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Resilience Measures Against Urban Terrorist Attacks: An Evaluation On Ankara's Kızılay Square

Kentsel Terör Saldırılarına Karşı Dayanıklılık Önlemleri: Ankara Kızılay Meydanı Üzerine Bir Değerlendirme

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HIGHLIGHTS	▪ *In the study, the elements of CPTED were analyzed through the example of Kızılay.* ▪ *Successful terror-resilient CPTED examples from around the world have been identified.* ▪ *Although recent efforts have been made in Kızılay within the context of terror resistance, they are insufficient.*
ÖNE ÇIKANLAR	▪ *Çalışmada, Kızılay örneği üzerinden CPTED unsurlarının analizi yapılmıştır.* ▪ *Dünya örnekleri üzerinden başarılı teröre dayanıklı CPTED örnekleri tespit edilmiştir.* ▪ *Kızılay'da teröre dayanıklılık bağlamında son dönemlerde çalışmalar gerçekleştirilmekle birlikte yeterli değildir.*
ABSTRACT	*With the continuous increase in urban population, resilience theory has become a critical component of contemporary urban planning. Unlike sustainability, which often takes a static and reactive approach to crises, resilience requires adaptation and flexibility through its dynamic structure. This feature becomes particularly prominent when addressing complex threats such as urban terrorism. With the advancement of technology and the effects of globalization, urban terrorism is an increasingly growing threat worldwide, affecting both developing countries and major metropolises. Terrorist organizations have made urban security more complex by employing the "hit-and-run strategy" more frequently to amplify their impact. In this context, the concept of "terror-resilient cities" has gained importance, leading to the implementation of proactive measures aimed at enhancing urban security and strengthening resilience. This study examines Kızılay Square, one of the areas most frequently targeted by urban terrorist attacks in Turkey. Due to its dense population, the symbolic state institutions it hosts, and its high visibility, Kızılay is particularly vulnerable to terrorist threats. The security measures in this important area are investigated, and the integration of Crime Prevention Through Environmental Design (CPTED) principles into its planning and design is assessed. It has been observed that CPTED elements seen in advanced world metropolises, such as traffic control practices, the use of surveillance technologies, the positioning of street furniture, and the implementation of innovative barriers, have also started to be applied in Kızılay. However, it was concluded that significant progress still needs to be made in both quantity and quality.*
Urban Terrorism, *Hit-and-Run Strategy,* *Resilience,* *CPTED*	
ÖZ	*Kent nüfusunun sürekli artışıyla birlikte, dayanıklılık teorisi çağdaş kent planlamasında kritik bir bileşen haline gelmiştir. Sürdürülebilirliğin genellikle sabit ve krizlere tepki veren yaklaşımının aksine, dayanıklılık dinamik yapısı ile yeni şartlara adaptasyon ve esneklik gerektirir. Özellikle kentsel terör gibi karmaşık tehditleri ele alırken bu özellik öne çıkmaktadır. Teknolojik ilerlemeler ve küreselleşmenin etkisiyle artan kent terörü, dünya çapında hem gelişmekte olan ülkeler hem de büyük metropoller için giderek büyüyen bir tehdit oluşturmaktadır. Terörist örgütler, etkilerini artırmak amacıyla "baskın stratejisini" daha sık kullanarak kentsel güvenliği daha karmaşık hale getirmektedir. Bu bağlamda, "teröre-dayanıklı kentler" kavramı önem kazanmış ve kent güvenliğini artırmak ile dayanıklılığı güçlendirmek amacıyla proaktif önlemler alınmaya başlanmıştır. Bu çalışma, Türkiye'de kentsel terör eylemleri tarafından en sık hedef alınan mekanlardan birisi olan Kızılay Meydanı'nı incelemektedir. Kızılay'ın yoğun nüfusu, ev sahipliği yaptığı sembolik devlet kurumları ve yüksek görünürlüğü nedeniyle terörist tehditlere açık olan bu önemli bölgedeki güvenlik önlemleri araştırılmakta ve Çevresel Tasarım Yoluyla Suç Önleme (CPTED) ilkelerinin bu bölgenin planlama ve tasarımına entegrasyonu değerlendirilmektedir. Gelişmiş dünya metropollerinde görülen trafik kontrolü uygulamaları, gözetleme teknolojilerinin kullanımı, sokak mobilyalarının konumlandırılması ve yenilikçi bariyer kullanımı gibi CPTED ögelerinin Kızılay'da da uygulanmaya başlandığı gözlemlenmiş ama nicelik ve nitelik olarak halen önemli bir mesafe katedilmesi sonucuna varılmıştır.*
Kentsel Terör, *Baskın Stratejisi,* *Dayanıklılık,* *CPTED*	

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[2] This study is derived from the doctoral thesis titled "Urban Planning and Management for Terror-Resilient Cities: Ankara and Diyarbakır Examples" (Teröre dayanıklı kentler oluşturulması açısından kent planlaması ve yönetimi: Ankara ve Diyarbakır örnekleri) prepared by Mücahit Navruz.

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Introduction

In today's world, where more than half of the global population resides in cities, resilience has begun to occupy a significant place on the urban agenda alongside sustainability. Given that sustainability often adopts a static approach to the crises faced by cities, the dynamic and adaptive nature of resilience stands out in the context of addressing or mitigating urban issues. In this regard, one of the most critical risks and crises of recent times is urban terrorism, which has been increasing worldwide. With advancing technology and the globalization of terrorism, the number and impact of urban terrorist acts have seen a significant rise in recent years. This qualitative and quantitative increase has begun to threaten not only less developed countries but also major metropolises in developed countries. Countering these threats and making cities resilient have become a priority for global, national, and local actors. To ensure a sustainable urban order, preventing terrorist acts that directly threaten the necessary security conditions, breaking the motivation of organizations, and reducing the impact of these acts have led to the development of the "terror-resilient cities" approach. This paradigm has started to shape cities, especially metropolises, that are at risk of becoming targets of terrorism.

As demonstrated by the experiences of major metropolitan areas worldwide, Turkey is also increasingly acknowledging the critical importance of developing terror-resilient cities in response to its own periodic encounters with urban terrorism. In light of the rising frequency and sophistication of terrorist attacks in urban settings, it has become evident that traditional approaches to city planning and security are no longer sufficient. Urban centers in Turkey, much like their global counterparts, face significant challenges in safeguarding their infrastructure and populations from such threats. This growing awareness emphasizes the need for a comprehensive and proactive strategy to enhance urban resilience. Particularly in Ankara, the capital city, the concentration of political and economic significance underscores the necessity for advanced security measures and thoughtful urban planning to mitigate the risks associated with urban terrorism.

Terrorist organizations aim to achieve the highest possible impact with their actions. One of the most effective ways to increase this impact is to carry out the act in a highly visible area where public attention is concentrated. When examining the spatial distribution of terrorist acts in Ankara, it is observed that the Ulus-Kızılay axis is a frequently preferred area for these actions. This situation is not a random choice, but rather the result of a strategic decision. The Ulus-Kızılay axis is one of the city's most densely populated and central areas. The presence of both a large civilian population and important state institutions with high symbolic value, such as public agencies, ministries, official offices, and military establishments, attracts the attention of terrorist organizations to this region. As a result, the concentration of terrorist acts on the Ulus-Kızılay axis in Ankara is due to the organizations consciously choosing this area to achieve the highest strategic impact. This choice is influenced not only by the region's symbolic and strategic importance but also by the practical advantages it offers.

For this reason, Kızılay has been chosen as the case study area for this research. The study aims to explore and analyze the various implementations and measures that have been applied in Kızılay in the context of creating a terrorism-resilient urban environment. By focusing on Kızılay, the research seeks to evaluate how effectively these principles have been integrated into the urban design and planning of this central district, which is strategically significant due to its high visibility and symbolic value. The goal is to understand how these practices contribute to enhancing the area's resilience against terrorist threats and to identify both the strengths and potential areas for improvement in the application of terrorism-resilient urban principles

1. Urban Terrorism and Hit-and-Run Strategy

Terrorist activities can be categorized as rural or urban terrorism based on the locations where they occur. However, many terrorist organizations operate in both rural and urban areas, and can be active in either type of setting. Therefore, instead of classifying terrorist organizations as rural or urban, it would be more accurate to evaluate the terrorist act according to the location where it takes place. In this context, labeling acts as rural terrorism or urban terrorism allows for a more precise analysis of spatial strategies and areas of impact. Rural terrorist acts are typically carried out in large, sparsely populated areas, whereas urban terrorist acts occur in more densely populated, developed, and easily accessible areas. This distinction can aid in the design of more effective, location-specific security strategies and preventive measures.

The strategies employed in urban terrorism can be broadly categorized into two types based on their objectives and methods: the "hit-and-run strategy" and the "area control strategy." Terrorist organizations often utilize the hit-and-run strategy in densely populated city centers, where the population is heterogeneously distributed, executing sudden and destructive attacks. The primary goal of this strategy is to create widespread chaos and instill fear among the masses in urban centers through swift, impactful operations. Conversely, in neighborhoods with more homogeneous communities, terrorist groups may employ the area control strategy, aiming to establish de facto control over specific territories and maintain their dominance (Yeşiltaş and Özçelik, 2016). Given the asymmetric nature of terrorist organizations, it is observed that the majority of urban terrorist activities are conducted using the hit-and-run strategy, while the area control strategy is less commonly employed (Chaliand and Blind, 2007, p. 25). This pattern is reflected in academic literature on urban terrorism, which predominantly focuses on the hit-and-run strategy, underscoring its prevalence and significant influence on urban security dynamics.

The hit-and-run strategy is one of the most frequently employed attack methods by terrorist organizations in both rural and urban settings. This strategy becomes particularly effective when terrorist groups face significant disparities in weaponry, funding, and personnel compared to centralized state forces. Instead of engaging in direct armed confrontations, these organizations opt for carefully planned and targeted strikes, aiming to inflict maximum

damage with minimal losses. This approach not only helps in reducing their own casualties but also serves to create significant psychological and strategic impact against their adversaries.

