

Design out Crime in Neighborhoods of Kaunas

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The research and practice in designing out crime is an absolutely new approach in Lithuania to reduce crime. Therefore, the application of design out crime through the prism of CPTED (Crime Prevention Through Environmental Design) to the typical Lithuanian urban area that has high crime rates and the variance of land uses is proposed in this paper. After the assessment of current situation in the selected research area (Vilijampole in Kaunas) the urban planning and design proposals have been made according to the identified weaknesses and concerning buildings' exposition for better natural surveillance and inter-visibility, street network geometry and connectivity, differentiation of public and private spaces, greenery and its links to other spaces, maintenance, interaction between neighbors, activity support, lighting etc. The proposed urban planning and design solutions should bring more safety into the neighborhoods and businesses.

KEYWORDS: design out crime, CPTED (Crime Prevention Through Environmental Design).

Design out crime is a crime prevention strategy that combines various concepts focusing on reducing anonymity of a potential criminal, regulating the relationship between public and private spaces, urban planning and design as well as security tools. It aims in reducing the vulnerability of people, property and businesses to crime by removing opportunities that may be caused by the surrounding environment. It also aims to reduce fear of crime and to improve the quality of life. Numerous research and practice in the USA, UK, Australia and many other countries throughout the world have demonstrated that the proper planning and design of environment can reduce crime (Crowe 2013; Cozens *et al.* 2005; Saville and Cleveland 2008; Sutton *et al.* 2014; Atlas 2013; Armitage 2013; Western ... 2006). For instance, the inclusion of specialized areas and greenery into dense residential areas would contribute to crime prevention on the streets, public lands should be combined with residential dwellings and greenery (Stankevicius *et al.* 2013). High streets with mixed land use (primarily commercial) can lead to a bigger amount of pickpockets there. O. Newman (Newman 1972) argues that crime can be expected to be less in low density, single use environments with restricted access to strangers. Contrarily, J. Jacobs (Jacobs 1961) alleges precisely the opposite – in open and pervious mixed use environments, strangers passing through spaces, as well as inhabitants occupying them, form a natural guardianship mechanism which inhibits crime. However, various researchers have revealed that different types of anti-social behavior are correlat-

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Introduction



ed with different urban spaces (Hillier and Sahbaz 2009; Monteiro 2012). According to B. Hillier and O. Sahbaz such factors as movement, land use and high and low activity patterns are all thought to be linked in some way to crime (Hillier and Sahbaz 2009). In terms of urban design well maintained urban spaces contribute to less crime, abandoned areas don't attract people and make the territory more vulnerable to crime. These urban planning and design factors in frames of designing out crime are related to CPTED (Crime Prevention Through Environmental Design). The process of designing security into architecture is known as crime prevention through environmental design (CPTED), and it is 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 (Atlas 2013). CPTED differs from traditional security tools in urban planning and architecture. Traditional security tools mean building of fences, walls, installing of alarms etc., *id est.* mechanical security tools, as well as police officers and guards on the streets as organizational security tools. Whereas, CPTED focuses more on natural security strategies, such as natural surveillance, access control, territorial reinforcement, maintenance, activity support.

In Lithuania the research in CPTED and its application to design out crime is brand new (since 2012), whereas, the level of criminality is high. Two Lithuanian research projects (Matijosaitiene 2014; LPDUMI 2015) were analyzing different territories in Vilnius, Kaunas and Panevezys according to CPTED in order to identify the environmental reasons of unsafety. Though, non of them proposed urban planning and design solutions for analyzed problematic territories, except for recommendations based on CPTED. The aim of this paper is to demonstrate some principles of application of design out crime to the typical Lithuanian urban area that has high crime rates and the variance of land uses. The application of design out crime to our selected urban area with neighborhoods would involve assessment of current situation with identification of weaknesses of urban planning that might increase crime rates according to CPTED, and integration of urban planning and design in order to reduce crime.

Methods

A part of Vilijampole residential area with many neighborhoods in Kaunas is selected for the analysis (Fig. 1). This is chosen due to high crime rates and the most heterogeneous crimes committed. Above other crimes many robberies and thefts were committed in this area. Vilijampole lays in the proximity to Kaunas centre, *id est.* Old and New Towns. Raudondvario and Jurbarko streets are the main urban and mobility axes there with highly intensive vehicles flows (though, more private vehicles than public). For many city dwellers Vilijampole is a transition zone between city centre and residential areas located on the outskirts of Kaunas (Smeliai, Lampedziai etc.) and even suburbs (Romainiai, Akademija etc.). This is an area with many commercial-industrial buildings as well as one and two family old residential houses. The data of the Statistics Lithuania of 2014 describes Vilijampole area as one of the most oldest (according to the residents' age). 33 percent of residents are retirees. Here the number of residents with high education is one of the smallest in Kaunas, and the number of divorced or living not in marriage residents is one of the biggest.

