human excellence and is right located after human physiological needs which are necessary to survival.

In general, enhancing of this component has directly effect on human health and society. Living in cities, as the most densely human's settlements has always been associated with complexities. Aggregation of incongruous groups of people with each other, can caused health problems such as insecurity. In traditional cities, social life sustainability and intensive sharing of customs, and traditions, has been a major obstacle to criminal behavior but have lost the power of its longtime due to industrialization of societies, creation of large cities and population density, social customs and moral laws.

Regardless of social contradictions, conflicts and deprivations, another important factor in cities is poverty and financial needs which can be lead to deviant behavior in society. Although studying and analyzing the role of social, economic, and cultural factors has more necessity to commit a crime and insecurity in urban spaces, but attention to the role of urban spaces has been less considered to intensify conducive conditions to commit a crime. Structural features of urban spaces can be having significant impact on citizen's social behaviour controlling, current studies and experiences indicate this.

On the other hand, incidence of insecurity in new cities is more than other cities due to the high population,

density of buildings, and lack of subjective backgrounds in residents of these cities. Lack of security in cities will be cause to social disorder on the one hand and urban spaces failure to attract citizen on the other hand. It would make designers and planners to think and establish solutions to provide safety and security in cities. One of the newest and effective approaches is prevention crime approach through environmental designing (CPTED).

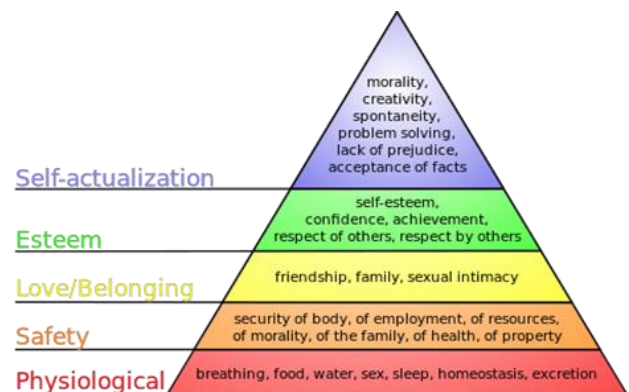


Figure 1. Maslow's Hierarchy of Needs

New approaches of environmental design have emphasized on this point that the vast amount of urban criminal offenses can be prevented by attention to physical structure of urban spaces, codification, and their specific standards enforcing which will be happened by reducing natural potential of urban areas in rising crime or giving possibility to crime.

In this matter can be summarized the present study necessity, nowadays pay less attention to potential

capacity of urban areas to reduce or prevent from crime. More important than it, the role of environmental designers and architects is not well determined to prevent from crime through their designs, and maybe some designers would be alien to it. According to this point, the urban designer or architect must note this point that in design process and spatial replacement whether in urban scale or at the level of building plan prevent from designing space which reduce the possibility of public oversight or increase how to access crime-prone areas.

Review of literature

Since 60s in America the beginning of theories about increasing safety in man-made spaces can be considered based on environmental design, which was introduced by activities of individuals such as Jacobes Jane (1961) with his book "The Death and Life of Great American Cities", Angels Schlomo (1968) with "Discouraging Crime through City Planning", Newman, O. (1972) with "Defensible Space Principal", and Jeffery, C.R. (1987) with "Crime Prevention through Environmental Design" (Mahmoodi Janaki and Qurchi Beigi, 2009; Ahmadi et al., 2015).

A theory known as CPTED for the first time in 1969 was proposed by Jeffery, C.R. and another phrase known as "Defensible Space" was introduced by Newman in 1973. With the formation environmental criminology theory and other theories such as the "The broken windows" since the mid-eighties AD, theoretical principles of crime prevention was more strong. The Broken windows theory was introduced in 1982 by social scientists, James Q. Wilson and George L. Kelling. According to this theory, maintenance and property preservation were added to CPTED strategies like monitoring and supervisory, control inputs, and domain-oriented (Mahmoodi Janaki and Qurchi Beigi, 2009). Greenburg and Rohe (1968) studied researches about neighbourhoods in the cities and reviewed the relationship between crime and different permissions of neighbourhoods units they concluded that proper design and planning of the built environment reduce access to neighbourhood units. From 1990, many studies have been done in this field due to results view to increase safety and reduce crime.

MATERIAL AND METHODS

Definitions and related concepts of CPTED approach

Present approach can be considered as efficiently design and optimized utilization of all elements in the artificial environment to reduce urban crime, which have directly and indirectly significant impact to improve life quality, increase citizen satisfaction, and improve the welfare and social capital (Crowe, 1976).

