

THE FUTURE OF URBAN WARFARE IN THE AGE OF MEGACITIES

Margarita KONAEV

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Focus stratégique

Resolving today's security problems requires an integrated approach. Analysis must be cross-cutting and consider the regional and global dimensions of problems, their technological and military aspects, as well as their media linkages and broader human consequences. It must also strive to understand the far reaching and complex dynamics of military transformation, international terrorism or post-conflict stabilization. Through the “**Focus stratégique**” series Ifri's Security Studies Center aims to do so, offering new perspectives on the major international security issues in the world today.

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Abstract

Urbanization is a relentless trend, and as cities grow and expand, armed conflict and violence are urbanizing as well. In recent years, cities like Aleppo, Sana'a, and Mosul have suffered siege warfare, aerial and artillery bombardments, and heavy street fighting. Major cities across Europe and Africa are being targeted by terrorist groups and "lone wolf attackers" inspired by ISIS. Even traditionally rural insurgents such as the Taliban and PKK are shifting to cities. In Latin America, where urban violence is fueled by organized crime and transnational drug trafficking, cities in Mexico and Brazil have some of the highest homicide rates in the world. This study traces the drivers behind this rise in urban violence and warfare, assesses the complex challenges military forces face in cities, and analyzes the key demographic, technological, and political developments that have shaped military operations in cities in the 21st century, and will likely characterize future urban conflicts.

Résumé

La tendance à l'urbanisation est inexorable, et à mesure que les villes se développent, les conflits armés et la violence deviennent également urbains. Ces dernières années, des villes comme Alep, Sanaa et Mossoul ont subi des sièges, des frappes aériennes et d'artillerie, et de violents combats de rue. Les grandes villes d'Europe et d'Afrique sont la cible de groupes terroristes et de « loups solitaires » influencés par le groupe Etat Islamique. Même les insurrections traditionnellement rurales, telles que les Talibans et le PKK, se déploient désormais en ville. En Amérique Latine, où le crime organisé et le narcotrafic entretiennent la violence urbaine, les villes du Mexique et du Brésil enregistrent des taux d'homicides parmi les plus élevés au monde. Cette étude explore les causes de cette urbanisation de la violence et de la guerre, et évalue les défis auxquels sont confrontées les forces militaires dans les villes. Elle analyse enfin les principales évolutions démographiques, technologiques et politiques qui façonnent les opérations militaires en ville au XXI^e siècle, et qui caractériseront probablement l'avenir de la guerre urbaine.

Table of Contents

INTRODUCTION	9
PATTERNS AND DRIVERS OF URBAN WARFARE	13
The long coming of age of urban warfare.....	13
Urbanization, Fragility, and Modern Conflicts	18
The Urban Future of Conflict.....	20
“COMBAT IN HELL”: UNDERSTANDING THE CHALLENGES OF URBAN WARFARE	25
The Nature of Urban Environment	25
Shared Characteristics of Urban Military Operations.....	28
Urban Populations : a strategic feature	34
URBAN WARFARE AND VIOLENCE IN THE 21ST CENTURY	37
(Mega)Cities Swallowing Armies	37
Emerging Technologies	39
Humanitarian Consequences and Impact on Civilians	43
Urban Violence and Organized Crime	47
CONCLUSION	51

Introduction

The year 2008 marked the first time in history when the majority of the world's population was living in cities. By 2050, the United Nations estimates that urbanization – the gradual shift in residence of the human population from rural to urban areas – combined with overall population growth could add another 2.5 billion people to the world's cities, culminating in over two-thirds of the globe calling urban areas home.¹ Throughout history, cities have been the engines of economic development and growth, centers of power and wealth, crucibles of culture and scholarship, and drivers of innovation and entrepreneurship. Over the past few decades alone, the move to cities has provided tens of millions of people in developing countries with unprecedented access to electricity, running water, sanitation, education, employment, and telecommunications. And in today's increasingly connected and networked world, cities are the hubs that facilitate the flows of goods, people, ideas, and capital which sustain, deepen, and expand global commerce, investment, prosperity, productivity, and seemingly limitless human potential.²

That said, neither all cities, nor all residents within a given city, necessarily benefit from the positive economic, social, and political dividends of urbanization.³ The sheer speed and volume of urban population growth in developing countries, much of it unplanned and unregulated, has overwhelmed existing infrastructure and public service provision capacities. Whether it is security, housing, water and sanitation, health, education, or adequate transport networks, many developing countries are failing to meet the needs of their ever-expanding urban populations.