The area is observed on site while collecting data for the analysis and identification of reasons of unsafety there. For the identification of reasons we need to know how people move, how they live and interact, what is their relation to various public spaces (green areas, activities), what kind of spaces are there created and what kind are needed. The walking route throughout the analyzed territory is designed in order to collect data about streets and their condition, buildings and their expositions, greenery and public green spaces. The intensity of motor vehicles and pedestrian flows was counted at every street segment spending 15 minutes at every observation point. The observation points are located at the opposite sides of street segment (the beginning and the end of the segment). Street segment is defined as a part of the street between two intersecting streets, and between the turns of the street (if a street has a turn).

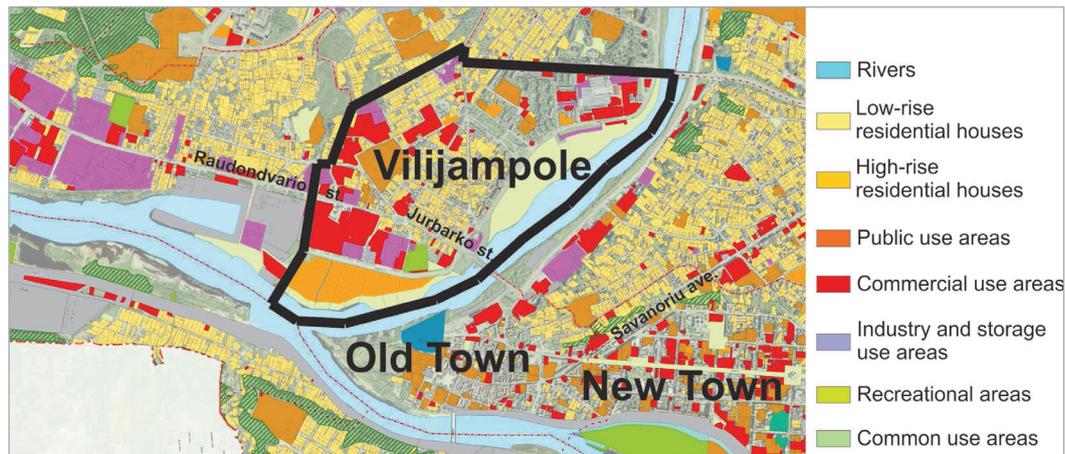


Fig. 1

Location of Vilijampole area. Mapped on the background of Kaunas master plan (current situation) (http://www.kaunoplanas.lt/bendrieji_planai/kauno_miesto_bendrisis_planas_esama_bukle)

The design out crime proposals are made concerning street network, buildings' position, links between public spaces, greenery, intensity of usage of public spaces by motor vehicles and pedestrians. The proposals are based on CPTED principles.

Current situation assessment. The territory observation reveals that the inner core of the area is built-up with randomly located buildings. Thus, random structure creates a sense of uncontrol and chaos in the analyzed area. The urban pattern of this neighborhood demonstrates the evidence of disorder, vandalism, rubbish and graffiti. The most part of single and two family houses in the inner core of the area are in poor condition, unmaintained, even some of them abandoned and half-way demolished. Moreover, the analyzed neighborhoods are disconnected from all the activities happening in the town. There is barely any outdoor life in these areas. For the residents of these neighborhoods activities around their living place are almost inexistent, and the paths he or she can move are extremely limited. The estimation of the motor vehicles and pedestrian flows demonstrates a crucial difference in habits of the usage of public spaces by drivers and pedestrians. Many public spaces are used very intensively by motor vehicles, though, are lacking in pedestrians and look empty. The counted rates of motor vehicles on analyzed street segments exceed pedestrian rates several times (with being the minimum 20 vehicles per 15 minutes, and maximum 90 vehicles per 15 minutes). Whereas, the rates of pedestrians are very low, and on some street segments pedestrians were absent at all. Motor vehicle drivers most intensively use Jurbarko, Raudondvario, Linkuvos and Neris Krantines streets. Whereas, pedestrians use more intensively Jurbarko street and a part of Tilzes street that leads to the Veterinary Academy. Pedestrian rates are also counted for the most part of streets in Old and New Towns for comparison. As we can see from the Fig. 2, the difference between pedestrian movement intensity in Vilijampole and Old/New Town is obvious, highlighting the lack of pedestrians on the streets in Vilijampole area. In terms of CPTED, the lack of people on the streets means the lack of 'eyes on the street' (Jacobs 1961), and accordingly lack of natural surveillance. The more a space is observed by people the more secure it is. In the observed streets of Vilijampole the level of natural surveillance is very low. Moreover, we faced difficulties with movement around the area, since many of the streets or pathways are unmaintained or unplanned or without pedestrian sidewalks. Unmaintained territories attract criminals, as in the case of the "broken window theory" (Kelling and Wilson 1982) one broken and unrepaired window causes more broken windows, and as a result the territory becomes unmaintained and abandoned. The initial state of the greenery system shows the high disconnection of green spaces and built-up territories. There is no greenery network that could connect a green boulevard to a public park stimulating a motion action and giving a movement direction for the users. There seems to be no façade line to subconsciously help the pedestrian