Always, there are definitions in studying and reviewing of this approach research background, which are inseparable with all researches and designs. Three usual definitions can be summarized in relation to present approach in related definitions of crime, safety, and defensible spaces. In the following, we will provide brief definitions of these concepts to learn more about them.

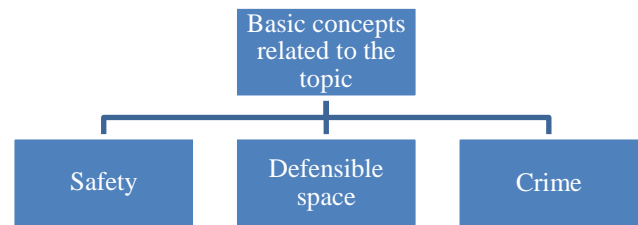


Figure 2. Basic concepts related to CPTED approach, Source: author

Safety

In Moeen encyclopedia, safety is defined: Being securely, being protected, have no fear, no fear.

Safety is felling tranquility and confidence of non-aggression against life, property and human rights. This unique value is considered as one of the individual and social life requirements. Previously, places were selected with natural and geographical barriers such as rivers, mountains, and valleys for more security. Later, intellectual methods of designing have evolved and lead to construct of barriers, fences and ditches surrounding towns which had create a safe space for the city and its residents. This way, the city was safe from aliens' invasion and unwanted foreign entry (Hooper and Derug, 2007).

Defensible space

Defensible space is a term for a series of spatial systems, including real and symbolic barriers, defined spheres of influence, and possibility of further care, which controls an environment to residents. In a residential environment, defensible space is in such a way organized, which provide security and safety of families, neighbors, and friends (Newman, 1972).

Defensible space is a tool which rebuilds our livable residential urban environment to be a livable and manageable, but this issue is done by human communities with participating in public fields not by police (Newman, 1972). Newman claimed that four defensible space elements, individually and together, will help to create a more secure urban environment:

1. Territory: Physical environment can help to create specific areas that affected by territories, these areas can evoke to residents a sense of ownership and ownership concern.

2. Supervisory: Environmental designing can be used to create supervisory opportunities for residents.

3. Isolation: Environmental design is perception of the project isolation uniqueness.

4. Image building: It expresses unsuitable places and eventually, a general picture of the location.

The concept of defensible space in public (state) residential environment is developed by creation definite relationship between the rate of crime and urban design.

Crime

In human societies has always existed crime. Its definition seems so obviously as if everyone knows it, but it is questionable does anyone really know definition of the crime.

Some people have a clear idea about the true nature and extent of crime and criminal behavior. Following definition will help us to better understand the

concept of crime in ninth published revised edition of Webster's collegiate dictionary.

Crime is act performing or attempt to do an act which is prohibited by law, or leave a task which must be done such who performs act or leave it, are responsible and should be punished. This definition has the vast domain of prohibited legal acts.

Applying field of CPTED approach

Generally crimes divide into two fields of social and physical, which are emphasized from the physical dimension on capabilities of the city and its control and inhibition in criminals' behaviours.

1. Social field is considering to crimes inhibition by urban behaviours based on environmental psychology.

2. Physical field is reviewed crimes inhibition in the physical environment through designing standards and regulations.

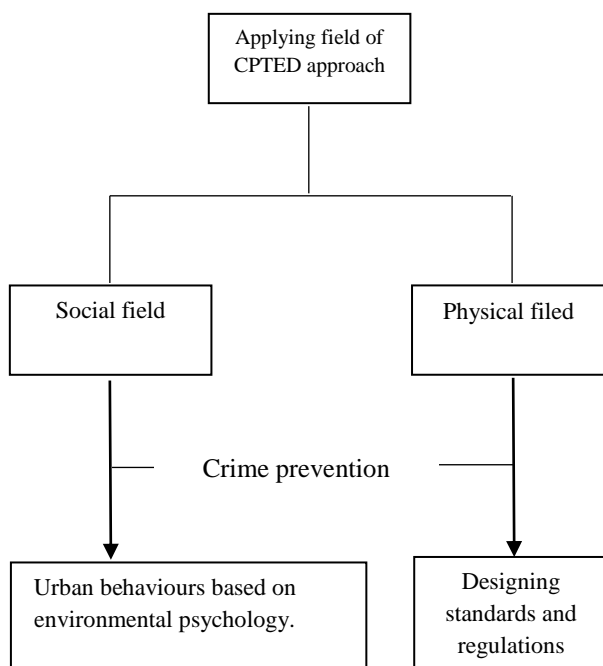


Figure 3. Applying field of CPTED approach

CPTED principles to provide safety

CPTED theory is discussed on this basis which can be preventing from crime committing by proper and practical environmental design. In addition to improve environmental quality of life overcome the fear due to crime (Crowe, 1976).

