

The challenges of military operations in urban areas



Dragiša Jurišić

Bezbjednosni istraživački centar, Banja Luka, Republika Srpska, Bosna i Hercegovina

Received: 03/10/2021

Revised: 11/12/2021

Accepted: 30/03/2022

Published: 08/07/2022

Corresponding author:

Dragiša Jurišić

Correspondence email:

bicbl@yahoo.com

DOI:

10.5937/vojdelo2202075J



Abstract:

Urban areas, depending on their characteristics, have different effects on the engagement of forces and equipment and the manner in which military operations are conducted. The characteristics of these areas that are important for conducting operations are position, location, shape, size, the method of construction, the layout of the street network, the existence of underground facilities, plants, etc. Their complexity is one of the greatest challenges for planners of these operations. To conduct operations in urban areas, forces are expected to be modular and thus flexible, and adaptable to a constantly changing environment. It is necessary to focus on smaller units that are in the field, up to company level. Their most important feature is to disperse fast, and then quickly concentrate towards target. The discussion between scientific and military circles is whether to establish special forces to fight in an urban area or to use the existing ones with certain technological solutions and futuristic weapons. The consideration of the type of weapons that will be used in these military operations in urban areas is primarily related to the issue of the protection of civilians. The use of weapons that have limited effect (do not break through several walls) and weapons that do not cause additional effects (such as fire, unnecessary destruction) should be the choice of modern armies in military operations in urban areas. The issue of command and control is also one of the challenges that modern armed forces conducting military operations in urban areas face. In this context, modern technology (robots, sensors, satellites, etc.) can be of great help to the forces conducting these military operations. On the other hand, they are very expensive for most armies in the world. The logistical challenges are also very great when it comes to military operations in urban areas. The increased use of food and water, as well as greater consumption of ammunition pose additional challenges for planners and logisticians of these operations, which, above all, have to be taken into account when planning these operations. In any case, the issue of future military operations in urban areas should not be a taboo subject because it is expected that there will be more and more of them in the future. Population movement has made suburbs huge and a major challenge for military forces, even greater than urban centres. Distinguishing combatants from non-combatants, providing basic necessities for civilians during operations, the use of conventional and unconventional combat equipment are some of the challenges that planners of operations in urban areas have also to consider. The detailed analyses of previous operations in urban areas, transformation of these identified lessons into lessons learned, adaptation of training and equipment for such operations are some of the first steps that should be taken. Special emphasis should be placed on the need to study more the topic of combat in urban areas in operations of battalions and brigades and to be as much as possible an integral part of the training process of these units.

Keywords: operations; urban area; civilians; cities; challenges; armament; Geneva Convention

INTRODUCTION

Having in mind the growing impact of urbanization, it is expected that in the future the majority of the population will live in greater populated areas. Currently, over 4 billion people, or 55% of the world population, live in urban areas [1]. It is expected to be over 60% of the world population by 2030 [2]. In any case, this means that future military operations will be primarily focused on urban areas. We are witnessing the military conflict in Ukraine from the end of February and during March 2022, and by its analysis it can be concluded that it is impossible to avoid military operations in urban areas and that those areas have become the key ones to accomplish strategic military goals.

It is expected that the increase in megacities, those with over 10 million citizens, from 33 in 2018 will increase to 43 until 2030. In 2018, 48 cities had between 5 and 10 million citizens, and it is expected that until 2030, 10 of them will become megacities. Projections show that 28 cities will exceed the number of five million citizens in the period 2018-2030 including 13 in Asia and 10 in Africa. The vast majority of the world cities currently have less than 5 million citizens. In 2018, there were 467 cities with 1 to 5 million citizens, and the additional 598 cities with between 500,000 and a million citizens [2]. It can be concluded that new cities emerge every year, and that the existing ones grow incredibly fast and become huge urban areas. Furthermore, we are witnessing that some cities, due to their expansion, are merging to create huge urban areas called conurbations.

On the other hand, population structure in cities is changing. In that context, it should be emphasized out that one in seven people on the planet is a migrant. It is currently estimated that there are 763 million of internal migrants and 272 million of international migrants worldwide. This demographic force has been a major contributor to urbanization, whether it is about moving from rural to urban areas, within countries, or international migration. International migration includes about one-third of urban population growth in developed countries, and more and more populated areas are being transformed into urban areas with highly heterogeneous, multiethnic, multicultural, multireligious and multilingual population [3]. Having that in mind, it is a special challenge for planners of military operations in urban areas, as well as for those who conduct those operations. The challenge is, first of all, reflected in the manner and diversity of approaches for winning local population over to their side in conflict, i.e. the manner of expressing support to citizens of certain urban areas.

