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PROTECTING PUBLIC SPACES AGAINST VEHICULAR TERRORIST ATTACKS

ZABEZPIECZENIE PRZESTRZENI PUBLICZNYCH PRZED SAMOCHODOWYMI ATAKAMI TERRORYSTYCZNYMI

Abstract

The recent wave of terrorist attacks, where vehicles are driven into crowds of people, forces us to question the effectiveness of the current antiterrorism security measures in our cities, especially in open public spaces. Vehicular terrorism, a new form of Islamic terrorism, which involves the use of mechanical vehicles as a weapon against civilians, brings new challenges for the police, security agencies and mass event organisers, as well as for designers, architects and planners. This article considers the possibilities, costs and results of implementing actions and security measures that may reduce the risk of vehicular terrorism.

Keywords: vehicular terrorism, antiterrorist security, urban fortifications.

Streszczenie

Seria ataków terrorystycznych przeprowadzonych z użyciem samochodów taranujących ludzi każe na nowo postawić pytanie o skuteczność zabezpieczeń antyterrorystycznych naszych miast, a szczególnie ich otwartych przestrzeni publicznych. Nowa forma taktyki islamskiego terroryzmu, polegająca na wykorzystaniu pojazdów mechanicznych jako broni wymierzonej w ludność cywilną, stawia kolejne wyzwania służbom odpowiedzialnym za bezpieczeństwo publiczne i organizatorom masowych imprez, a w drugiej kolejności także projektantom, architektom i planistom. W artykule rozważane są możliwości, koszty i skutki wprowadzenia w życie działań i zabezpieczeń, które mogą służyć ograniczeniu ryzyka ataków terrorystycznych dokonywanych przy użyciu samochodów.

Słowa kluczowe: terroryzm samochodowy, zabezpieczenia antyterrorystyczne, fortyfikacje miejskie.

1. Introduction

Terrorists have used vehicles as weapons, or more specifically, for weapon transportation, for close on a century. The historic Morgan's building on Wall Street in downtown Manhattan still bears the scars of an August 1920 attack, when Italian-born anarchist Mario Buda blew up a horse-drawn wagon full of explosives, killing 40 and wounding more than 200. Mike Davis, who describes the rich history of vehicle terrorism, metaphorically calls the car bomb “the poor man's air force” [4, p. 4]. The growing popularity of recipes for the DIY production of explosives using generally available materials (organic fertilisers, oil) sparked a worldwide wave of bomb attacks in the late 20th century. The attacks carried out by the IRA in towns and cities across England, the series of attacks against US embassies, car bombs detonated indiscriminately in the streets of Middle Eastern cities and the Oklahoma Alfred P. Murrah Federal Building bomb attack of April 1995 have caused hundreds of casualties and inflicted significant material damage. The images of destruction reported in the media have sparked a fierce reaction from the public, followed by fear and dismay, and, in some cases, a destabilisation of the political situation.



Fig. 1. High security on London's Downing Street, where the seat of the British Prime Minister is located: police checkpoints, massive gates, and a clamshell road barrier in the background

Since the late 20th century, the Vehicle Borne Improvised Explosive Device (VBIED) has been seen as the most menacing type of weapon in the hands of terrorists. A variety of situational prevention tactics have been employed to counter potential car bomb attacks, such as setting up road barriers, reinforcing and fortifying essential buildings, and creating security zones around

whole city sections (London, New York, Washington). Comprehensive antiterrorism security tends to militarise the city space, “harden” the urban landscape, and restrict access to public facilities by residents, who are subject to continuous control and surveillance using state-of-the-art technologies. This poses the archetypical question of “safety versus freedom”, which, in spatial terms, can manifest as a conflict concerning the essence of urban character: it involves risks to the functioning of the city’s public space as a widely accessible zone of civic activity and freedom [7, p. 12].

2. The car as a weapon for attacking people

The Internet, along with the social media associated with it, is one of the most commonly used platforms for the dissemination of contemporary Islamic terrorism ideologies. In October 2010, the second issue of the English-language magazine “Inspire”, published online by Al Qaeda cells, had an article titled “The Ultimate Mowing Machine”. It described how a car could be used as a weapon for “mowing down the enemies of Allah”, particularly in situations where attackers have no access to explosives or firearms. More detailed tactical guidelines on planning terrorist attacks using vehicles were featured in the third online edition of ISIL’s (Daesh’s) “Rumiyah Magazine”, which included the expertise gained from recent attacks in the EU and Western Europe [10, p. 2].