In operations conducted using the hit-and-run strategy, terrorist organizations typically target military positions in rural settings, while in urban environments, they focus on public buildings and civilian targets. Recently, within the scope of this strategy, terrorist groups have increasingly employed methods such as suicide vests, vehicle-borne improvised explosive devices (VBIEDs), and remotely detonated bombs. These tactics, referred to by Mike Davis as "the poor man's air force," are favored due to their ability to be easily concealed, their flexibility in terms of timing, location, and target selection, and the mobility they offer in approaching the intended target. Additionally, new methods such as drone attacks with explosive payloads and armed or vehicular assaults on crowds have also emerged as part of the evolving tactics in recent years. These innovations in attack strategies underscore the continuous adaptation and evolution of terrorist methodologies, particularly within the framework of the hit-and-run strategy, to maximize their impact while maintaining operational flexibility.

Urban terrorist attacks carried out using the hit-and-run strategy can generally be divided into two main categories based on their targets as soft targets and hard targets.[3] Soft targets are individuals and locations that are easily accessible and relatively unprotected. These targets are often more vulnerable, making them more suitable for terrorist attacks due to the lower level of security and the potential for higher casualties. On the other hand, hard targets are individuals and locations that are more difficult to access and are typically better protected due to the predictable nature of potential attacks. These targets often have more robust security measures in place, making them more resilient to attacks. The distinction between soft and hard targets is crucial in understanding the tactical choices made by terrorist organizations, as the level of difficulty in accessing a target and the potential impact of an attack significantly influence their operational planning.

Terrorist attacks on soft targets can serve as a powerful propaganda tool for terrorist organizations. However, the inherent vulnerability of these targets, coupled with the fact that such attacks are often not directly related to armed conflict, tends to provoke strong public outrage. Attacks on soft targets, which typically involve defenseless civilians and innocent individuals, can lead to widespread social anger and condemnation. In this context, assaults on soft targets can be seen as a form of suicidal behavior by terrorist organizations, as these actions risk alienating the very social and political support that these groups rely on for survival. The backlash from such attacks can erode any existing support base, leading to the eventual decline or even destruction of the organization. In essence, while targeting soft

[3] Targets that have a significant impact due to their role in terrorism's fear and intimidation factors are referred to as 'rich targets.' Cities are considered rich targets because they have more potential targets compared to rural areas. Within cities, certain targets are considered richer due to their higher impact potential. Terrorist organizations focus on the richest targets to maximize the effect of their actions (Savitch and Ardashev, 2001, p. 2516; Glaeser and Shapiro, 2002, p. 3).

targets may initially appear advantageous in terms of propaganda and impact, the long-term consequences often include the isolation and self-destruction of the perpetrating group.[4]

Urban terrorist attacks can also be classified into three main categories based on the characteristics of their targets:

- Catalytic Terrorism: This type of terrorism involves specific actions directed at particular individuals, groups, locations, or symbols, with the primary aim of drawing attention to the terrorist organization. These targeted attacks are often symbolic and are designed to maximize media coverage and public awareness.
- Mega Terrorism: This refers to large-scale terrorist attacks that aim to cause maximum loss of life and property. Mega terrorism is characterized by its extensive scope and the significant impact it seeks to achieve through widespread destruction and casualties.
- Smart Terrorism: Smart terrorism involves more strategic and effective actions aimed at a city's vital functions. These attacks are typically more sophisticated and are designed to disrupt key infrastructures, such as transportation, communication, or energy systems, thereby paralyzing a city's operations (Savitch, 2014, p. 9).

This classification is rooted in the terrorist organizations' abilities to execute simultaneous attacks and their strategic planning targeting critical objectives. The categorization highlights the varying degrees of complexity, impact, and strategic intent behind different types of urban terrorist activities.

Globally, the greatest vulnerability to the hit-and-run strategy lies in the dense populations of metropolitan cities. A significant portion of recent terrorist attacks has been directed at these soft targets. Terrorist organizations frequently target venues such as sporting events, arts and cultural activities, festivals, public transportation systems, squares, schools, places of worship, hospitals, markets, rallies, and marches. The selection of these targets is driven by the desire to maximize the impact of the attack and to create an atmosphere of fear.

The factors that influence whether a target is classified as soft or hard include:

- Accessibility of the Target: How easily the target can be reached by the attackers.
- Vulnerability of the Target: The level of protection or security measures in place.
- Predictability of the Attack: The ability of the target to anticipate and prepare for a potential attack.

Today, most terrorist actions that come to mind are those executed through the hit-and-run strategy against soft targets. The emphasis on these targets reflects the terrorist organizations' intent to create widespread fear and disruption, exploiting the inherent vulnerabilities of easily accessible, less protected areas where large groups of people gather.

[4] In diplomacy, the period of mutual assistance between two countries following a natural disaster is referred to as 'disaster diplomacy,' with terms like 'earthquake diplomacy' used depending on the nature of the disaster. Similarly, after major terrorist attacks targeting civilian sites, troubled states can approach each other through tools such as condolence messages, visits, joint combat decisions, and joint operations. This can be described as 'terrorism diplomacy.'

A review of the history of urban terrorist attacks in Turkey reveals that recent attacks primarily involve suicide bombings using vehicle-borne explosives and suicide bombers (Öğünç, 2019, p. 404). Unlike individual acts of violence, these attacks are orchestrated and executed by terrorist organizations within a structured framework. Bombing operations require extensive preparation, expertise, and logistical coordination (Savitch, 2014, p. 105). This process involves various roles, including:

- Selection of Volunteers: The organization recruits and selects individuals willing to carry out the attacks.
- Psychological Motivation: The volunteers are psychologically prepared and motivated for their roles.
- Explosive Procurement: The necessary explosives and materials are acquired.
- Target Analysis: Detailed analysis of the targets is conducted to maximize impact.
- Transportation: Responsible individuals ensure the bomber reaches the target.
- Recording and Propaganda: The actions are documented, and spokespersons use this footage for propaganda purposes.

This intricate network demonstrates the sophistication of the terrorist organizations involved and indicates that groups conducting urban terrorism in Turkey have been operational for an extended period, reflecting their advanced capabilities and long-standing presence.

Before the 1980s, Turkey's cities were primarily affected by ideological terrorist activities. In the 1980s, ethnic terrorism emerged, and in the 1990s, fundamentalist terrorism became prominent. The shifting hit-and-run strategies of terrorist organizations, influenced by their ideological leanings, militant and material resources, and national and international political contexts, pose a significant threat to Turkey. Today, ethnic terrorist groups such as the PKK/TAK, ideological terrorist groups like DHKP/C, and fundamentalist terrorist groups such as al-Qaeda and ISIS are the main perpetrators of urban terrorist activities in Turkey.

The PKK initially conducted operations in urban areas, but in 2004, it established a front group named the Kurdish Freedom Falcons (TAK) to specifically organize urban activities. Although TAK claims to operate independently of the PKK, it has been recognized by the international community as a branch of the PKK and has been included in terrorism lists. PKK/TAK has carried out numerous urban attacks in metropolitan cities and tourist regions, causing hundreds of deaths and targeting both soft and hard targets. Similarly, the DHKP/C, an extremist leftist ideological group that emerged alongside the PKK, has also conducted numerous urban terrorist activities. Many of these actions were in the form of assassinations, and the group has also carried out bombings and suicide attacks against urban targets (Mango, 2005, p. 81). As a reflection of the global wave of fundamentalist terrorism, the Al-Qaeda organization targeted Turkey, conducting four bomb attacks in Istanbul in 2003. These attacks are considered Turkey's first instances of mega-terrorism. The targeted locations included the Bet Israel Synagogue, Neve Shalom Synagogue, HSBC Bank Headquarters, and the British Consulate in Istanbul, resulting in the deaths of 55 people. More recently, ISIS, exploiting the power vacuum created by the Syrian Civil War, has carried out large-scale suicide attacks in

Turkey. These attacks, conducted under the hit-and-run strategy, have diversified to target both soft and hard targets.

2. Crime Prevention Through Environmental Design (CPTED) and Terrorism-Resilient Cities

Creating cities that are resilient to terrorism requires first addressing measures aimed at countering the ultimate goals of terrorism. The hit-and-run strategy primarily seeks to create a climate of societal fear and achieve political objectives through threats. Therefore, a city resilient to terrorism emphasizes generating a sense of security against this fear. This sense of security can be established through a robust intelligence mechanism and the community's psychological resilience against potential terrorist actions. Supporting these elements with spatial measures is also crucial. Designing spaces to withstand terrorist acts not only facilitates intelligence activities but also, although it may not completely prevent terrorist actions, reduces their impact and positively affects the psychological resilience of the community.

The fundamental approach used to make cities resilient against terrorist acts is Crime Prevention Through Environmental Design (CPTED). As one of the modern crime ecology theories, CPTED emerged from the search for methods to prevent crime by transforming the environment in which it occurs, rather than merely predicting where, when, and how crime will happen. This theory, which can be applied in any space where people and crime elements coexist, aims to reduce crime and, consequently, the fear of crime, while enhancing the quality of life by using environmental design in an appropriate and effective manner. At its core, CPTED not only includes protective design measures that make committing a crime more difficult but also aims to psychologically deter potential offenders.

The CPTED literature is built upon six interconnected and mutually supportive elements (Cozens et al., 2005, p. 328). These elements are similarly utilized in the context of creating cities resilient to terrorism. Known as first-generation CPTED, these elements are:

- Access control: Regulates who can enter or exit a space to reduce opportunities for crime
- Surveillance: Increases visibility in an area to deter potential offenders through natural, formal, or mechanical means.
- Territoriality: Enhances a sense of ownership among residents and users, discouraging criminal activity by making it clear that the space is cared for.
- Target hardening: Strengthens physical structures to make it more difficult for offenders to carry out criminal acts.
- Activity support: Encourages legitimate activities in public spaces to naturally increase surveillance and reduce opportunities for crime.
- Image, maintenance, and milieu: Ensures that an area is well-maintained and projects a positive image, signaling that it is protected and under control.