Urban areas are most often the centres of social, economic, cultural, political and every other life of a country or region in which they are located. They consist, above all, of cities and their suburbs [4]. They are, in the context of military operations, a very demanding environment for their execution. In order to plan, organize or conduct military operations in an urban area, one needs to know what that area encompasses.

In the context of this research, an urban area is an inhabited and complex interactive environment expressed through a multidimensional physical system, information system and social system that includes the population of certain size and their variations [4]. That is, the urban area in this paper includes cities with suburbs, buildings and other infrastructure and systems that allow the urban area to function (electricity, water, transport, waste, food, etc.), together with the population living and working in these areas.

Since the functioning of an urban area depends on several interconnected systems, John Spencer and John Amble, Phil Williams and Werner Selle, Kilcullen David and some others consider a city, which is the most complex part of an urban area, as a living organism, that is, as a human body [5][6][7]. Both the human body and city are complex and adaptable and have patterns of dependence between the constituent parts, which can range from completely obvious patterns to almost completely hidden ones, except for expert observers. Like living organisms, cities rely on the material segment (food, air, water, electricity, fuel), the economic segment and the influx of information, while creating the outflow of waste at the same time, and both of them are vital for keeping the city alive. Thus, it is emphasized that cities, due to their complexity, dynamism, individual capriciousness and vulnerability, are very analogous to the human body [5]. This, above all, implies that such urban areas are very complex, connected and networked, and also different, and the impact of military operations on one of these systems has implications for the entire urban area and its lifestyle, but again in different ways, depending of the very character of an urban area.

The objective of this paper is, mainly, to consider the challenges of military operations in urban areas and to emphasize in a certain way their importance in the preparation, organization and execution of military operations in urban areas.

In order to reach this objective, an analysis of previous research related to the challenges of military operations in urban areas from the aspect of historical context, and also modern military operations will be performed at the beginning. The second chapter is primarily focused on the international legal framework and its relation to military operations in urban areas, considering, above all, this problem from the aspect of the challenges that the population in urban areas poses to armed forces. The third chapter, through a synthesis of previously analysed urban operations and the international legal framework, focuses on understanding the challenges of the urban environment, such as the structure and size of armed forces in these operations, the type of weapons in use, the manner of command and communication and logistical challenges. In the end, some conclusions have been drawn from the mentioned chapters.

THE PREVIOUS RESEARCH ON OPERATIONS IN URBAN AREAS

Historical context

The emergence and establishment of urban areas, their development and importance, have encouraged the development of a whole range of military activities aimed at their defence, and also the development of tactics, skills and weapons to conquer or attack them. One of the first to recognize the problems related to fighting in cities was the Chinese military leader and thinker Sun Tzu Wu, who, in his book *The Art of War*, clearly emphasizes that one should not conquer and besiege cities if possible at all; they should be conquered only as a last resort [8]. Much later, cities have become symbols of states, so their conquest and holding meant victory in wars. Napoleon aimed to occupy Moscow, which he did, so he thought that he would defeat Russia, but that did not happen [9]. In his grand plan to occupy France, Schlieffen intended to capture Paris and thus win a victory [10]. The German Wehrmacht, led by Hitler, tried to capture three key cities in Russia – Saint Petersburg, Volgograd and Moscow, the symbols of the Soviet Union, during World War II. For the same reasons, the Red Army so desperately defended these symbols. Following the same principle, in 1945, all the focus of the Soviet Red Army was directed to Berlin as a symbol of the complete Nazi system, so without its occupation, one could not speak of a final victory in the war.