Weak institutions, entrenched urban poverty and inequality, marginalization and exclusion, environmental degradation, youth unemployment, high crime rates, and burgeoning informal and illicit economies, especially drug trafficking, are then just a few of the problems cities in the developing world are facing today. And as the world's urban

1. UNHABITAT, *World Cities Report 2016 – Urbanization and Development: Emerging Futures*, Nairobi: United Nations Human Settlements Programme, 2016.

2. UNHABITAT, *State of the World's Cities 2010/11: Bridging the Urban Divide*, London: Earthscan, 2008; McKinsey Global Institute, *Urban World: Cities and the Rise of the Consuming Class*, June 2012.

3. S. Colenbrander, "Cities as Engines of Economic Growth: The Case for Providing Basic Infrastructure and Services in Urban Areas", *IIED Working Paper*, London: International Institute for Environment and Development, October 2016.

population has grown, we have also witnessed the increasing urbanization of violence and warfare.

Since the beginning of the 21st century, cities such as Aleppo, Sana'a, Mosul, Raqqa, Gaza, and Donetsk have seen great destruction and immeasurable human suffering as a result of wars between conventional state forces and insurgents and terrorist groups, infighting between different non-state actors, and third-party interventions. Cities are also increasingly becoming the targets of terrorism. In Kenya, for instance, Al-Shabaab's attack on the Westgate shopping mall in Nairobi in October 2013 and the siege of the university campus in Garissa in April of 2015 were two of the worst terrorist attacks in the country's history. And in France, the coordinated ISIL assault on the Bataclan theatre, a major stadium, and a number of restaurants and bars in Paris in November of 2015 marked the deadliest attack on French soil since World War II. Concurrently, urban violence related to organized crime and drug trafficking in cities such as Rio de Janeiro, Tijuana, Acapulco, San Pedro Sula, and Cali throughout Latin America and the Caribbean has at times been as lethal as war-time violence in some conflict-affected countries.⁴

Urban warfare – a broad term referring to the conduct of military operations in cities – is not a new phenomenon. Because of their political, psychological, and logistical value, military strategists have long viewed cities as centers of gravity – to be either defended or conquered in times of conflict. And depending on the strategic goals at hand, urban operations can span the entire spectrum of military operations: from high-intensity conventional war to low-intensity conflict and counterinsurgency to stabilization and humanitarian relief operations. These missions of course differ a great deal with respect to their operational objectives as well as the tactics and techniques employed. That said, a number of themes and principles that characterize modern military operations in urban environments have remained relatively consistent across both time and space.⁵

One such theme describes urban warfare as the “great equalizer” between professional and technologically superior conventional militaries and the generally much weaker, under-modernized irregular forces, and highlights the advantages armed non-state groups can gain by drawing

4. C. Woody, “These Were the 50 Most Violent Cities in the World in 2017”, *Business Insider*, March 6, 2018.

5. L. DiMarco, “Attacking the Heart and Guts: Urban Operation through the Ages” in: W. G. Robertson and L. A. Yates (eds.), *Block by Block: The Challenges of Urban Operations*, Fort Leavenworth: US Army Command and General Staff College Press, 2003.

militaries into urban areas.⁶ Another important aspect of urban warfare, both ancient and modern, is the significant amount of manpower, resources, and time it demands, as well as the high costs it exudes. The history of urban warfare also demonstrates that success depends on combined armed operations, outstanding small unit leadership and tactics, specialized equipment and training, and in particular, accurate and timely intelligence. Perhaps most critically, the presence of a sizable civilian population in the urban conflict zone is the defining feature of urban warfare, which inherently influences the conduct, progression, and oftentimes also the outcome of the entire operation.

These basic principles and challenges of urban combat have remained largely the same throughout the 20th century and to some extent, much longer than that. But the cities of the 21st century, much like the means and methods of modern warfare, are constantly evolving.