Among these elements, access control, surveillance, and target hardening are directly applicable to countering urban terrorism. Although CPTED is a modern theory, it clearly

reflects influences from the traditional fortress city model through its elements.[5] Traditional cities within fortresses, designed to withstand external invasions, featured natural access control through walls, moats, and gates, natural surveillance through watchtowers, and territoriality through neighborhood-type spatial organization (Federal Emergency Management Agency, 2007, p. 1/2; Petriashvili, 2017, p. 17). In this context, CPTED represents the adaptation of traditional methods to modern tools for ensuring urban security.[6]

All methods used against the hit-and-run strategy, including CPTED, aim to foster a sense of security by reminding the community of the measures taken to counter terrorism and by conveying that the city is protected from terrorist attackers. By increasing the likelihood of attack failure or reducing the intended impact through these measures, the motivation of terrorists is diminished. This approach has proven effective, as many urban terrorist groups worldwide have been forced to either end their operations or modify their methods due to repeated failures. Consequently, making cities resilient to terrorism now involves the active participation of a diverse group of professionals, including city planners, architects, and engineers, in addition to security personnel, politicians, and bureaucrats (Davis, 2019). However, terrorism-resilient city policies naturally vary within a country based on the specific terrorist threats faced by different cities. Investing in cities that have no political or economic significance and are geographically distant from social conflicts may not be a rational approach in the context of creating terrorism-resilient cities. Furthermore, whether terrorists who are unable to carry out attacks in resilient cities will redirect their efforts to these cities remains a debated issue. In Turkey, terrorist attacks are predominantly concentrated in major cities like Istanbul and Ankara, as well as in urban areas of the Southeastern Anatolia Region. This pattern reflects the strategy of terrorist groups to maximize their impact and reach a wide audience. On the other hand, the absence of such attacks in certain cities can be attributed to their socio-economic conditions and geographical features. These cities often have lower population densities, limited economic activity, or are geographically isolated, which makes them less attractive targets for terrorist organizations. Therefore, the distribution of terrorist activities is closely linked to the demographic and economic profiles of the cities.

[5] In the neoliberal urbanization process, gated communities that emerge are often marketed as modern 'fortified cities,' drawing from traditional fortresses.

[6] According to Steven Flusty, who takes a critical view of CPTED methods, there are five different spatial management approaches (Flusty, 2004, p. 70):

- Stealthy Space: Measures to conceal public spaces so they cannot be directly targeted.
- Slippery Space: Making public spaces accessible in an indirect manner.
- Crusty Space: Equipping public spaces with preventive elements against explosions and terrorist incidents. Inappropriate design of urban furniture for such threats can exacerbate the impact rather than mitigate it.
- Prickly Space: Designing public spaces to be deterrent to potential terrorist actions. Planning areas to be unattractive to all users can prevent malicious actors from moving anonymously. For example, people will prefer a different path over a thorny one. Streets and alleys leading to high-potential terrorist targets can be designed to deter potential crowds.
- Jittery Space: Maintaining strict surveillance over public spaces. Technological advancements, such as CCTV systems, have significantly improved urban security. Surveillance before terrorist actions can have strong psychological effects on perpetrators. While rational actions would prioritize quickly leaving the scene after an attack, surveillance systems make this considerably more difficult.

The capital city Ankara, which has been targeted by terrorist attacks, is designed not only to prevent loss of life and property in these incidents but also to send a symbolic message against terrorist organizations. Capitals are of critical importance for national security, and their vulnerability to terrorist attacks poses a significant threat. Ankara's resilience against terrorism is seen both as a practical measure and as a display of strength in terms of national security. Ensuring that capitals are strong and resilient against such actions is a strategy to reinforce the country's security on both domestic and international levels. Capital cities like Baghdad, Mogadishu, and Kabul, where terrorist attacks have become commonplace, exemplify the vulnerability of capitals and the serious threats they pose to national security.[7] Making a city resilient before it becomes a natural target for terrorist actions is much easier than trying to address it after the fact. The resilience of capitals against terrorism plays a critical role in preventing the increase of such actions and maintaining national security.

To create a city resilient to terrorism, it is essential to first equip and support civil buildings, public institutions, public spaces, critical infrastructure, and areas hosting large events with CPTED (Crime Prevention Through Environmental Design) elements.[8] To ensure that resilience measures do not negatively impact urban quality of life, strict security measures should be implemented for public buildings and critical infrastructure, while civil structures and crowded areas should be addressed with more flexible security measures.[9] Especially in city centers, integrating terrorism resilience practices into sustainable urban development policies will provide effective protection while preserving quality of life (Coaffee and Bosher, 2008, p. 75).

According to HM Government, seven key qualities sought in effective urban design related to CPTED are as follows (HM Government, 2012a, p. 11):

- Design Character Consistent with Spatial Identity: The design should be harmonious with the identity and history of its surrounding space.
- Clear Definition of Public Space Boundaries: Public spaces should be clearly defined with distinct boundaries to enhance ownership and security.
- Attractive and Successful Features that Encourage Social Use: Design features should be aesthetically pleasing and functional, promoting social interaction among users.
- Ease of Movement: Arrangements should allow people to move comfortably within the space.

[7] In recent times, many countries have felt the need to relocate their capitals for security and other reasons. Some of these countries have either adopted other cities as their capital or built new ones from scratch. Examples of capitals constructed from scratch in this context include Brasília in Brazil, Canberra in Australia, Islamabad in Pakistan, and Abuja in Nigeria.

[8] The proximity or mixed use of civilian and public buildings is one of the most critical challenges in implementing resilience against terrorism (Alasiri, 2020). The spatial hierarchy proposed in defensible space theory, which advocates for the spatial separation of civilian and public buildings and the clustering of public buildings in particular, can contribute to addressing this issue (Matijosaitiene and Petriashvili, 2017, p. 32).

[9] In the context of resilience against terrorism, there are three risk management options for each space. The first option is maximum risk, accepted with zero cost. This applies to spaces that are not exposed to any terrorist threats. The second option is reduced risk, accepted with low cost. This method, aimed at mitigating risks in light of terrorist threats, is particularly applied in the context of the resilience of soft targets. Given the involvement of multiple stakeholders, these methods are implemented in a participatory manner (design in). The third option is zero risk, implemented at a high cost. This approach, particularly applied to the resilience of hard targets, involves top-down decisions (design out) (Federal Emergency Management Agency, 2007, pp. 2-1).

- Legibility: The space should be easy to understand and navigate, reducing the difficulty of orientation.
- Adaptability and Responsiveness to Change: The design should accommodate evolving needs and technologies.
- Multi-functionality: The area should support various purposes and activities, making it versatile.[10]

These qualities contribute to both enhancing security and ensuring that the space is socially and aesthetically effective. Today, a significant portion of terrorist attacks in urban areas are carried out using bombings, and during such attacks, the effects of attacks are divided into three main stages:

- The lethal blast radius caused by the pressure effect of the explosion: The effective lethal distance of the explosion, depending on the type and amount of explosive.
- The effect distance where injuries from the fireball created immediately after the explosion are observed: The area affected by the fireball at the moment of the explosion, where there is a high risk of injury.
- The shrapnel distance where injuries from indirect effects of the explosion are observed: The area affected by shrapnel fragments that emerge after the explosion.

Considering these effects, a three-tier protection layer is recommended to prevent or reduce the impact of terrorist attacks on buildings, crowds and critical infrastructure. These layers are based on reports established by the General Services Administration (GSA) in the US after the 1995 Oklahoma City bombing and further developed by various agencies, including Federal Emergency Management Agency, in the post-9/11 era (GSA, 1999; Rothrock, 2010; Bartolo, 2013; CPNI, 2014; Petriashvili, 2017). The three-tier protection layers are as follows:

- Outer layer: A protective layer that prevents approach to the target. By limiting access to the target, it makes it more difficult for potential attackers to reach the target.
- Middle layer: The safety distance around the target's external environment. This layer covers the security area around the target and is designed to reduce the effects of an explosion.
- Inner layer: The target's exterior protection. This layer protects the target from direct blast effects and safeguards the interior of the building or infrastructure.[11]

The three-tier protection system recommended by Federal Emergency Management Agency is crucial for enhancing the resilience of important buildings, crowds, and critical infrastructure that are likely to be targeted by terrorist acts.[12] This system should be applied specifically to public buildings, military installations, buildings housing security units, and areas with large crowds. Terrorist organizations may exploit the security weaknesses of such locations, which

[10] The concept of territoriality, which is one of the CPTED elements, is an effective measure at the neighborhood level but cannot be considered an effective element for metropolitan central business districts, where the population is heterogeneous (Savitch, 2014, p. 217).

[11] The branch that focuses on security-oriented measures and designs to make cities resilient to terrorism has begun to be referred to as 'security engineering' (Federal Emergency Management Agency, 2007, p. 1/36).

[12] Depending on the density of the urban fabric, certain layers may become narrower, or two layers may share the same space (Keskin, 2019, p. 31).

they view as legitimate targets, to carry out their actions. Therefore, a target equipped with these protection layers is not only protected against potential attacks but also creates a deterrent effect on terrorist organizations. In other words, a robust protection structure can influence terrorists' target selection and may lead them to reconsider their decisions to carry out attacks.[13]

3. Case Study: Analyzing Terrorism-Resilient Urban Principles in The Kızılay Square Example

Implementing sustainable CPTED (Crime Prevention Through Environmental Design) elements used in major global metropolitan cities in Ankara is crucial for creating a capital city resilient to terrorism.[14] Evaluating Kızılay Square, which is the most crowded and strategically important gathering area in Ankara, within this framework is particularly significant.[15] Kızılay Square, as a center with both high-density civilian population and various public and commercial spaces, is one of the most sensitive points against terrorist actions. Sustainable CPTED elements can enhance security in such areas and reduce the impact of potential terrorist activities, thereby strengthening the city's overall security profile. These approaches play a critical role in both protecting against current threats and preparing for future risks.

The outer layer of protection, known as the first layer, encompasses barriers constructed between the target and the external environment to prevent or complicate any illegal entry. These barriers can be categorized into natural barriers (e.g., trees) and artificial barriers (e.g., fences and walls). The functions of the outer protection layer in the context of resilience to terrorism are as follows: creating a barrier to protect the target in armed attacks, providing an entry obstacle in cases of suicide bombings involving vests and vehicles, and helping to minimize damage by absorbing the impact in case of an explosion occurring outside. Such external protection enhances the security of targets both physically and strategically and reduces the impact of terrorist actions.