After World War II, the second half of the twentieth century focused on the Cold War and the threat of nuclear missiles, but its key feature was a great number of minor conflicts around the world. During this Cold War period, many operations took place in urban areas, such as the Palestinian War (1945-49), in Cyprus (1945-59), in Suez (1956), in Algeria (1952-62), in Aden (1964-67), in Budapest (1956), Prague (1968) and Northern Ireland (1969-2002). Fighting in urban areas was an integral part of campaigns and operations in Vietnam (1955-1975), Grenada (1983), Panama (1989) and Somalia (1993). As it can be seen, significant struggles took place in urban areas during this period. In the last thirty years, a great part of modern military operations has also taken place in the urban environment. The wars waged by Russia in Georgia, on two occasions, 1994-96 and 1999-2000 stand out in particular, the United States in Iraq in 1991 and 2003, and the war in Syria waged since 2011 [11]. After 2003, an era of more intensive urban military operations in Baghdad (2003), Fallujah (2004), Mosul (2016-2017), Aleppo (2012-2016), Homs (2011-2014), Ramadi (2006-2007), Mirawa (2017), Susa (2020) and other cities in the Middle East has begun, and today we are witnessing events in Kiev, Kharkov and Mariupol and other cities in Ukraine. These operations in the mentioned urban areas have shown all the complexity of warfare in such an environment, and also that urban areas have to be the focus of planning future military operations and that the outcome of overall combat operations at a strategic level depends on the manner of conducting military operations in urban areas.

A detailed analysis of some military operations in urban areas by Thomas D. Arnold and Nicolas Fiore, Olga Oliker, Matt. M. Matthews and Alexander Tarasov has shown that these operations have their own specifics important for planning, organizing and conducting military operations.

Analysing the military operation, which took place in Mosul from the end of 2016 to the middle of 2017, Thomas Arnold and Nicolas Fiore came to several important conclusions that may be useful for planners and executors of future military operations in urban areas, namely:

- it is difficult to isolate a modern city;
- problems increase with the depth of advancement and the operation duration;
- attackers lose the initiative the moment they enter a city;
- dense urban terrain improves the resilience of opponents; and
- operational reach is proportional to the population support [12].

An analysis of the war in Grozny, waged by the Russian forces on two occasions in the period 1994-2000 made Olga Olikier to come to several important conclusions, as well:

- elasticity is very important;
- it is necessary for soldiers and their officers to be brave, improvise and think quickly;
- complete units should rotate so that soldiers know each other;
- special and other forces deployed to urban areas have to be well-prepared;
- joint forces exercises are necessary;
- lessons learned have to be implemented quickly;
- the main problems are related to communications and combat in the conditions of reduced visibility;
- reconnaissance forces are the key to success;
- the control of newspapers and media is of the utmost importance;
- the engagement of armoured forces provides better protection and produces better results in direct combat than the actions of artillery from a distance [13].

The operation in Fallujah in 2004 also resulted in certain lessons learned, which are primarily related to communications, equipment, operation breakthrough, information collection and perception issues [14]. The problem of communication between the land forces and the US Marine Corps was particularly emphasized. At certain moments, there was no common operational picture, especially at company level. The issue of the lack of armoured medical vehicles in the Marine Corps was one of the most important. It was also important to note that an armoured company could support a maximum of two infantry battalions. Moreover, it has been registered that some of the conventional equipment and weapons, such as pistols and 9mm submachine guns, man-portable rocket launchers and 120mm sub-caliber ammunition, are still useful in such combats [15].

As another urban area, Aleppo is an example of conducting an operation in a great urban area, which took place relatively recently (2012-2016) and whose experiences can be implemented in the future. What some experts, such as Alexander Tarasov, have concluded regarding military operations in Aleppo, is that soldiers were asked to make quick and high-quality decisions, and that changes, at a very low tactical level, were not so specific [16]. In any case, special training is necessary for operations in urban areas. It is estimated that great changes have to be made in the future in terms of communications equipment and weapons of combat in urban areas. Tarasov also believes that in the fighting in Fallujah, the need of soldiers for food and water is much greater in these operations. This means that the challenges in the field of logistics in these operations are very important, and that the process of planning this type of operation has to take into account the real needs of soldiers.

Analysing the ongoing armed conflict in Ukraine (February-March 2022), and on the basis of currently available information, it can be concluded that urban areas such as Kiev, Kharkov, Mariupol, etc., are the focus of combat operations. A great number of civilians, their electricity, water, food supply, as well as their use as human shield, represent the challenges faced by planners of these military operations in urban areas. At the same time, these urban areas form strong resistance points for defenders, who use the presence of civilians as the pressure on the opposite side, when it comes to the intensity of fire and military operations in general. The speed of adaptation, precise actions and care for civil-

ians, both for those who have remained in urban areas and those who have been evacuated (food, water, electricity, medical care), provide an opportunity for the attacker to achieve their goals and take control of urban areas. It is particularly important to discredit the defender and his goals in order to win over the local population, both at a local and strategic level. This conflict in Ukraine clearly shows the complexity of modern military operations in urban areas.