On 22 December 2014, Sebastien Sarron ran down ten people at the Christmas market of the French city of Nantes in a van and then attempted suicide. One person died in the attack. The attack was inspired by a video, which urged ISIL supporters to attack infidels using cars. On 14 July 2016, another attack took place in Nice: Mohamed Lahouaiej Bouhlel, a Tunisian with a French residency permit, used a rented Renault Midlum truck to drive into people celebrating Independence Day along the city’s seafront boulevard. The deadly rampage lasted 5 minutes and the attacker drove almost 2 kilometres, killing 87 and injuring more than 200 people, before he was shot by the police.

On 28 November 2016 in Columbus, Ohio, Somalian refugee Abdul Razak Ali Artan drove a Honda Civic into the courtyard of Ohio State University. After hitting a wall, he got out of the car and began stabbing random victims with a knife, wounding 13 people, before a police officer shot him dead. ISIL claimed to have inspired the attack. On 19 December 2016, a large Scania truck with a trailer carrying steel beams ploughed into the crowd at the Breitscheidplatz Christmas market in central Berlin. Moving at more than 60 kph, the truck was driven into market stalls for some 80 metres [2]. 12 people were killed and 56 were injured. The attacker was a Tunisian refugee, and his victims included Łukasz Urban, the Polish driver of the carjacked truck, found dead in the passenger’s seat afterwards. The attacker fled the scene and was shot dead four days later by Italian police in Milan. The recording released after the attack suggests that Amiri was inspired by the ISIL.

The tactical guidelines on preparing and carrying out vehicular attacks in “Rumiyah Magazine” stressed the importance of meticulous preparation and the need to choose an appropriate spot for ramming with a speeding truck. It pointed out that, especially in the United States, attacks against civilians provoke more outrage than those against military targets. Some of the most sensitive potential targets specified in the article included outdoor assemblies and ceremonies, parades, fairs, festivals, political rallies and crowded inner-city streets. The article recommended

the use of sturdy trucks and all-terrain vehicles with a massive steel body and an all-wheel-drive system. “Inspire” also encouraged its readers to modify attack vehicles by welding thick sheets of metal to the vehicle front to act as blades to cut the victims’ bodies. It was recommended to choose long and narrow spaces, such as boulevards or bridges, with limited escape routes and no other vehicles around that could stop the attacker’s vehicle moving at speed. Walkways and inner-city main streets were indicated as perfect attack spots. Finally, drivers were encouraged to carry firearms or knives to complete their act of destruction after their vehicle comes to a halt, and to prepare for death by leaving a note with their motives in the vehicle or at home [10, p. 4].

The subsequent attacks in 2017 followed the same scenario. On 22 March 2017, British-born Islamic convert Khalid Masood rammed into pedestrians on Westminster Bridge, driving at over 120 kph, killing 4 people and injuring more than 50. When his SUV Hyundai Tucson crashed into a road barrier protecting the Parliament building, he exited the vehicle, stabbed a police officer with a knife and was shot down a few moments later while running away. The whole incident lasted 82 seconds [9]. In the recording that he left behind, he confessed that this was an act of vengeance against British society, responsible for wars with Islamic countries in the Middle East.

On 7 August 2017, 22-year old Younes Abouyaaqoub, a Moroccan-born Spanish citizen, killed 13 and injured 130 while driving a Fiat van on Las Ramblas Boulevard in central Barcelona. After driving more than 500 metres, the attacker was stopped by airbags and other safety systems; he escaped the car, stabbed another victim and fled the scene in a carjacked vehicle. A few hours later, five of his companions from the same terrorist cell rammed a passenger car into a group of pedestrians in the town of Cambrils, located to the south-west of Barcelona, killing one and injuring six people. The attackers were shot dead on the spot by the police; 4 days later Abouyaaqoub met the same fate.

These incidents prove that protecting public spaces against vehicular terrorist attacks is extremely challenging at the present time, perhaps even impossible, both because of the broad access to the terrorist’s new weapon: the regular vehicle, and because of the virtually unlimited number of potential targets: pedestrians in cities. What can be done? Is it even possible to protect against vehicular terrorism attacks?

3. Measures that can reduce the risk of a vehicle-ramming attack

According to Brian M. Jenkins, an expert on contemporary terrorism and advisor to the influential think tank RAND, vehicular terrorist attacks cannot be prevented, only their results mitigated [8, p. 2]. He proposes 10 hostile vehicle mitigation measures:

3.1. Armed police patrols

Increased numbers of armed police improve security on the streets and at mass events. However, most vehicular attacks last for only a few dozen seconds or several minutes. Lightly-armed police officers will certainly not be able to prevent such an attack, but they can try to deter and neutralise the attacker, reducing the number of potential victims.