The adaptation of the relationship between the target and the outer protection layer according to different ground profiles has a direct impact on the protection effect. In Barakat and Hetherington's (1999, p. 342) study simulating four different ground structures, various scenarios were evaluated with barriers of fixed size and distance. The results obtained are as follows:

[13] Psychological resilience of the society against terrorist acts is at least as important as urban resilience. In addition to raising awareness about terrorism, remembering past terrorist acts is also a part of this process. Memorials built after terrorist attacks serve as 'sites of memory' and are the most significant visual reminders in this context (Paizs, 2013, p. 11). In the case of Ankara, the 15 July Martyrs' Memorial was constructed in Beştepe, in front of the presidential complex, to commemorate the civilians and security personnel who were martyred during the 15 July coup attempt. It is noteworthy that, aside from this memorial, no other monuments or symbols have been erected in Ankara for the terrorist acts that have occurred over time (Kesici, 2017, pp. 46-48).

[14] Relocating military and public institutions around Kızılay Square to more secure locations can reduce the risk of these facilities being targeted by terrorist organizations. By removing high-profile hard targets from the area, the need for stringent CPTED measures is diminished, which significantly contributes to overall risk reduction.

[15] The Kızılay Square should be considered in relation to Güvenpark, with which it has an organic connection, and the pedestrianized streets directly linked to it, rather than merely as an intersection where Atatürk Boulevard and Gazi Mustafa Kemal Boulevard cross.

- When the explosion point is at a low elevation, the building is at a high elevation, and the barrier is a trench type: The lowest level of protection was detected.
- When the explosion point is at a low elevation, the building is at a high elevation, and the barrier is a berm type: The second lowest level of protection was date
- When the explosion point and the building are at the same elevation and the barrier is a berm type: The second highest level of protection was provided.
- When the explosion point is at a high elevation, the building is at a low elevation, and the barrier is a berm type: The highest level of protection was achieved.

These results highlight the effects of the distance between the target and the outer protection layer, ground profile, and type of barrier on the effectiveness of protection.

When positioning the outer protection layer, factors such as topographic structure, the location of the target within the terrain, the shape of the outer protection layer, and its relationship with the target should be considered to develop more effective solutions against potential terrorist actions. Taking these variables into account during land selection and building design phases will yield much more efficient results compared to later adjustments of the outer protection layers. Today, the most significant factor preventing the implementation of rigid CPTED (Crime Prevention Through Environmental Design) elements is the lack of consideration for security measures during the initial construction of the target. In such cases, more flexible and adaptable CPTED elements are implemented instead of rigid measures that would provide optimal effectiveness. Flexible CPTED offers more adaptable and easily implementable solutions, improving security by better accommodating existing building and environmental conditions.

3.1. Traffic control strategies in the context of CPTED

To enhance the effectiveness of the outer protection layer, CPTED elements should be activated before a potential perpetrator approaches the target. Especially to prevent vehicle-based terrorist attacks commonly seen in metropolitan cities today, it is crucial to slow down the speed of the potential perpetrator and have them reviewed by organic, mechanical, or organized surveillance tools before approaching the outer protection layer.[16] Terrorist organizations frequently use these methods due to reasons such as the ease of carrying out vehicle-based attacks, difficulty in detection, the impact being equivalent to a major bombing, lack of specialized expertise and training, challenges in armed intervention by security forces, and the absence of issues related to bomb production, transportation, and cost (CPNI, 2014; Öğünç, 2019; Alasiri, 2020). Therefore, creating an effective outer protection layer to prevent vehicle-based attacks and properly implementing CPTED elements is of great importance.

[16] When considering the four vehicle ramming attacks in 2016 and 2017—during the Bastille Day celebrations in Nice, France; at the Christmas Market in Berlin, Germany; on Westminster Bridge in London, England; and on La Rambla Boulevard in Barcelona, Spain—where over a hundred people were killed, it becomes evident that vehicle-based terrorist attacks are an increasingly significant issue (Peachey, 2017).

One of the key characteristics of vehicle-based attacks is the short duration between the start and end of the attack. Since no preparation is required for the attack, a vehicle used as an attack tool can be effectively utilized until it encounters the first barrier while driving through a crowd. In crowded areas, security personnel are often unarmed to avoid social concerns, or even if armed, it is difficult to intervene within this short period. As a result, the attack usually ends only when it encounters a physical barrier. In this context, it is crucial to control the vehicle's speed and prevent it from approaching targets directly and at a straight angle to reduce the impact of vehicle-based attacks (CPNI, 2014, p. 22). Some tools used to reduce vehicle speed when approaching critical areas include chicanes, roundabouts, artificial curves in the road, speed bumps, raised pedestrian crossings, trees used as road barriers, and no-parking restrictions (Federal Emergency Management Agency , 2007, p. 5/7). These measures can help significantly reduce potential terrorist attacks by decreasing vehicle speed and changing its direction.[17]

One of the most effective methods for preventing vehicle-borne bomb attacks in cities before they reach their targets is the Automatic Number Plate Recognition (ANPR) system. Since terrorist attacks are often carried out using stolen or rented vehicles (Özçelik, 2016), ANPR systems integrated with CCTV systems are critically important for tracking suspicious vehicles within the city. These systems can quickly read vehicle plates and analyze them in a central environment, achieving significant successes.[18] A major challenge in detecting bomb-laden vehicles is preventing the use of duplicate or fake plates. To overcome this issue, the use of multiple RFID (Radio Frequency Identification) tagged plates is recommended, and RFID plate detection systems should be added at city entry and exit points (Öğünç, 2019, p. 415).[19] In the United States, the digital surveillance network implemented by the Pentagon in 2003 allows for the detection and tracking of physical characteristics, colors, and even biometric images of drivers for all vehicles within the city (Coaffee, 2004, p. 202). Advancing artificial intelligence systems will further facilitate these processes and make vehicle detection and tracking more efficient.[20]

[17] In preventing the use of vehicles in terrorist attacks, it is crucial to identify parking areas and parking regulations near critical targets and crowded places. Continuous surveillance of the entrances to enclosed parking areas by organic, mechanical, and organized monitoring elements is essential. Enclosed parking facilities should be constructed independently of the building structure, and when determining the location of open parking areas, safety distances should be observed. If safety distances cannot be maintained, permanent and temporary parking should be prohibited (Federal Emergency Management Agency, 2007, pp. 6/25 – 6/30).

[18] License plate recognition systems, a component of modern surveillance systems, were invented by the British Police Scientific Development Branch in 1976. The first prototype was developed in 1979, and thanks to this system, the first stolen vehicle was apprehended in 1981.

[19] One of the major issues with mechanical surveillance tools is their reliance on operator control. Operators at command centers have to monitor, view, and analyze large amounts of data, which can make it difficult to detect suspicious situations and individuals. To address this problem, mechanical surveillance systems supported by 'artificial intelligence' are likely to produce more successful results (Öğünç, 2018, p. 706).

[20] The most significant issue caused by camera surveillance is the intervention in an individual's freedom of privacy. In traditional times, the proverb 'city air liberates' reflected the anonymity cities provided. However, with the rise of surveillance, this notion has reversed. Consequently, people who do not wish to have their living spaces intruded upon may move to rural areas or leave city centers, leading to 'concentrated decentralization' in suburban areas (Marcuse, 2002, p. 597).

In Kızılay Square, one of Ankara's busiest transit routes, methods to reduce vehicle speed are not employed. The primary reason for this is that such methods can increase traffic congestion, leading to transportation delays, and are typically only effective for protecting micro-targets. In large-scale urban areas like Kızılay, the most effective protection strategy against vehicle attacks is to implement underground vehicle traffic and pedestrianization policies.[21] These strategies separate vehicles from pedestrians, preventing vehicles from accessing areas where pedestrians are present. Additionally, reducing the visibility of surrounding civilian and public structures from vehicles makes it more difficult for potential terrorist attacks to target these areas. This way, both vehicle and pedestrian mobility are managed more safely.[22]

3.2. Pedestrianization policies in the context of CPTED

In cities, in addition to fixed elements such as buildings and critical infrastructure, another significant target for terrorist actions is crowds in open spaces. These crowds often gather in places with intense activities, public transport hubs, or popular shopping and leisure areas. Terrorists exploit the presence of a large number of civilians in these areas to create a greater impact and instill fear.[23]

Crowds can form in connection with physical spaces such as cinemas, theaters, shopping malls, and stadiums, or they can appear as temporary and space-independent gatherings like events, rallies, and marches (HM Government, 2012a, p. 4; ANZCTC, 2017a, p. 4). Especially for terrorist organizations that have completely lost their search for legitimate targets, attacks on civilian crowds are used to create an atmosphere of fear. Such attacks aim to induce agoraphobia (fear of open spaces) and disrupt social life; therefore, the most crowded areas of cities or event spaces are frequently targeted (Coaffee et al., 2009, p. 497). Various CPTED

[21] In 2003, an approach focused on vehicles was attempted in Kızılay to separate vehicle and pedestrian traffic by closing pedestrian crossings on boulevards and directing pedestrians to underpasses. This vehicle-centric and unsustainable method quickly faced public backlash and was discontinued (İlkay, 2007, pp. 200-202).

[22] Access control operates on three levels: at the macro level, it involves securing a country's borders; at the meso level, it concerns controlling entry into a city or region; and at the micro level, it entails managing and controlling access to a specific target through various means. Controlling entry into the city where a terrorist act is to be carried out is just as crucial as controlling access to the potential target. As seen in previous terrorist acts in Ankara, the perpetrators or the vehicle used in the attack often enter the city shortly before the act is carried out. Therefore, monitoring the entry and exit points of cities can prevent a terrorist act during the planning stage. While some cities, due to their topography, have a limited number of entry and exit routes, which directly benefits control efforts, the vast expanse of a city like Ankara poses challenges. Besides the seven main transportation arteries leading into Ankara from neighboring provinces, there are hundreds of secondary roads that allow access to the city.

[23] Several factors influence the targeting of crowds in terrorist attacks (ANZCTC, 2017b, p. 5):

- Attacks on crowds result in higher casualties.
- They create a fear environment by having a negative psychological impact on urban life.
- Unlike hard targets, crowds are often considered soft targets.
- Crowded places frequently hold symbolic significance for a country, government, or culture.
- Attacks on crowds often have side effects such as disrupting transportation systems, hindering tourism, and causing long-term economic downturns.
- Crowds can become propaganda material on platforms like social media, serving as a stage for the terrorist act.
- These attacks typically receive more coverage in global media compared to other types of actions.

applications are implemented worldwide to protect crowds in open spaces from terrorist actions.[24]

Pedestrianization practices are one of the most important CPTED methods for ensuring the safety of human crowds. Under the framework of sustainable urbanization, pedestrianized streets and avenues implemented worldwide have emerged as a crucial component of terrorism-resistant cities. Pedestrianization, along with other CPTED elements, offers opportunities that directly affect pedestrian capacity, pedestrian flow speed, pedestrian behavior, and pedestrian surveillance in a particular area (Keskin, 2019, p. 38).