All of the mentioned clearly indicates that previous operations in urban areas have to be analysed in detail, and also that it is not possible to copy some solutions from an operation to other because each urban environment is specific. Nevertheless, the issue of unit organization, communications, supply, use of some equipment and training, cooperation with the civilian population form the backbone of all lessons learned from modern operations in urban areas.

An urban area in the context of modern trends

David Kilcullen states that four megatrends: urbanization, population growth, literacy and connectivity are currently widespread in the world [7]. All of these elements pose a huge challenge for planners of future military operations, especially those to be conducted in urban areas.

Phil Williams and Werner Selle point out six different strategic reasons that can lead to operations in urban areas, namely: assistance to civilians in emergencies, assistance to civil authorities in case of riots, military intervention in strategic cities, intervention in the context of fighting rebel forces and terrorists, in the context of a conventional conflict between two states and imprisonment or quarantine due to pandemics [6]. In this regard, operations in urban areas, in a way or other, are inevitable for all world armies.

Here we should point out two very important, and basically opposite phenomena, i.e. opposite processes, and these are the increased urbanization and the decreasing trend of the armed forces in the world. According to the report by The Economics [17], armies have decreased after the Cold War. In 1990, West Germany could engage 215 combat battalions. Until 2015, and after the reunification of Germany, there were only 34 of them, which is a decrease of 84%. The number of Italian battalions fell by 67%, and British by almost half. The US forces in Europe decreased from 99 battalions to 14, and from half a million of soldiers to 76,000 today. Such trends of decreasing armies are contrary to urbanization, if we know how many soldiers are necessary to occupy a multi-million city. That is why a part of the scientific community believes that future wars are not wars in urban areas [18]. On the other hand, most people believe that the armies of the world countries should study operations in urban areas, especially in megacities, in order to develop the skills that lead to success for the wars that will be fought in 2030-2040¹.

The research related to operations in urban areas is particularly important, in the fields such as characteristics of conflict in megacities, types of operations that require conflicts in them, types of units necessary to conduct operations in megacities, and the manner to conduct joint operations in their area².

THE INTERNATIONAL LEGAL FRAMEWORK AND OPERATIONS IN URBAN AREAS

All wars and all military operations that take place during them have a huge impact on the civilian population. The number of civilians killed in wars in the twentieth century is still controversial today, and scientific circles decrease or increase the number of civilian casualties for various reasons. According to the data by Lawrence Weil, in compliance with the report by the Swiss Federal Department of Defence, Civil Protection and Sport (Table 1), the ratio of civilian to military casualties is changing in such a way that in the twentieth century wars civilian casualties were increasing with its end [19].

Table 1. The ratio of military to civilian casualties in the 20th century wars

War	Military casualties	Civilian casualties	Ratio
WWI (1914–1918)	10.000.000	500.000	20:1
WWII (1939–1945)	26.000.000	24.000.000	1:1
Korean War (1950–1953)	1.000.000	5.000.000	1:5
Vietnam War (1961–1975)	150.000	3.000.000	1:20

Source: Lorens Dž. Vejl, "Civilna odbrana", Vojnoizdavački i novinski centar, Beograd, 1991, p. 30 (adapted by the author of the paper) [19]

According to the estimates by Mary Kaldor, the percentage of civilian casualties in the wars during the transition from the past to this century is 20%, there were about 50% of civilian casualties in World War II, and during the 1990s about 80% of casualties in those wars were civilians [20]. In addition to these data, modern wars, such as the war in Iraq in 2003-2006, show that the ratio of military and civilian casualties is 1:3 [21]. A great number of civilian casualties is particularly expressed in the African civil wars, where military casualties do not exceed 30% of total casualties (Mozambique 1976-1992), and in the Ethiopian war (1976-1991) less than 2% of all casualties were soldiers [22]. According to the report by the International Committee of the Red Cross, in the wars in Iraq and Syria, in the period from 2014 to 2017, 70% of people were killed in cities, and the number of civilian casualties increased five times when operations took place in urban areas³.