This attitude can be considered as a targeted approach, in order to efficiently an intelligently designing of environmental components with optimized using of artificial environment to reduce crimes which has a considerable impact on increasing social investment, improved quality of life and increase citizen satisfaction and thus improve social welfare (Pour Jafar et al., 2007) This theory has six elements, which will examine and dissect them.

1. Domain-Oriented: Domain-oriented is a method which emphasizes on strengthening the ownership of ideas and makes a sense of ownership in the legitimate

users of that space. In conclusion, offenders' crime opportunities are decreased with using barrier for illegal users (Bayat Rostami et al., 2010).

2. Supervisory: Supervisory has three types: informal or natural (throughout windows), formal or organized, and mechanical. Natural supervisory means urban environment empowering through exposure and easily supervisory. Official supervisory is done by official forces, guards or Police. The important section in mechanical supervisory is lightening development and urban lighting.

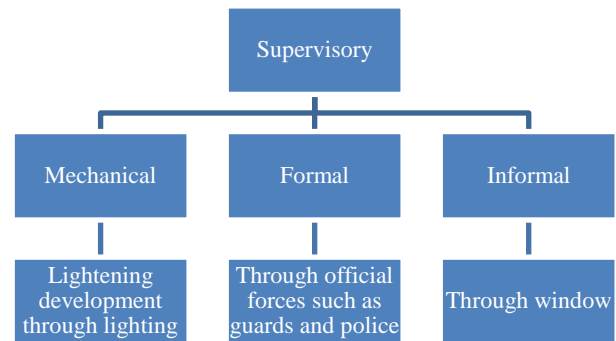


Figure 4. Supervisory species

3. Access Control: A kind of supervisory and control of performances as well as collaborative effort is needed to prevent modernization and design of urban environment (Rahmat, 2009). Access control in short can be described in protection of entering and leaving of physical environment.

4. Intensifying crime target: Targets and objects which usually vandalized or burgled, designed to be resistant against crime, and stay safe of theft or destruction (Mahmoodi Janaki and Qurchi Beigi 2009).

5. Space maintenance and image: With proper maintaining and repairing urban furniture, urban signs, lighting, and landscaping, in addition to optimize the urban costs can be reduced rising capacity of areas in doing crime (Pour Jafar et al, 2008).

6. Supportive activities: Encouraging people to do some activities in public spaces prevent from crime Supportive activities using of design is to encourage residents to more use and presence in public spaces (Mahmoodi Janaki and Qurchi Beigi 2009).

Conducted researches indicate that places where has occurred environmental design or physical spaces reconstruction, this design and reconstruction cause to the rate of crimes significantly decreases and minimizes the issues of crime and social disorder. According to what had showed, based on CPTED approach can be expressed solutions and recommend-ations by identifying main indicators of CPTED approach. But it should be noted that implementation of solutions which related to this approach in each region and site, should be specially provided the same space potential.

What you see in the form of table solutions in below (table1) just is comprehensive general and solutions about related proposal of designing.

Table 1. Solutions and executive proposals in introduced principles CPTED approach, source: author

CPTED Principles	Approaches and proposals
Domain-oriented	<ol style="list-style-type: none"> 1. Continuous use of space through executive strategies of environmental design 2. Use of signs, symptoms, and visual signs through art of visual communication 3. Increasing natural control and developing ownership sense through social institutions 4. Utilizing inhibitory strategies by social planning organizations 5. Use of landscaping, guards and fences in urban design
Access control	<ol style="list-style-type: none"> 1. Use of blocking barriers such as walls and fences 2. Inform people from the entry and output locations 3. Use of proper urban infrastructure such as flooring, glazing and Landscaping 4. Adequate and sufficient lighting on gates, entry and access system
Supervisory	<ol style="list-style-type: none"> 1. Compliance of urban furniture standards such as lighting and urban boards 2. Attention to replacing urban usages through urban planning 3. Attention to public places access such as parks and public parking 4. Place of telephone kiosks, newsagents or mobile kiosks in crime 5. Ability to presence of human with service provisions to increase public supervisory 6. Increase visibility with vegetation covers and low landscaping through urban design 7. Increasing the possibility of vision in the building orientation
Supportive activities	<ol style="list-style-type: none"> 1. Correct spatial planning through efficient using of urban spaces 2. Create density in social activities crime-prone areas 3. Housing special economic activities in places nearby Police 4. Accommodate service activities in areas where have less public supervisory 5. Replacing public spaces in areas with low supervisory and vision
Space maintenance and image	<ol style="list-style-type: none"> 1. Repair and maintenance of urban facilities such as boards and communication signals 2. Protect from damaging to urban facilities such as guarding street lights 3. Landscaping based on increasing criteria of vision and public supervisory
Intensifying crime target	<ol style="list-style-type: none"> 1. Install physical barriers such as fences, locks, gates, electronic warning 2. Using resistant materials to reinforce objects which have more vulnerable