Separating pedestrian crowds from vehicle traffic in a rigid or flexible manner can prevent the execution of vehicle-borne bomb attacks and methods such as driving vehicles into crowds used in terrorist actions. As seen worldwide, in Ankara, important and crowded streets directly connected to Kızılay Square, such as Selanik Street, İzmir Street, Sakarya Street, Yüksel Street, Karanfil Street, and Konur Street, have been pedestrianized. Among the pedestrianization projects that have come back to the agenda following the wave of terrorism in Ankara in 2016, the pedestrianization projects for Ulus Square and Kızılay Square, the two most important and crowded squares in the city, stand out.[25]

The complete pedestrianization of Kızılay Square is seen as a significant opportunity to restore the functional and social values that the square has lost over time. Pedestrianization can contribute to the revival of the area and increase social interaction, allowing the crowds that were lost to regroup around the square. This process will enable the area to be reshaped both physically and socially.

3.3. Use of innovative barriers in the context of CPTED

The pedestrianization process alone is not sufficient to create a space resistant to terrorism. CPTED elements, which are used to separate human crowds from vehicular traffic, are employed worldwide, particularly at the entrances and exits of pedestrianized streets and roads, for this purpose. These measures are designed to permanently or temporarily block vehicular traffic. Fixed or hydraulic bollards and mushroom-arm barriers are traditional CPTED elements commonly used to separate pedestrian and vehicular traffic. These elements, designed to withstand vehicle passage, act as barriers between vehicle and pedestrian areas. However, in addition to effectively preventing vehicular traffic, these barriers must be designed not to disrupt pedestrian flow and accessibility for people with disabilities. Frequent use of such traditional methods in public spaces can lead to aesthetic issues and may also

[24] Like all phobias, fear of open spaces (agoraphobia) also has its roots in early humans. In prehistoric times, hunter-gatherer communities avoided open spaces as much as possible due to their vulnerability to nature and wild animals. Modern terrorist attacks aim to trigger this fear again in people, thereby encouraging them to confine themselves to their homes.

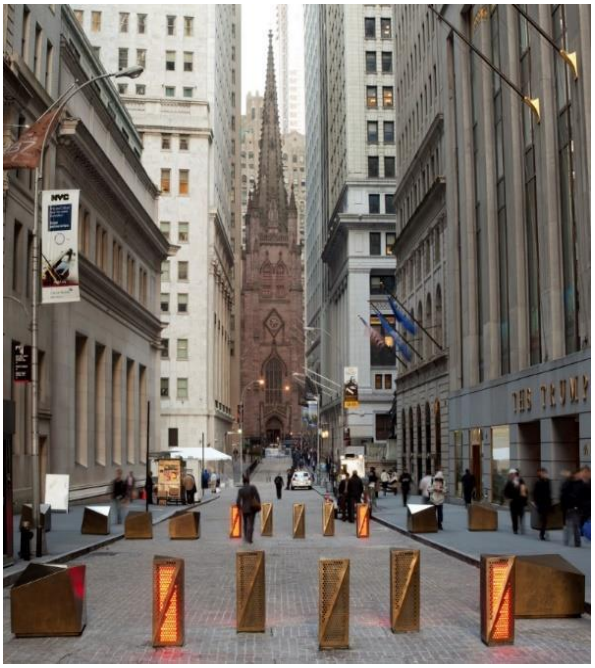
[25] Most of the pedestrianized streets and avenues in Kızılay were implemented in the 1980s (Kaplan and Acuner, 2005, p. 120). New pedestrian areas were neglected for a long period until the advent of terrorist attacks. The pedestrianized areas inherited from these years now stand out as breathable spaces amidst the heavy pedestrian traffic in Kızılay (Ayoğlu, 2010, p. 49).

foster a sense of insecurity within the community.

Following the 9/11 attacks, security designs in metropolitan cities were often characterized by a lack of aesthetics and a monotonous appearance (Marcuse, 2006; Benton-Short, 2007; Coaffee and O'Hare, 2008). However, over time, security designers have developed innovative solutions by combining traditional security measures with functionality, minimalism, invisibility, and aesthetics (Miletic, 2017; Quito, 2017; Coaffee, 2018). As open democratic societies do not embrace a surveillance society framework, aesthetic and functional security measures have been favored over the fortification of urban spaces (Gebbeken et al., 2012, p. 154). Some innovative security measures, such as "No-Go barriers," "Rotating bollards," "Portable barriers," and "Tiger Traps," offer effective solutions against terrorist attacks while minimizing the negative impact on urban life quality. These tools are used to enhance security while maintaining the aesthetic and functional balance of cities.[26]

Figure 1

Nogo Barriers At Wall Street Entrance



Aesthetic No-Go barriers, designed to restrict vehicle access to certain streets and roads, have increasingly been adopted in metropolitan areas across the globe. Initially introduced in New York's Wall Street district (Figure 1), these barriers provide an effective means of preventing vehicle entry while maintaining a more visually appealing alternative to conventional security measures like bollards and concrete barriers (Federal Emergency Management Agency, 2007, p. 173).

Kaynak: (https://theknowledgeexchangeblog.com/tag/nogo/*)*

Turntable barriers provide an effective solution for controlling access to central streets and roads where pedestrian and vehicle traffic coexist (Figure 2). These barriers allow streets and roads to be fully pedestrianized during certain hours of the day while enabling mixed use during other times (Federal Emergency Management Agency, 2007, p. 4/48). In contrast, removing fixed barriers to allow vehicle access to closed streets can be both time-consuming

[26] As previously mentioned, one of the goals of terrorism is to create a fear of open spaces (agoraphobia) with the anxiety that any area might become a target of terrorist attacks. Therefore, if visible CPTED measures are applied in a paranoid manner, they may create similar negative externalities. This paradox, which could lead to 'locally unwanted land use' due to its impact on social and commercial life, can be mitigated by integrating CPTED elements into normal living environments in an aesthetically pleasing way. T (Coaffee et al, 2009, p. 496).

and cumbersome. Therefore, turntable barriers offer advantages in terms of both security and flexibility.[27]

Figure 2

Turntable Barriers

Kaynak: (http://www.macton.com/security-turntables)

Portable barriers designed for crowded events do not cause aesthetic issues like permanent barriers since they are only used during events (Figure 3). These barriers can be set up and removed within minutes, providing effective protection against vehicle attacks while not obstructing pedestrian and cyclist passage (Coaffee, 2008, p. 42).

Figure 3

Portable Barrier

Kaykak: (Dezeen.com, 2018)

[27] Fully pedestrianized areas enclosed with fixed barriers may face issues such as the accessibility of ambulances and fire trucks when needed, as well as the delivery of commercial goods to businesses on the street. In this context, hydraulic barriers and rotating barriers offer significant advantages.

Figure 4

Tiger Trap

One of the successful security measures effectively used in recent times is tiger traps, particularly at the entrances of crowded streets and roads where vehicle entry is prohibited, to prevent attacks involving bomb-laden vehicles and vehicle-ramming attacks targeting civilians (Figure 4).

Kaynak: (Federal Emergency Management Agency, 2007, p. 175)

This system allows pedestrians and cyclists to pass freely, while vehicles attempting to pass are trapped, thereby providing effective security (Rothrock, 2010, pp. 35-36; Bartolo, 2013, pp. 50-51; Petriashvili, 2017, p. 32). Due to its ability to remain invisible and to trap a dangerous vehicle without giving it the opportunity to change its course, tiger traps offer a more effective solution compared to barricades (Gebbeken et al., 2012, p. 160; Paizs, 2013, p. 38). Tiger traps can be effectively implemented at the entrances of areas in Ankara, such as Karanfil Street, İzmir Street, Sakarya Street, and Yüksel Street, which are closed to vehicle traffic and heavily used by pedestrians.[28]

In the metropolises of developed countries, there is an increasing number of examples where traditional protection methods are being approached more innovatively, using new concepts and materials while balancing security and openness. However, aside from a few examples of active barriers, these practices have yet to be reflected in the Kızılay area, where pedestrian and vehicle traffic is still being separated by traditional and aesthetically unpleasing passive barriers, bollards, and mushroom-shaped obstacles (Figure 5). The current setup in Kızılay, while functional, contrasts sharply with the evolving global standards that prioritize both security and urban aesthetics. The persistence of these outdated measures highlights a missed opportunity to enhance the area's visual appeal and functionality while providing effective security solutions. Incorporating modern, aesthetically pleasing security designs could not only improve the public perception of safety but also contribute to the overall urban experience by creating a more welcoming and integrated environment.

[28] Vehicle traffic management against terrorist attacks can be implemented in four different ways: complete exclusion of vehicle traffic from the designated area, partial inclusion of vehicle traffic after natural or mechanical surveillance, use of temporary barriers to restrict traffic in emergencies, and slowing down traffic (Keskin, 2019, pp. 35-37).