All of this shows that civilian casualties in the twenty-first century wars are one of the key issues of international humanitarian law. The increasing urbanization also increases the risk of killing more civilians in future wars in urban areas, especially in civil and "asymmetric wars", given that distinguishing fighters from civilians has become a very complex process [23]. That is why some authors, such as James Howcroft, call wars in urban areas asymmetric⁴.

One of the general principles of international humanitarian law is precisely the principle of clear demarcation and distinction of military and non-military targets. This particularly becomes a great challenge when it comes to operations in urban areas. Until the adoption of the Hague Convention in 1907, military and non-military targets were not discussed. Only the Hague Convention in point 25 prohibits the attack and bombing of undefended cities, villages and settlements, i.e. buildings [24]. In the same year, the convention on bombing by naval forces during war was passed, which more clearly defines military facilities that are the legal target of an attack [25]. After World War I, with the establishment of the League of Nations, there was another legal international battle for the protection of civilians during war and a clear distinction between legitimate and illegitimate military targets. In particular, after the Spanish Civil War, one of the 1938 resolutions emphasized that the deliberate bombing of civilians was against the law, that the targets of an attack should be identified and that the civilian population in the neighbourhood should be spared [26].

After World War II, in 1977, with the adoption of the Additional Protocol I of the Geneva Convention, the obligation was imposed on the parties to a conflict to distinguish between civilian and military facilities at any time. Article 48 of the Additional Protocol I clearly states that "the parties to a conflict should at all times distinguish between civilians and combatants and between civilian and military facilities and, accordingly, direct their military operations only against military facilities" [27]. It should be emphasized that this Protocol, in Article 52, defines the concept of military facilities and limits them to "those which by their nature, location, purpose or use effectively contribute to military ac-

tion, and whose total or partial destruction, occupation or neutralization in ruling conditions at the time provide a certain military advantage” [27]. It is very important to point out that the Protocol prohibits attacks that are indiscriminate, especially if it causes casualties among civilians, and also prohibits their abuse in order to prevent the enemy from gaining military advantage by attacking military facilities or to make certain areas immune to military operations, i.e. prohibits the use of civilians as “human shield”.

Two particularly important cases in international humanitarian law concerning urban areas are an undefended and open city. Although the Hague Regulations and Convention from 1907 mention the concept of an undefended place, its definition and obligatory implementation followed by the Protocol I of 1977. This protocol, its Article 59, prohibits the attack on undefended places. The authorities of a party to a conflict declare a place undefended and inform the opposing side, which means that it is open to occupation by the opposing side. Both sides, i.e. all parties to a conflict, have to agree on the issue of an open city.

In modern operations, the provisions of the Protocol I of the Geneva Convention can help to avoid war in the streets of cities, but the situation in the field is different. Operations in urban areas become more frequent, so conflicts are almost impossible to avoid. The protection of civilians and facilities has become the main problem in relation to casualties and losses suffered by conflicting parties in an urban area. Therefore, the revision of international and humanitarian law would be needed, if possible at all, in the context of future military operations in urban areas.

AN URBAN AREA AS THE FIELD OF MILITARY OPERATIONS

For the purpose of the research in this paper, military operations in an urban area are defined as military and other activities in the field of operations defined by physical structures made by humans, appropriate infrastructure and civilians [28]. As it can be seen, the definition is very broad, but given all the diversity of urban areas, it is very difficult to define an urban area differently without omitting segments that are important for conducting military operations.

According to the ATP-99, i.e. the NATO publication related to tactics in urban areas, the classification of cities into two segments has been done: population and the type of environment [4]. According to population, cities are classified into megalopolises (population over 10 million), metropolises (between 1 and 10 million citizens), cities (from 100,000 to a million, with the diameter of over 25 kilometers), small towns (from 30,000 to 100,000) and villages (up to 30 thousand inhabitants). It should be noted that cities with more than 10 million citizens are often called megacities, and those with more than 20 million citizens are metacities [29][6]. According to the type of environment, in the ATP-99 cities are classified into historical centres/old cities, financial centres/business centres, cities with heavy industry, cities with light industry, cities with high population density (horizontally and vertically), low population density and suburban areas (slums/shanty). According to the TTP 3-06.1 “Infantry fighting in a populated area”, there are four categories of “populated areas”: large cities, small towns and provinces, villages and settlements. In this context, villages have a population of 3,000 or less, small towns and provinces have up to 100,000, and large cities more than that number. In any case, all urban areas may or may not have certain facilities below its surface (underground, sewerage, garage, etc.), or transport capacities (airports, ports, railway stations, etc.).