3.2. Increased traffic surveillance

In theory, digital technologies could be used for traffic surveillance (e.g. with algorithms to detect suspicious vehicles or unusual driver behaviour). Rental companies, especially those renting trucks and off-road vehicles, could be subject to meticulous scrutiny and their customers pre-emptively crosschecked with police databases, similar to passenger profiling in airports. It is also possible to put vans and trucks under GPS surveillance; a vehicle departing from its planned and electronically controlled route would then produce an alarm signal to call for police intervention.

3.3. Separate pedestrian and road traffic

To ensure pedestrian safety, it is always desirable to physically separate the roadway from the adjoining pavements; for example, with street furniture, bollards, reinforced street signs and various specialised barriers. Rows of trees and cars parked along the pavements also provide effective separation.

3.4. Restricted vehicle access to pedestrian zones



Fig. 2. A pedestrian crossing protected from car entry, Brussels (photo by A. Jasiński)

Walkways, squares, pavements and other pedestrian zones, particularly around pedestrian crossings and intersections, can be effectively protected from vehicle entry with reinforced bollards, elements of small architecture and hardened street furniture.

3.5. Traffic calming

Traffic speed can be reduced by installing speed bumps, obstacles that force drivers to zig-zag, etc. Long, straight road sections should be avoided, as these allow an attacker to accelerate, especially those near the entry-points to protected zones, where the vehicle's kinetic energy combined with its mass increases the risk of penetrating barriers and other security features if these are not sturdy enough.

3.6. Temporary security barriers for mass events



Fig. 3. Trucks, dumpsters and a police car blocking the city's main street during a sports parade, Rotterdam, 5 June 2017 (photo by A. Jasiński)

Trucks are often used to block areas holding mass events. One advantage of this solution is that the vehicles can be quickly deployed, and then moved if necessary to allow police and emergency services to cross the barrier. During the 2016 New Year's Eve celebration in Times Square, the access roads around the venue were blocked with 65 dumpsters and trucks filled with sand, and 100 police cars. At the same time, the public transport system was rearranged to ensure an efficient movement of people to and from the event. More than 7,000 police officers were responsible for maintaining order and safety [10, p. 2].

Other means of blocking access to mass event locations include temporary barriers made of water-filled tanks, Jersey Barriers road partitions from reinforced concrete and other innovative systems, such as X-Net from the British company Qinetiq. The latter is



Fig. 4. “Surface Guard” temporary barrier in a city centre street (source: [1])

a polyethylene net studded with sharp spikes that punctures the tyres and wraps around the wheels, effectively stopping vehicles with masses of up to several tonnes. X-Net can be quickly deployed by two people, and is used by the British police for securing mass events. The Surface Guard System, patented by ATG, uses another mechanism: its lightweight, three-dimensional plastic elements can be deployed on the road and linked together to set up a flexible barrier that provides full pedestrian and bicycle permeability but at the same time is capable of stopping a vehicle weighing up to 2.5 tonnes and travelling at 50 kph. It can be deployed and removed by four people in a short time, without damaging the surface.

3.7. Expanding the existing protection zones around buildings

The threat of car-bomb attacks has led to the construction of zone protection systems, such as rows of reinforced bollards, barriers and elements of small architecture, around a number of important buildings. These can be used or expanded to protect public spaces and the mass events they host. Some of the barriers are swivel-mounted or hydraulically collapsible to allow the crossing of emergency services. Deploying such systems is costly and time-consuming, but they provide the most effective form of protection against car-bomb

attacks. In many cities, it is not just the zones around single buildings that are secured this way, but whole streets with important public buildings, institutions and embassies, such as Wall Street in Manhattan and Wilhelmstrasse in Berlin.



Fig. 5. Double road barrier and police checkpoint at Wilhelmstrasse in Berlin, with the British embassy in the background (photo by A. Jasiński)

3.8. Terrorist-proof inner-city zones

In some cases, antiterrorist enclosures, road barriers and police checkpoints are used to protect whole inner-city areas. Examples include the Ring of Steel around the City of London, central Washington along Pennsylvania Avenue, and part of Lower Manhattan around the World Trade Center complex. In these cases, the “hard” terrain protection measures are supported by police patrols, CCTV surveillance systems, digital cameras for registration plate identification connected to police databases, and biometric devices (for identifying wanted individuals). Access to the zones is restricted by moving road barriers controlled by police checkpoints. These systems could be expanded, theoretically, but this would be extremely expensive and complicated due to the number of stakeholders and conflicting interests, and would interfere with the character of the public space.