Figure 5

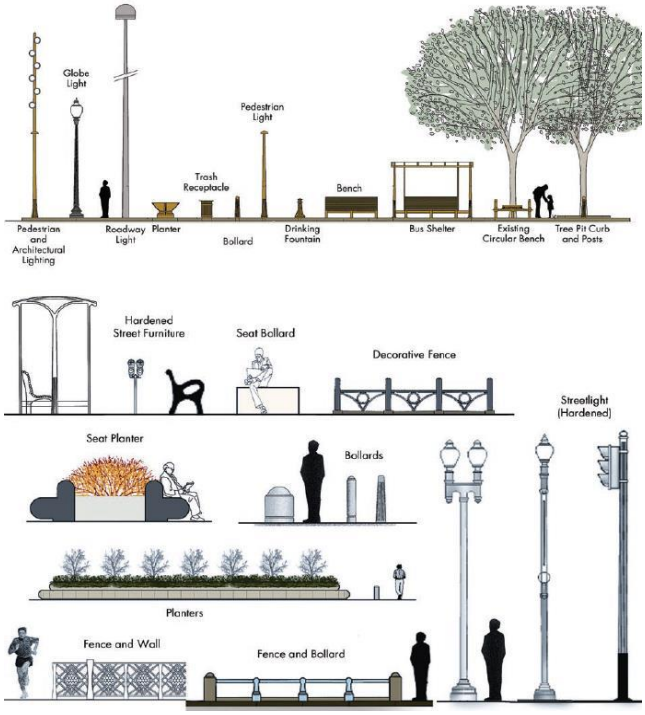
Kızılay'da Aktif ve Pasif Bariyer Ögeleri

Kaynak: (Personal archive)

3.4. Use of street furnıture ın the context of CPTED

Figure 6

Street Furniture can be Used as CPTED Items



Street furniture or urban furniture used in crowded areas can be transformed into CPTED elements in two ways. The first involves modifying the design of security-oriented passive barriers so that these objects function as street furniture or art pieces. The second involves adapting street furniture with minor modifications to serve as security tools, turning them into passive barriers (Figure 6). In many cities, items such as trees, shrubs, plant containers, art installations, symbolic elements, seating benches, trash cans, bus stops, traffic lights, and street lighting not only fulfill the natural entry control function of CPTED but are also used to minimize the shrapnel effect in the event of a potential bombing attack (Barry-Jester, 2017).

A sustainable use of concrete blocks and security barriers is their transformation into plant containers through a change in function. This transformation allows plant containers to separate pedestrian and vehicle traffic while providing an aesthetic solution to the monotonous appearance of concrete blocks and barriers (Figure 7). Additionally, it offers an alternative to the durability issues of trees and plants, providing an effective solution in terms of both security and aesthetics.

Figure 7

Security Barriers Functioning as Plant Vaults in New York and Melbourne

A sustainable use of concrete blocks and security barriers is their transformation into plant containers through a change in function. This transformation allows plant containers to separate pedestrian and vehicle traffic while providing an aesthetic solution to the monotonous appearance of concrete blocks and barriers (Figure 7). Additionally, it offers an alternative to the durability issues of trees and plants, providing an effective solution in terms of both security and aesthetics.

Kaynak: (dotyconcrete.com, 2017; Medium.com, 2018; Failedarchitecture.com, 2019)

Figure 8

Street Furniture with CPTED Function in Kızılay

In front of the Kızılay AVM, which forms the largest plaza area in Kızılay Square, security barriers have been transformed into plant containers to separate pedestrian traffic from vehicle traffic. Similarly, along the Atatürk Boulevard side of Güvenpark, concrete barriers functioning as street furniture are used to separate pedestrian and vehicle traffic. These applications serve both aesthetic and security purposes (Figure 8).

Kaynak: (Personal archive)

Figure 9

Transparent Trash Can Example

Kaynak: (core77.com, 2011)

Another important modification in the design of urban furniture for counter-terrorism purposes is ensuring that items do not provide hiding places for explosives. In this context, new practices include completely removing or designing trash cans in a transparent manner in certain areas and arranging benches so they cannot be used to hide objects (State of Australian Cities Conference, 2015).[29] Especially in crowded streets and areas, enclosed trash cans are often targeted because they can be used to camouflage bombs and reduce the risk of external intervention (Figure 9). Therefore, the spatial placement and design of trash cans should be carefully considered as part of preventive measures against potential terrorist actions (Akbulut, 2020, p. 33).

Figure 10

Terror Resistant Trash Can

Kaynak: (copunesahipcik,org, 2020)

Another example of trash cans being renewed according to CPTED principles is the renovation campaign initiated by the British advertising firm Media Metrica in London's crowded streets and avenues. As part of this campaign, old trash cans were replaced with technologically advanced bins named "Renew." The new trash cans are equipped with heat-sensitive sensors that can detect potential explosions in advance and reduce the intensity of the blast to minimize damage (Figure 10). Additionally, these bins provide extra functionality by delivering daily weather information, transportation updates, and current news to the public. The implementation began in 2019 at busy bus and metro stops (Copunesahipcik.org, 2020).

[29] In inhabited areas and crowded spaces, other elements where bombs may be concealed include vents, grates, manhole covers, and cobblestones. These types of elements should be made inaccessible or concealed from anyone other than authorized personnel (Öğünç, 2018, p. 707).

Figure 11

Trash can Example in Kızılay

Following the 2016 terrorist attacks, plastic trash bags have been preferred over traditional fixed and rigid trash cans in Kızılay Square and its surroundings. This practice has improved security by making it more difficult to hide bombs in trash cans and has provided a sustainable solution (Figure 11).

Kaynak: (personal archive)

3.5. Use of symbolic elements in the context of CPTED

The primary goal of artistic and symbolic objects commonly seen in cities is often to enhance visual appeal. However, these objects can be transformed into passive physical barriers and CPTED elements with small modifications. For example, the "I Amsterdam" icon (Figure 12) in front of the Rijksmuseum in Amsterdam, which is a pioneer of city name signs seen in many cities today, not only conveys a symbolic message but is also designed to prevent vehicles from approaching the museum (Petriashvili, 2017, pp. 31-32).[30]

Figure 12

I Amsterdam İcon

Kaynak: (https://www.iamexpat.nl/expat-info/dutch-expat-news/end-i-amsterdam-sign)

Another example is the massive Arsenal sign in front of the Emirates Stadium in London, which is considered one of the most successful applications of iconic symbols for CPTED purposes

[30] The 'I Amsterdam' sign was removed in 2018 as part of the city's policies to prevent overtourism, following the pedestrianization of the museum entrance.

(Figure 13). This sign serves not only as an aesthetic symbol but also as a barrier to prevent potential vehicle-based bomb attacks on the crowd in front of the stadium. Designed to be strong enough to stop a truck moving at 70 km/h, this barrier achieves its security purpose while maintaining aesthetic qualities that do not negatively impact the quality of life (Coaffee and Bosher, 2008, p. 79).

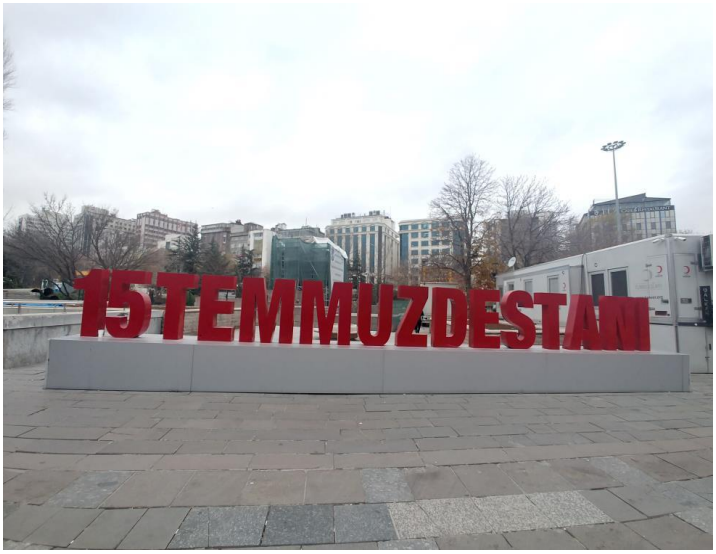
Figure 13

Symbolic icon Functioning as CPTED Element in Front of Emirates Stadium

Kaynak: (Havis, 2017)

Figure 14

Use of Symbolic Structure as a CPTED Element in Kızılay



Kaynak: (personal archive)

A similar application in Kızılay can be seen in the 15 July icon, which was built to separate Güvenpark from vehicle traffic. This icon functions both as an aesthetic symbol and as a physical barrier for security purposes (Figure 14).[31]

[31] In spaces with large crowds, shared areas such as trees providing shade, water features, and artistic elements for photography create a social triangulation effect. This effect is directly related to CPTED's features of access control, natural surveillance, and territoriality (Nikolopoulo et al., 2016, p. 86).

3.6. Incorporating trees and water features into CPTED strategies

Figure 15

Examples of Trees Converted to CPTED Elements

Kaynak: (ANZCTC, 2017a, p. 9; Federal Emergency Management Agency, 2007, pp. 5/36)

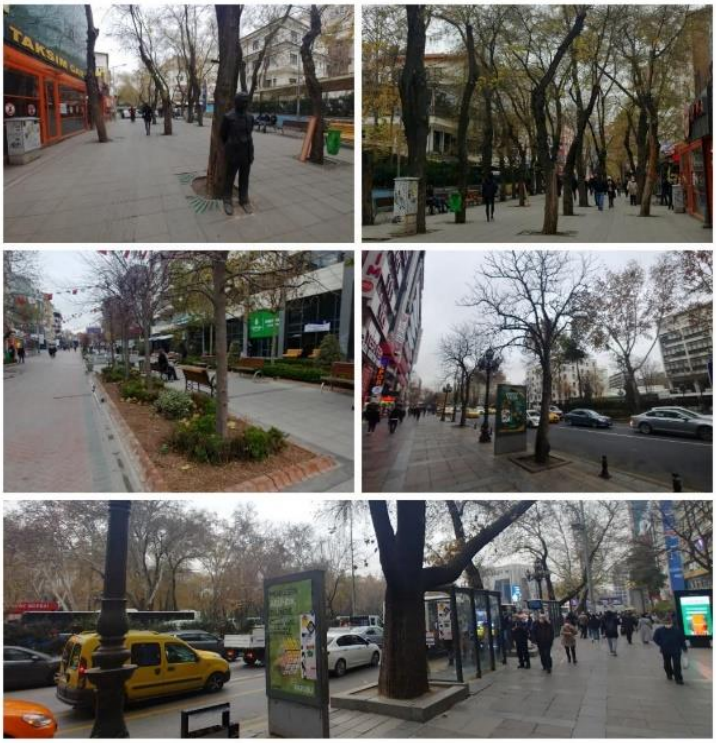
When discussing outer protective layers, passive barriers and security walls typically come to mind. However, trees, shrubs, and plants are among the most sustainable and natural elements used to provide flexible CPTED features for natural entry control (Figure 15). Large-stemmed trees can function as natural barriers instead of artificial ones, without giving the impression of being used for this purpose (Despard, 2012, p. 151). Similarly, integrating certain plant species with walls and fences can both enhance the entry control function and positively impact the quality of life as green space (Fennelly and Perry, 2018, pp. 217-220).[32]

In Kızılay Square, trees are frequently utilized as CPTED elements due to their multifaceted roles in enhancing safety and security. They effectively serve to delineate pedestrian and vehicular traffic, thereby reducing potential conflicts between different modes of transportation. Additionally, trees function as natural barriers at the entrances and exits of pedestrianized areas, helping to regulate access and control movement. They also play a crucial role in distinguishing between public and private spaces, providing clear boundaries and enhancing privacy. Moreover, trees help in dividing roads and creating safety buffers in front of buildings, contributing to overall safety and spatial organization in the area (Figure 16).