In addition to these characteristics, urban areas have other features that are important for operations in them. First of all, the horizontal and vertical structure of each urban area is significant. When it comes to vertical infrastructure, we primarily mean various types of buildings and underground garages, while the horizontal structure consists of streets, underground tunnels or sewers, etc. There are four levels in the urban environment: airspace, supersurface, surface and subsurface [30]. In addition, in the ATP-99 the interior and exterior are also mentioned, as well as supersurface such as tall skyscrapers’ tops [4]. In the FM 2-91.4 the Intelligence support to operations in urban areas classifies

supersurface into external and internal (huge shopping malls, factory halls, etc.), and also into internal underground, i.e. garages and basements under the buildings that belong to them [31]. All of this offers a picture of a very complex structure, and only the physical structure of the urban area made by man, and we should not forget the field and natural environment. Table 2 shows the main features of some types of the urban environment that should be taken into account in the process of planning military operations.

Table 2. The main characteristics of the types of the urban environment

Cities	Historical centres	Financial centres	Old industrial centres	New industrial centres	High population density		Low population density
Characteristics					Horizontally	Vertically	
Function	civilian	economy	Large and small manufactures, warehouses and distribution		housing	housing	housing
Height	medium	medium	medium	low	medium	high	low
Visibility	medium	poor	medium	good	poor	medium	good
Density	high	medium	medium	low	high	high	medium
Infrastructure	medium	good	medium	good	medium	medium	medium
Daily/nightly activities	daily, nightly fun	daily	daily	daily, somewhat at night	daily, nightly	daily, nightly	daily/limited at night
Building material	concrete, stone, wood and steel frames	metal, glass	building without frames	without frames construction, from finished elements	building	steel frames	building without frames, light construction, concrete, steel frames, mud in developing world
Area of distribution	globally	globally	globally	globally	west	globally	globally
Population density	low	high during day, low at night	medium	low/medium	high	high	medium

Source: ATP-99 Urban Tactics (2020), NATO, Allied Tactical Publication, Edition B, Version 1, Annex A, p. A-1 [4].

One of the contemporary problems of modern urban areas that has and will have a huge impact on military operations in urban areas are suburban slums that can serve as key points in the giant network, which in postmodern times become criminal empires and grow as “cancer within state”⁵. It is estimated that by 2030, about two billion people will live in these areas, which is almost 40% of those in cities. As many as 80% of the Nigerian urban population lived in these suburbs in 2011, as well as 4 million citizens of Mexico City⁶. These areas are most often architecturally undeveloped; there are no systems of power and water supply, roads and streets, sewerage systems, etc. in plans. For planners

and executors of military operations, the lack of information about such urban areas is a great challenge, which modern military forces of rich countries are trying to solve by using modern technology (satellites, sensors, etc.). However, it is still a very demanding area for military operations for most of the world armies.

For the purpose of intelligence preparation for the execution of operations in city, it is necessary to consider several main segments. Phil Williams and Werner Selle highlight ten levels that should be analysed in this context (Table 3). Each of these levels is equally important and significant for understanding the urban area in which operations are planned.

Table 3. The levels of intelligence challenges in operations in urban areas

Level 1	Subsurface
Level 2	Topography – roads, checkpoints, etc.
Level 3	City look – buildings
Level 4	Service infrastructure
Level 5	People – “human terrain”
Level 6	Networks – social, criminal
Level 7	Flow – people and goods
Level 8	Power manners and authorities
Level 9	City rhythm
Level 10	Cyber and electronic level

Source: Phil Williams and Werner Selle, “Military Contingencies in Megacities and Sub-Megacities,” American War College, SSI, December 2016, p. 41 [6]

It is very important to emphasize that operations in urban areas require detailed planning that will enable decentralized execution [32]. They used to be and will be more complex in the following period, primarily by limited visibility in terms of buildings and streets, dispersion of forces and equipment, as well as the enemy, impossibility to define the locations of the enemy, own forces and civilians, communication problems⁷. Operations in urban areas increase the possible dimensions of combat, terrain complexity, dispersal of forces, reduce distances between opposing forces, increase troop requirements, favour low-tech warfare, increase the likelihood of casualties, complicate military rules of engagement and pose a challenge how to define success or failure in these operations [33].