Fig. 6. Road barriers and police checkpoints around the World Trade Center area in Lower Manhattan (photo by A. Jasiński)

3.9. Change car-accessible roads into pedestrian walkways

An easier solution, and one that is becoming increasingly popular and acceptable to the public, is to turn inner-city streets and squares, as well as main commercial streets, into pedestrian zones with completely or partly restricted motor traffic. This task is not a simple one, either, as they need to prevent a potential attacker's vehicle from penetrating the area without hindering access by delivery, emergency or repair services. This can be achieved with movable road barriers and hydraulic bollards installed at the entry points, controlled by police checkpoints or remotely by the drivers of authorised vehicles.

In many European cities, whole inner-city areas have already been transformed into pedestrian and bicycle zones, which improves pedestrian security while also promoting the development of local businesses and giving the city a friendly character. Some typical examples can be found in Venice, Copenhagen, Göttingen, Brussels and Kraków. This trend is now being popularised across the world, not least thanks to the design and journalistic efforts of Jan Gehl [5]. At the same time, busy inner-city streets and squares should be protected from unauthorised vehicle access, especially since those publications inspiring vehicular terrorism list crowded commercial streets as priority targets.



Fig. 7. Remotely-controlled hydraulic bollards blocking access to an inner-city pedestrian zone in Brussels (photo by A. Jasiński)

3.10. Use new technologies to prevent attacks against people

Most vehicle and software manufacturers are now carrying out intense research into developing vehicles that move automatically. The technology they use may, besides preventing road accidents, also counter vehicle-ramming attacks. The required blocking mechanisms could be installed in all vehicles.

4. Conclusions: on the need for measured and proportional reactions

In conclusion, the measures and protection systems mentioned above should be evaluated in terms of their cost and effectiveness. First of all, while terror attacks involving vehicles have been gaining much notoriety in the media worldwide, their actual significance is quite limited: they cause negligible damage to material property and have relatively few victims. Jenkins reports that a total of 167 people have been killed in all such attacks since 2000, which is less than two casualties per incident on average [8, p. 2]. Every death is a tragedy in itself, of course, but the number of fatal road accidents, which is more than 30,000 a year in the US alone, puts vehicular terrorism in a slightly different perspective.

Secondly, it is worth noting that terrorists continue to modify their tactics. Their targets and tools change. The worst terror attack in history was carried out using civilian aircraft as

flying bombs (New York, 2001), while real bombs have been used against trains (Madrid, 2004), buses and metro lines (London, 2005). In Israel, some desperate Palestinian attackers stab their victims with kitchen knives. Improving the security and protection against attacks in one place may force a change of target or method, and as a result increase the threat in another place, against softer and less protected targets. Particular attention should be given to the August 2017 article in “Inspire” urging Al Qaeda supporters in Europe and the US to target trains and railways [3].

The New York truck-ramming attack of 30 October 2017 committed by an Uzbek immigrant sympathising with the ISIL proves that such an act of terrorism can succeed even in a city better protected against terror attacks than any other, a city surrounded by multiple rings of electronic and physical fortifications. The attack took place in Lower Manhattan, on a bicycle path along the Hudson River, and finished with the attacker crashing into a school bus a few hundred metres away from the fortified zone around the WTC. It is extremely difficult to prevent this type of attack: to identify a potential perpetrator whose preparations involve nothing more than accepting online propaganda and self-indoctrination, and to restrict vehicle access. It is impossible to protect all the people in all the streets and squares of a city.

Attempts at restricting vehicular access or placing all drivers under surveillance would infringe upon the modern way of life, where the car plays an important role. Of course, an actual threat warrants appropriate countermeasures that are proportional to the threat, yet allowing an acceptable level of risk. Crowded inner-city streets, busy squares and outdoor mass events certainly require special attention, although it is important to realise that the threat of terrorist attacks can never be fully eliminated and must be accepted. We cannot give in to the fear syndrome fuelled by the mass media, which have effectively become the greatest allies of contemporary terrorism. The word “terrorism” can be more dangerous than the terrorist act itself, according to Tomasz Goban-Klas, who urges journalists to exercise restraint in reporting terror attacks, and calls for self-regulation of the media [6, p. 363–385].

The best response to the increased threat of terror in today’s cities is to apply situational prevention measures in a skilful manner, to increase the threat prevention capabilities, and to improve emergency response in the wake of potential attacks, accidents and natural disasters. One way to reduce the threat of vehicular terrorism is to introduce comprehensive solutions that improve pedestrian safety and gradually restrict vehicular traffic. By redesigning streets, we can protect people from both careless and malicious drivers. Moreover, a well-conceived, holistic system of traffic security and regulation can contribute to inner-city revitalisation, thus improving the living and working conditions for the residents, and making the city more attractive to tourists.

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