RESULTS AND CONCLUSION

Spread of crimes in urban physical structure and lack of attention of architects and urban planners to principles of environmental crimes prevention, it is required that with new approach provide possibility to implement CPTED principles when designing a building or urban structure. Regarding of these principles can increase citizen's sense of safety, so this issue is important and increases the rate of citizenship's satisfaction, and considers as one of the ways to increase social welfare in

city. Accordingly, CPTED principles and strategies should be used in the progress of architectural design or urban design, and take administrative aspects. A few issues should be considered, in order to executive strategies of urban design and architecture, which can provide possibility of reorganization and formation of a safe city with reducing capacities of crime-prone areas and applying them to designing and construction. In Iran current conditions, with more attention to what is described, it can be decreased the rate of urban crimes as following:

Proper training of architecture and urbanism

Urban crimes prevention in urban and architecture design is not considered, so it can be realized that the reason of no principles training of crimes prevention in environmental design is this issue. It would requires, university professors notice this concepts in training and designing architecture and students, and whenever possible consider a course to teaching and assessment of concepts and strategies of this approach.

Compilation of national regulation to reduce crime

It can be noted that in many countries have been established regulations and laws to prevent crimes in environmental designing. So, regulations should be compiled in framework of national building regulations to everyone follow.

Establish necessary coordination between architects and planners in design process

Since the process of architecture design and urban structure must be consider creation of the lowest potential urban areas of crime-prone to prevent urban crimes through environmental designing, it seems that architects and urban designers should be considered this issues in plan designing, positioning, designing of sit or residential buildings.

Strengthening social- cultural space

It can be attempted that people have more attention to their living space, through proper creation and utilization of established cultural spaces in urban areas and neighborhoods. This is only possible when people want to accept the city as well as the house where belongs to them. And in case of more attention, it can be said that during public and general movement can provided the possibility of supervisory rising and reduce the ability of crime-prone.

Public participation with city planners

It should be noted that just with people and citizen's intervention of urban planning process in participative planning approach which would be expected to improve the current situation. Why are people so indifferent of his town? Can not create this feeling in them through involving them in decision making process and decision making at a local level that city and especially their neighborhood where they live belong to them and there are no significant difference among their houses and neighborhoods or at least should not exist? In any case, they must accept that the only way to increase safety and security of residential neighborhoods is their entrance into

scene of neighborhood management and know that avoiding and indifference to other neighborhoods has no effect except worsened the situation.

Making social culture

It can be changed or modified current viewpoint of people about urban public spaces and places where they live. Culture-oriented approaches to achieve desired results require more patience and tolerance in levels of Iran management. Because changes in beliefs, habits and beliefs of a social structure is not possible in the short term and should be thinking about long-term and mid-term actions. In any case, people must accept the only who can improve structures with more effort and participation during public movements are themselves.

Compilation designing instructions of physical space

It is worth mentioning, some issues are effective on the rate and type of crime such as size and distance between buildings (masses in space), paths and visual corridors, placement of access local to sites and residential buildings, universal access, and even positioning and deploying city controls. Therefore, it is necessary that regulations and structural designing of urban and residential spaces principles has been published in relation with size and distance of buildings and their proportion. This has been done in other countries and urban municipalities.

These designing criteria in Iran should be published according to cultural conditions and social and psychological requirements Iranian citizens. Because it cannot do design of places and spaces regardless of the circumstances and cultural requirements of a territory. It seems necessary putting on the agenda this issue in organizations and related institutions, and cannot be considered clear and comprehensive opinion about this issue only with referring to a specialist or generalize it to the whole of people. Hope that publishing and developing such instructions in international levels will be considered by the authorities and dependent institutions as national regulations and in municipalities' level to more conformity and compliance of these standards, components, and design criteria with behavioral characteristics of city's residents.

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