When it comes to forces in urban operations, it is believed that the attacker has to be much superior to the enemy. The experiences from World War II have shown that a ratio of 5-6:1 in favour of the attacker is necessary in order to be able to speak about the possible success of the attack [34]. According to the TTP 3-06.1, units to be used, either for attack or defence, in urban areas should not be more than five times larger than those used for attack or defence [35].

The size of the units for a frontal attack on an urban area depends on the size of the facility. According to a certain norm from the manual for infantry fighting in populated area of the Armed Forces of Bosnia and Herzegovina, an infantry company attacks the front of two to three buildings, a battalion two to four blocks of buildings, if block is 175m wide on average [35], while the front of the battalion attack, out of populated area, is about 1.5 km, and for a company 500-700 metres [36].

There are various dilemmas regarding the use of different types of weapons in operations in urban areas, and also experiences from previous wars, especially those from the end of the twentieth and the beginning of the twenty-first century. One of the factors to keep in mind is that the ammunition consumption is five to ten times greater in operations in urban areas than out of this area [35], which is a problem of logistical supply of units.

The use of smart weapons with laser-guided missiles is a very important innovation that helps in operations in urban areas. In the last armed conflict led by the Israel Defense Forces against Hamas in Gaza, in May 2021, Israel demonstrated the possibility of efficient use of these weapons. It demolished several buildings in residential areas using very precise equipment, which reduced collateral damage to minimum. The clear announcement of the Israel Defense Forces that they will demolish those buildings, that is, that they are legitimate targets for them should be added, and the population was evacuated.

Likewise, the use of non-lethal weapons has increased dramatically over the last ten years. These weapons enable, above all, the avoidance of collateral damage and casualties among civilians [37].

Activities and fights below the surface of the ground, through sewers, tunnels, garages, passages, etc. represent great problems for military units. In these cramped spaces, often without light, the problem is also in orientation, booby traps, great noise when opening fire, big flashes that blind the devices for nightly actions, very difficult and almost impossible to maintain connection, etc.

The use of thermal cameras to locate enemies, and also civilians, 3D printers for printing maps and entire areas for “rock drill”, satellites and other technology, and unmanned weapons and systems, small robots and drones - are a new type of equipment that can be found and seen in operations in urban areas. Various types of sensors for movement, heat, locating enemy sniper fire, as well as indirect fire from mortars, etc. are very useful.

It is very important to point out that the existing equipment can be used in a high-quality manner in operations in urban areas with smart thinking, flexibility and innovation. Due to a great number of booby traps, improvised explosive devices, ambush, and after heavy casualties during clearance of the area, the US Marine Corps used an armoured bulldozer in Fallujah (2004) to clear obstacles, demolish buildings and build new passages. Thus, with the use of engineering devices, infantry and armour, they created their combat environment⁸. In that context, the activities of the Israel Defense Forces during the operations in Nablus in 2002 should be emphasized. Israeli did not use streets, roads, alleys or courtyards that make up the city, nor exterior doors, interior stairs and windows of buildings, but moved horizontally through walls, and vertically through explosive openings in ceilings and floors⁹.

All of this shows that an urban area is very complex when it comes to space for the execution of military operations. It requires great engagement of personnel and equipment, innovation, resourcefulness and flexibility. In addition, it is necessary to adapt modern technology and existing equipment to the conditions of military operations in urban areas, and collecting information about the enemy, urban area and civilians becomes a priority activity in the planning process, and also the conduct of field activities.

CONCLUSION

Urban areas, depending on their characteristics, have different effects on the engagement of forces and equipment and the manner in which military operations are conducted. The characteristics of these areas that are important for conducting operations are position, location, shape, size, the method of construction, the layout of the street network, the existence of underground facilities, plants, etc. Their complexity is one of the greatest challenges for planners of these operations.

To conduct operations in urban areas, forces are expected to be modular and thus flexible, and adaptable to a constantly changing environment. It is necessary to focus on smaller units that are in the field, up to company level. Their most important feature is to disperse fast, and then quickly concentrate towards target. The discussion between scientific and military circles is whether to establish special forces to fight in an urban area or to use the existing ones with certain technological solutions and futuristic weapons.