Results

Fig. 2

Assessment results (current situation).
 A - randomly located buildings, B - intensity of pedestrian flows, the more dots the more intensive the flows are,
 C - intensity of motor vehicles flows, the more dots the more intensive the flows are, D - current greenery



distinguish spaces, no exact boundaries between spaces and especially no definition of these spaces. According to CPTED, private spaces must be clearly differentiated from public. In the analyzed Vilijampole area this differentiation is absent, and in this case for offenders it becomes easier to enter private area and to commit a crime there.

Design out crime proposals through urban planning. Geometry creates control and minimizes the sense of chaos. This principle is used for the planning proposals in the analyzed area (Fig. 3). The new urban planning decisions should make the territory well-used and vibrant, with a diverse range of land-uses that would contribute to crime reduce according to CPTED. In our proposals the connection of the analyzed area with Old Town, Jonavos street, the Kaunas Castle and Santakos park is added by two new bridges. Both bridges are designed for pedestrians and cyclists (on the south and east of the designed area), and provide the links between green areas and areas with public activities, as well as with the riverside. The size of buildings and streets plays a great role here in making urban spaces adapted for all users (cars, cyclists, pedestrians), and the exposition of buildings plays a role in control of the territory by residents and reducing the crime. In our proposals, buildings are located in the way that every area on any site can be observed by residents at least from either the front or back door and at least one window. Moreover, inter-visibility of windows and doors is ensured, id est. a person standing at the building entrance or looking through the window on one side of the street can see building entrance/-s or windows on another side of the street. Our design out crime through urban planning proposal includes adding new building typologies into the analyzed territory. New offices, a public library, school, sports pavilion and centre, residential and mixed-use buildings are proposed. New typologies of buildings should distribute uses and provide more activities to residents. Activity

support is a very important CPTED strategy. Activity support encourages people to observe the area through their daily activities. Thus, their presence and behaviour will discourage offenders from committing a crime (Ekblom 2013). The development of new commercial objects not only will let entrepreneurs settle and bring business, but it will help to reduce small robberies on the streets. The locations of new activities and services for residents are chosen concerning their good distribution and connectivity to residential and other areas, and the system of pedestrian paths, bikeways and car pathways. The new paths do not lead to unpredictable places. The new blocks of housing are proposed that won't have a huge dimension comparing to existing blocks, and will allow reasonable walking distances between different parts of the territory. In residential neighborhoods cut-through or high-speed traffic must be discouraged, and dead-end spaces should be blocked off with fences or gates. Design proposals also result in creation and separation of private, semi-private, semi-public and public spaces for the residents and visitors. According to CPTED, private spaces must be separated from public by low or higher inter-visible fence, not dense greenery, different plants or pavement materials. Signage such as Private Property—No Trespassing, Hours of Usage, Residents Only, and No Vehicle Traffic should be used on the site. Separation of private and public spaces should not create dark spots, unpredictable areas where an offender can hide. It should also create a good visibility of all areas and natural surveillance into these areas in order to observe the potential criminal or suspicious person on time and to react on his/her actions. On the other hand, the property should be planned in the way that it encourages interaction between neighbors with low property-division fences, bushes, or landscaping transitions. New design proposals also include combination of car pathways with separated pedestrian sidewalks and bikeways. In this way, all the movement flows of the different users cohabitate in the same network of street.