[32] To ensure the effectiveness of using plants and trees as CPTED elements, they must be regularly maintained, protected from climatic and environmental conditions, and designed so that they do not inadvertently restrict visibility or provide hiding places for attackers while fulfilling their security function (Federal Emergency Management Agency, 2007, pp. 5/34-5/37; Despard, 2012, pp. 154-159). A significant disadvantage of using trees as barriers is that, unlike other types of barriers, they cannot be relocated if necessary and can only be removed by cutting them down (ANZCTC, 2017a, pp. 16-17).

Figure 16

Trees used as CPTED elements in Kızılay



Kaynak: (personal archive)

Figure 17

US London Embassy Project and Water Features as CPTED Element

Kaynak: (wainwright, 2016)

One of the effective and aesthetic methods used to restrict access to buildings and crowded plazas is water features. Since ancient times, moats used alongside walls for fortress protection are frequently employed in modern CPTED methods. These moats can consist of natural water sources such as lakes and rivers, or artificial elements like pools and canals. For example, in response to increasing terrorist threats, the U.S. has invested $1 billion to build its embassy in London, which is considered one of the safest buildings in the world, (Figure 17) water elements were used to provide a safety buffer (Monaghan and McIlhatton, 2012, p. 743; Wainwright, 2016).

Figure 18

Water features functioning as CPTED elements in Kızılay Square

In Kızılay Square, the pool located just in front of the Güvenpark Monument functions to restrict access to the symbolic area of the plaza. This pool acts as both a physical barrier, limiting access to certain areas of the square, and provides an aesthetically sustainable impression. The pool's design plays a crucial role not only as an aesthetic and functional element but also within security strategies. In this context, the pool's current location and design provide an effective arrangement for the overall layout and accessibility of the square (Figure 18).

Kaynak: (personal archive)

3.7. Artificial landforms and topographic elements in the context of CPTED

Figure 19

Using Elevation Differences to Prevent Vehicular Attacks

Transforming natural and artificial elevation differences according to CPTED (Crime Prevention Through Environmental Design) principles using various tools is one of the most effective strategies to mitigate the risk of vehicle-based attacks, especially in pedestrianized areas. Converting elevation differences into steps not only serves as a barrier preventing vehicle access but also provides a solution that does not disrupt pedestrian traffic (Figure 19). This approach can be used to both enhance security and ensure that pedestrians can move comfortably and safely.

Kaynak: (RIBA, 2010, p. 12)

Figure 20

Stairs in Kızılay with CPTED Element Function

Kaynak: (personal archive)

In many of Kızılay's crowded pedestrian streets, stairs have been used as a CPTED element by transforming elevation differences. Stairs not only separate vehicular traffic from pedestrianized areas but also create distinctions between different pedestrianized zones, helping to prevent excessive crowding (Figure 20).

Figure 21

CPTED elements in front of Minneapolis Courthouse

Kaynak: (Federal Emergency Management Agency, 2007, pp. 6/20-6/22)

As external protective layers, walls provide a high level of security but can create aesthetic issues. Therefore, examples where security measures are integrated with aesthetics and do not compromise quality of life are increasingly valued by designers (Coaffee et al., 2009, p. 496).[33] These CPTED elements, designed as artificial landforms, are implemented in the forms of ditches and elevations. They help prevent the approach of dangerous vehicles, minimize the shrapnel effect in the event of an explosion, and enhance environmental surveillance. When designed in accordance with the area's topography, they also offer a sustainable aesthetic appearance. For instance, the artificial elevations and barriers made of logs used in the area above the enclosed vehicle parking lot in front of the courthouse in Minneapolis, USA, (Figure 21) provide effective protection while maintaining aesthetic harmony with the region's natural and cultural features (Federal Emergency Management Agency, 2007, pp. 6/20-6/22). It is important that such artificial barriers do not immediately convey a security purpose to the public, thereby preventing concern (Gebbeken et al., 2012, p. 157).

[33] Aesthetics and functionality are equally important elements for CPTED features. A security element that is not functional will only have symbolic value. A classic example of this is the thousands of bunkers built during Enver Hoxha's regime in Albania, which, due to security paranoia, failed to serve their intended security function.

Conclusion

Just as there are multiple dimensions to counterterrorism, the strategies employed to combat different types of terrorism vary depending on the specific threat. In this context, terrorism is classified in various ways, including by its sources and targets, geographical boundaries, objectives, and methods. However, as highlighted in this study, terrorism can also be categorized spatially into rural terrorism and urban terrorism. The spatial distinction between these two forms of terrorism, which have distinct sources, targets, objectives, and methods, is crucial in shaping effective counterterrorism policies.

Methods for combating terrorism in urban areas differ significantly from those used in rural settings. One of the most prominent approaches in recent years is CPTED (Crime Prevention Through Environmental Design), which aims to enhance urban resilience against terrorist activities through strategic environmental design. This method has been widely adopted in metropolitan areas around the world. In light of these considerations, the conclusion section of this research focuses on Kızılay Square and provides detailed findings and recommendations for improving its resilience against terrorist acts. The research underscores the importance of a comprehensive security strategy tailored to the specific urban context of Kızılay Square. The following summarizes the key observations and recommendations derived from this analysis:

- Traffic Management: As a fundamental transit hub in Ankara, Kızılay experiences intense traffic. While methods like speed bumps, roundabouts, artificial curves, and speed humps are commonly used to reduce vehicle speeds near critical areas, their implementation in Kızılay could exacerbate traffic congestion. Thus, it is crucial to either divert the transit traffic away from Kızılay or relocate it underground in connection with the pedestrianization process. This strategy is essential for reducing traffic density and improving security.
- Pedestrianization Proposal: Pedestrianizing key and crowded streets directly connected to Kızılay Square, such as Selanik Street, İzmir Street, Sakarya Street, Yüksel Street, Karanfil Street, and Konur Street, would obstruct terrorist methods like vehicle-borne bomb attacks and vehicle-ramming into crowds. Complete pedestrianization of Kızılay Square would represent a significant step towards enhancing the area's security.
- Effectiveness of Surveillance Tools: Mechanical surveillance tools like Automatic Number Plate Recognition (ANPR) systems and CCTV cameras are used around Kızılay. However, their effectiveness in detecting terrorist attacks is still questioned. Emerging artificial intelligence systems are expected to enhance the efficiency of these tools and facilitate vehicle detection, offering a potential improvement in the detection of terrorist activities.
- Modern Security Designs: In developed countries, functional, minimal, and aesthetically pleasing security designs such as No-Go barriers, revolving barriers, portable barriers, and tiger traps are commonly used. In Kızılay, however, traditional passive barriers and

bollards are still prevalent. Adopting modern, functional, and aesthetically sensitive solutions is important to enhance community security perceptions.

- Natural Barriers: Trees, considered sustainable passive barriers, are effectively used in Kızılay Square. They serve to separate pedestrian and vehicle traffic, provide barriers at entrances and exits of pedestrianized areas, distinguish between public and private spaces, and create safety buffers in front of buildings. Natural barriers offer environmentally friendly and sustainable security solutions.
- Topographic Obstacles: Due to Kızılay's topographic features, ditches and artificial elevations are not preferred. However, creating elevation differences in pedestrianized areas through stairs helps separate vehicle traffic from pedestrian zones and prevents overcrowding between pedestrian areas. These topographic obstacles are effective in enhancing security and managing crowd density.
- Water Features: Water features like pools or fountains provide significant safety distances in protecting risky targets and crowds. While water features are implemented in Kızılay, increasing their quantity is recommended. Water features play an essential role in both aesthetic and security aspects.
- Symbolic Elements: While examples of symbolic elements being converted into CPTED features exist in global cities, such examples are rare in Kızılay. Given that Kızılay is one of the most symbolic areas in Ankara, there is a high potential for utilizing symbolic elements as CPTED features, which can offer both aesthetic and security benefits.
- Street Furniture: Street furniture such as plant boxes, lighting poles, traffic lights, and resting benches are often adapted into CPTED features with minor modifications in Kızılay. These elements are designed to protect pedestrians from vehicle traffic and minimize shrapnel effects during explosions without creating a heightened sense of security.
- Transparent Trash Bags: To prevent the concealment of bombs in trash containers, transparent trash bags have replaced traditional ones around Kızılay Square. This change makes potential threats more visible, thereby enhancing security. Transparent trash bags provide an opportunity to detect potential threats at an earlier stage.

In conclusion, while modern CPTED methods have begun to be applied in the Kızılay example, the process is slower compared to developed metropolitan areas. To prevent terrorist acts in symbolic locations like Kızılay Square and mitigate their severe impact on public morale, there is a clear need for more comprehensive and integrated policies.

References

Akbulut, A. (2020). *Kamusal alanlarda çevre güvenliği için tasarım sürecinin değerlendirilmesi: Sultanahmet Meydanı örneği* (Doktora tezi). İstanbul Aydın Üniversitesi.

Alasiri, F. (2020). *How urban design can help combat terrorism*. European Eye on Radicalization, https://eeradicalization.com/how-urban-design-can-help-combat-terrorism/

ANZCTC/Australia and New Zealand Counter-Terrorism Committee (2017a). *Hostile vehicle guidelines for crowded places: A guide for owners, operators and designers.* Commonwealth of Australia. https://www.nationalsecurity.gov.au/Media-and-publications/Publications/Documents/hostile-vehicle-guidelines-crowdedplaces.pdf

ANZCTC/Australia and New Zealand Counter-Terrorism Committee (2017b). *Australia's strategy for protecting crowded places from terrorism*. Australian Government. https://www.nationalsecurity.gov.au/Securityandyourcommunity/Pages/australias-strategy-for-protecting-crowded-places-from-terrorism.aspx

Ayoğlu, B. O. (2010). *Zafer Anıtı – Güvenpark – TBMM kent aksının var olan durumunun irdelenmesi ve Cumhuriyet aksı olarak yeniden tasarımı* (Yüksek lisans tezi). Ankara Üniversitesi Peyzaj Mimarlığı.