The consideration of the type of weapons that will be used in these military operations in urban areas is primarily related to the issue of the protection of civilians. The use of weapons that have limited effect (do not break through several walls) and weapons that do not cause additional effects (such as fire, unnecessary destruction) should be the choice of modern armies in military operations in urban areas.

The issue of command and control is also one of the challenges that modern armed forces conducting military operations in urban areas face. In this context, modern technology (robots, sensors, satellites, etc.) can be of great help to the forces conducting these military operations. On the other hand, they are very expensive for most armies in the world.

The logistical challenges are also very great when it comes to military operations in urban areas. The increased use of food and water, as well as greater consumption of ammunition pose additional challenges for planners and logisticians of these operations, which, above all, have to be taken into account when planning these operations.

In any case, the issue of future military operations in urban areas should not be a taboo subject because it is expected that there will be more and more of them in the future. Population movement has made suburbs huge and a major challenge for military forces, even greater than urban centres. Distinguishing combatants from non-combatants, providing basic necessities for civilians during operations, the use of conventional and unconventional combat equipment are some of the challenges that planners of operations in urban areas have also to consider.

The detailed analyses of previous operations in urban areas, transformation of these identified lessons into lessons learned, adaptation of training and equipment for such operations are some of the first steps that should be taken. Special emphasis should be placed on the need to study more the topic of combat in urban areas in operations of battalions and brigades and to be as much as possible an integral part of the training process of these units.

Endnotes

¹David Shunk, „Mega Cities, Ungoverned Areas, and the Challenge of Army Urban Combat Operations in 2030/2040”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 174.

²Sean M. Castilla, „On the Likelihood of Large Urban Conflict in the 21st Century”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 539.

³Robert Muggah, „The Tricky Business of Counting the Costs of Armed Conflict in Cities”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 620 [29].

⁴James Howcroft, „Intelligence Challenges in Urban Operations”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 225 [29].

⁵John P. Sullivan and Adam Elkus, „Postcard from Mumbai: Modern Urban Siege”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 43 [29].

⁶Ibid, p. 90 [29].

⁷Russell Glenn, „Urban Operations: Meeting Challenges, Seizing Opportunities, Improving the Approach”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 659 [29].

⁸Dennis A. Lowe, „Employing Armor Against the Islamic State: The Inevitable Urban Combined Arms Fight”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 249 [29].

⁹David Shunk, „Mega Cities, Ungoverned Areas, and the Challenge of Army Urban Combat Operations in 2030/2040”, in Robert Bunker, „Blood and Concrete: 21st Century Conflict in Urban Centers and Megacities”, A Small Wars Journal Anthology, 2019, p. 181 [29].

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Изазови војних операција у урбаном подручју

Сажетак:

Према извјештајима Уједињених нација, из године у годину све је већи број градова у свијету и тај тренд ће се сигурно наставити у блиској будућности. Тиме се мијења и простор на коме се изводе војне операције. Градови постају подручја која је немогуће заобићи у војним операцијама, и постају кључ успјеха тих операција. Савремене војне операције које су се одвијале у Чеченији, Ираку, Сирији, Авганистану, али и у појасу Газе у Израелу, показале су да постоји велики број изазова које савремене војске морају ријешити. Прије свега, ту је разликовање војних и невојних циљева, као и разликовање цивила од бораца, што је регулисано и Женевском конвенцијом, али се то у околностима војних операција у урбаном подручју показало као тешко испуњиво. Са друге стране, градови се разликују по структури, становништву, објектима и др., и сваки од њих тражи карактеристичан приступ. Све то представља изазове за војне снаге које изводе војне операције у урбаном подручју. Циљ овог рада је да, кроз анализу конкретних војних операција у урбаном подручју, које се због своје сложености, трајања и значаја могу узети као огледни примјери (Мосул, Грозни, Фалуџа, Алепо, Кијев, Харков), а које су реализовале првенствено војне снаге Сједињених Америчких Држава и Русије, али и неке друге, истакне значај урбаних средина за будуће војне операције. Поред тога, указано је на изазове које то носи, а прије свега на питања организације и структуре јединица, врсте и тип наоружања које се користи, начина командовања и остваривање везе, логистичких изазова, изазова које представљају цивили у подручју операција, те изазови везани за примјену Женевске конвенције о овим војним операцијама.

Кључне речи: операције; урбано подручје; цивили; градови; изазови; наоружање; Женевска конвенција