Greenery is necessary for a sustainable future and it is the best way to conduct pedestrians along a well knitted town fabric. The proposed greenery creates a net of public green spaces, green avenues and major green spots to help city dwellers and visitors navigate the city. New greenery system is closely related to a public spaces network. The big green masses on the riverside have to be controlled, maintained and connected with the other urban areas. The big green public space leading to the river needs to be maintained, with bushes to be pruned up to 0.91 meters high and trees 2.13 meters from the ground in order to provide a good visibility of the territory. In all green public spaces there should be no places where offenders could easily hide and conceal themselves. Landscaping must not create blind spots or hiding spots. Walkways and landscaping should direct visitors to the proper entrance/exit to the public space, and away from the private residential areas. There should be signs to locate where a visitor is, even sufficient way-finding

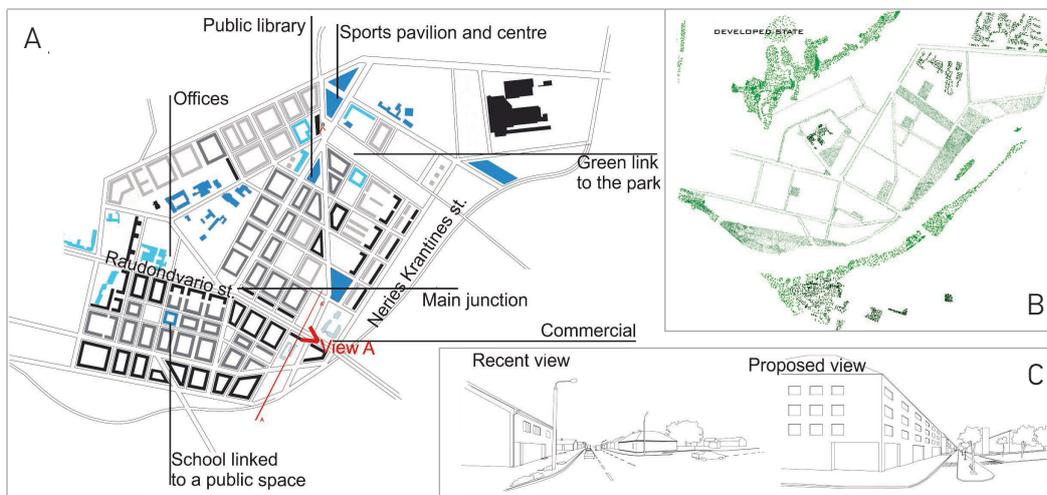


Fig. 3

Design out crime proposals through urban planning. A – proposed plan of the territory, B – newly designed greenery, C – view A

maps / signs to key destinations may be installed on the territory. The entry points into the parks or other public green spaces have to be visible and well-defined (different paving material, changes in street elevation, architectural, and landscape design, signs, gates may be used for that).

The lighting on the streets should be placed in such a way that it allows people to be recognized from 7.62 meters away. Moreover, the lighting must be directed so that it doesn't glare into someone's eyes or into the eyes of persons passing by on the sidewalk or street.

Conclusions

The assessment of current situation reveals that randomly located buildings create a sense of uncontrol and chaos. In many places there is an evidence of unmaintained buildings, sites and pathways, rubbish and vandalism. Only the main streets have a good connectivity. Moreover, many streets are used intensively by motor vehicles, though, they lack of pedestrians, therefore, no natural surveillance is present here. There is a big disconnection of green spaces and built-up territories. In many cases no definitions between different spaces are observed.

For designing out crime in Vilijampole neighborhoods the following major urban planning decisions have been made concerning CPTED (Crime Prevention Through Environmental Design) principles:

Clear exposition of buildings is proposed in order to improve natural surveillance and inter-visibility as well as control of urban public and private areas. To residential buildings new building typologies have been added, such as library, sports centre, offices, school, mixed-use buildings, that would contribute to activity support, more passengers and more eyes on the streets, and accordingly less crime. The connectivity of the most important streets is increased by designing the new network of streets (these are mostly local small-scale streets that intersect with bigger streets). Higher connectivity should lead to less crime, according to B. Hillier (2009). The separation of public and private spaces together with interaction between neighbors is encouraged in design proposals, as well as combination of car pathways with separated pedestrian sidewalks and bikeways.

Design proposals for greenery include maintenance (such as pruned bushes and trees and all the structures being painted and in a condition of good repair), building the links between public spaces and green spaces' role of the navigator within the city. Landscaping should not create blind spots or hiding areas for offenders. The entry points into the green areas must be visible and well-defined. Way-finding maps and signs should be used on bigger green areas.

Lighting proposals are prepared according to the worldwide CPTED recommendations and the particularity of the analyzed Vilijampole neighborhoods.

The proposed urban planning and design solutions should bring more safety into the neighborhoods and businesses.

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