Barakat, M. A. and Hetherington, J. G. (1999). Architectural approach to reducing blast effects on structures. *Proceedings of the Institution of Civil Engineers: Structures and Buildings*, 133, 333–343.

Barry-Jester, A. M. (2017). *How anti-terrorism design can also make cities more livable.* Five Thirty Eight. https://fivethirtyeight.com/features/how-anti-terrorism-design-can-also-make-cities-more-livable/

Bartolo, G. (2013). *Security and planning: A Canadian case study analysis* (Master's thesis). University of Waterloo.

Benton-Short, L. (2007). Bollards, bunkers, and barriers: Securing the National Mall in Washington, *DC. Environment and Planning D: Society and Space, 25*(3), 424-446.

Chaliand, G. and Blind, A. (Eds.). (2007). *The history of terrorism: From antiquity to Al Qaeda*. University of California Press.

Coaffee, J. (2004). Rings of steel, rings of concrete and rings of confidence: Designing out terrorism in central London pre and post September 11th. *International Journal of Urban and Regional Research, 28*(1), 201-211.

Coaffee, J. and Bosher, L. (2008). Integrating counter-terrorist resilience into sustainability. *Proceedings of the ICE – Urban Design and Planning, 161*(2), 75-83.

Coaffee, J. and O'Hare, P. (2008). Urban resilience and national security: The role for planning. *Urban Design and Planning, 161*(DP4), 173-182.

Coaffee, J., Moore, C., Fletcher, D. and Bosher, L. (2008, June). Resilient design for community safety and terror-resistant cities. In *Proceedings of the Institution of Civil Engineers-Municipal Engineer* (Vol. 161, No. 2, pp. 103-110). Thomas Telford Ltd.

Coaffee, J., Wood, D. M., Rogers, P., and Wood, D. M. M. (2008). *The everyday resilience of the city: How cities respond to terrorism and disaster*. Springer.

Coaffee, J. (2009). *Terrorism, risk and the global city: Towards urban resilience*. Ashgate Publishing, Ltd.

Coaffee, J., O'Hare, P., and Hawkesworth, M. (2009). The visibility of (in)security: The aesthetics of planning urban defences against terrorism. *Security Dialogue, 40*(4-5), 489-511.

Coaffee, J., and Portier, J. (2018). *Beyond concrete barriers: Innovation in urban furniture and security in public space*. GCDN Commissioned Research.

Copunesahipcik.org (2020). *Bombalara karşı çöp kutuları.* https://www.copunesahipcik.org/bilgi-merkezi/blog/bombalara-karsi-cop-kutulari

Cozens, P. M., Saville, G. and Hillier, D. (2005). Crime prevention through environmental design (CPTED): A review and modern bibliography. *Property Management, 23*(5), 328-356.

CPNI/Centre for the Protection of National Infrastructure (2014). *Integrated security: A public realm design guide for hostile vehicle mitigation (2nd ed.).* https://www.npsa.gov.uk/system/files/documents/40/20/Integrated%20Security%20Guide.pdf

Davis, L. (2019). *Urban resilience needs to incorporate terrorism prevention.* https://www.thefifthestate.com.au/urbanism/planning/urban-resilience-needs-toincorporate-terrorism-prevention/

Despard, E. (2012). Cultivating security: Plants in the urban landscape. *Space and Culture, 15*(2), 151-163.

Dezeen.com (2017). *Stefano Boeri proposes trees instead of barriers to protect against terror attacks*. https://www.dezeen.com/2017/08/24/stefano-boeri-tree-barrierspreventvehicle-terror-attacks-news/

Dezeen.com (2018). *Modular anti-terror barriers adopted at Premier League football stadiums*. https://www.dezeen.com/2018/02/27/modular-anti-terror-barriers-atgaccess-surface-guard-premier-league-football-stadiums/

Dezeen.com (2019). *Joe Doucet installs anti-terror benches in New York"s Times Square*. https://www.dezeen.com/2019/05/23/rely-bench-joe-doucet-new-york-timessquare/

Dotyconcrete.com (2017). *Securıty Planters On Broadway Street In Tımes Square*. (https://dotyconcrete.com/security-planters-broadway-street-times-square/)

Federal Emergency Management Agency (2007). *Risk management series: Site and urban design for security guidance against potential terrorist attacks providing protection to people and buildings* (FEMA 430). Federal Emergency Management Agency.

Fennelly, L. and Perry, M. (2018). *CPTED and traditional security countermeasures: 150 things you should know*. CRC Press.

Flusty, S. (2004). *De-Coca-Colonization: Making the globe from the inside out*. Psychology Press.

Gebbeken, N., Döge, T. and Larcher, M. (2012). Safety and security of urban areas through innovative architectural and structural concepts. In *Future Security Research Conference* (pp. 153-164). Springer.

Glaeser, E. L. and Shapiro, J. M. (2002). Cities and warfare: The impact of terrorism on urban form. *Journal of Urban Economics, 51*(2), 205-224.

U.S. General Services Administration (GSA). (1999). *Urban design guidelines for physical perimeter entrance security: An overlay to the master plan for the Federal Triangle*. U.S. General Services Administration.

HM Government. (2012). *Protecting crowded places: Design and technical issues*. HM Government.

İlkay, Y. (2007). *The political struggle on and at public space: The case of Kızılay Square* (Master thesis), Sosyal Bilimler Enstitüsü, ODTÜ.

Kaplan, H. and Acuner, A. (2005). Ankara'da yayalaştırma sorunsalı: Yaya alanlarının yasal çerçeve ve yerel yönetimlerin rolü kapsamında değerlendirilmesi. *PLANLAMA, 13*, 112-123.

Kesici, D. (2017). *A contemporary approach to memorial design in the light of collective memory theory: Guidelines for Ankara train station square* (Master's thesis), Middle East Technical University.

Keskin, A. (2019). *Kamusal açık alanlarda araçlı terör saldırılarına yönelik güvenlik önlemlerinin tasarım disiplinleri açısından irdelenmesi* (Master's thesis), Fen Bilimleri Enstitüsü, İstanbul Üniversitesi.

Mango, A. (2005). *Turkey and the war on terror: For forty years we fought alone*. Routledge.

Marcuse, P. (2002). Urban form and globalization after September 11th: The view from New York. *International Journal of Urban and Regional Research, 26*(3), 596-606.

Marcuse, P. (2006). Security or safety in cities: The threat of terrorism after 9/11. *International Journal of Urban and Regional Research, 30*(4), 919-929.

Matijosaitiene, I., and Petriashvili, A. (2017). Urban planning and design for terrorism resilient cities. *Journal of Sustainable Architecture and Civil Engineering, 18(1),* 27-38.

Medium. (2018). *How can public spaces act against terrorism and still be hospitable?* Medium. https://medium.com/we-research-and-expriment-with-how-the-sharing/how-can-public-spaces-act-against-terrorism-and-still-be-hospitable-3aa6d7795208

Miletic, B. (2017). *Can architecture and smart design help prevent terrorism? Architecture & Design*. https://www.architectureanddesign.com.au/features/comment/can-architecture-andsmart-design-help-prevent-ter

Monaghan, R., and McIlhatton, D. (2012). *Prevention of bomb attacks by terrorists in urban settings: Improvised explosive devices*. Institute for Economics & Peace. 309.

Nikolopoulou, M., Martin, K. and Dalton, B. (2016). Shaping pedestrian movement through playful interventions in security planning: What do field surveys suggest? *Journal of Urban Design, 21*(1), 84-104.

Öğünç, G. İ. (2018). Yeni dönem terör saldırıları çerçevesinde meskûn mahal imarı ve yapı tasarımı. In *X. Uluslararası Uludağ Uluslararası İlişkiler* (pp. 746-756). Bursa.

Öğünç, G. İ. (2019). Kent güvenliğinde araç bomba saldırısı tehdidi. *ASSAM Uluslararası Hakemli Dergi*, 13. Uluslararası Kamu Yönetimi Sempozyumu Bildirileri Özel Sayısı, 401-416.

Özçelik, N. (2016). PKK ve bombalı araç saldırıları. *SETA Analiz*, Ekim 2016, Sayı 170.

Paizs, F. (2013). Urban planning after terrorism: The case of Oslo with focus on the impacts of the terrorist attack on the consideration of security, memorialisation and conservation in urban planning. Technischen Universität Berlin, https://doi.org/10.14279/depositonce-3770

Peachey, P. (2017) Europe's new reality: blocks, bollards and barriers to combat terrorist threat. The National. https://www.thenational.ae/world/europe/europe-s-new-reality-blocks-bollardsandbarriers-to-combat-terrorist-threat-1.622690.

Petriashvili, A. (2017). *Urban planning and design for terrorism resilient cities* (Doctoral dissertation), Kaunas University of Technology.

Rothrock, S. E. (2010). *Antiterrorism design and public safety: Reconciling CPTED with the post-9/11 city* (Doctoral dissertation), Massachusetts Institute of Technology.

Savitch, H. V. and Ardashev, G. (2001). Does terror have an urban future? *Urban Studies, 38*(13), 2515-2533.

Savitch, H. V. (2014). *Cities in a time of terror: Space, territory and local resilience*. Routledge.

State of Australian Cities Conference. (2015). Countering terrorism in the city. Retrieved from https://apo.org.au/sites/default/files/resource-files/2015-12/apo-nid63318.pdf

Quito, A. (2017). *The secret of anti-terror architecture: Your city is probably safer than you realize*. Quartz.com. https://qz.com/733374/counter-terrorism-architecture-howcities- prevent-attacks-without-looking-like-theyre-trying/

Wainwright, O. (2016). *Fortress London: The new US embassy and the rise of counter-terror urbanism*. *Harvard Design Magazine, 42*, 8-13.

Yeşiltaş, M., and Özçelik, N. (2016). *PKK terörünün yeni dinamikleri: Radikalleşme ve şehir çatışmaları* (SETA Analiz, Nisan 2016, No. 157). SETA.