The rapid increase in large cities and megacities, as well as emerging technologies, especially the advent of social media and the proliferation of drones exacerbate existing problems and generate new strategic, operational, and tactical challenges even for the world's advanced professional militaries. In addition to these demographic and technological developments, we have also witnessed meaningful advances in global norms and policies governing the protection of civilians in conflict since the 1990s, including the establishment of the International Criminal Court and the deployment of various United Nations (UN), European Union (EU), North Atlantic Treaty Organization (NATO), and African Union (AU) peacekeeping and peace enforcement missions with a clear mandate to protect civilians. While the gap between norms and practice remains a contested topic as a whole, urban areas present unique challenges for the implementation of the principles of international humanitarian law (especially distinction, proportionality, and precaution) designed to protect civilians in armed conflict.⁷ Finally, the lines between different forms of violence and political instability – civil wars, terrorism, communal violence, political repression, and criminal violence – are becoming increasingly blurred.⁸ Urban violence fueled by organized crime, which generally falls outside of standard definitions and discussions of armed conflict, therefore also merits consideration.

6. B. R. Posen, "Urban Operations: Tactical Realities and Strategic Ambiguities" in: M. C. Desch (ed.), *Soldiers in Cities: Military Operations in Urban Terrain*, Carlisle: Strategic Studies Institute, 2001.

7. N. Durhim, "Protecting Civilians in Urban Areas: A Military Perspective on the Application of International Humanitarian Law", *International Review of the Red Cross*, Vol. 98, No. 1, 2016, pp. 177-199.

8. C. Blattman and E. Miguel, "Civil War", *Journal of Economic Literature*, Vol. 48, No. 1, 2010, pp. 3-57.

Looking ahead, over the next two decades, almost 90% of the increase in global urban population will take place in developing countries in Asia and Africa. Thus, as cities such as Dhaka, Kinshasa, and Lagos continue to grow, they will likely become even more vulnerable to political and social unrest, violent crime, terrorism, environmental hazards and natural disasters, and armed conflict.

Given these trends in globalization and armed conflict, militaries and internal security forces must prepare for the inevitable eventualities of fighting in complex, densely populated urban environments. In turn, humanitarian aid agencies and development organizations must brace for the destructive consequences of conflict in cities. And as far as research on violence and war is concerned, there is also an urgent need to increasingly focus on cities. As such, this monograph traces the patterns and drivers behind the rise in urban violence and warfare, assesses the multifaceted challenges that military forces face in cities, and analyzes the key demographic, technological, and political developments that have shaped military operations in cities in the 21st century, and will likely characterize future urban conflicts.

Patterns and Drivers of Urban Warfare

The Long Coming of Age of Urban Warfare

For centuries, cities have been the center of politics, industry, economic and commercial activity, communications, and culture. And military forces throughout history have devoted much thought and a great deal of resources to attacking and defending key cities in their pursuit of various political objectives. As the ancient and medieval cities of Asia and Europe raised walls around their perimeter for their own defenses, siege warfare became the dominant method of capturing cities.

The streets and buildings of the city's inner core, however, rarely turned into full-scale battlefields. That is, unless and until the besieging force broke through the fortifications, sacked the city, and subjected its residents to all kinds of violence. Jerusalem, for instance, was besieged forty times and sacked and utterly destroyed on two occasions, while the destruction of Carthage by the Romans in 146 BC and the successful siege and capture of the Byzantine capital of Constantinople by the Ottomans in 1453 marked pivotal battles that sealed the fate of empires.

With the invention of gunpowder and artillery that was capable of moving with armies, from the end of the Hundred Years' War in the late fifteenth century and into the 20th century, confrontation on a battlefield in open country became more prevalent than siege warfare. Leaders and armies, of course, continued to fight *for* cities. But at least within the European military convention, the evolution of the Laws of War urged that what happened to the city was to be determined as the result of open warfare and field campaigns. Between 1805 and 1812, for instance, Napoleon took Vienna, Berlin, and Moscow after defeating the Austrian, Prussian, and Russian armies in the field rather than following a protracted siege.⁹

During World War I, most of the heavy fighting took place in rural areas, and the majority of the heavily populated urban areas were either evacuated or declared as open cities. In the 1930s, urban warfare became a prominent feature of the Spanish Civil War (as well as the Sino-Japanese

9. M. Evans, "City Without Joy: Urban Military Operations into the 21st Century", *Australian Defence College Occasional Paper*, No. 2, 2007.

War), with new weapons such as quick-firing artillery and machine guns targeting cities such as Madrid and Barcelona, and the German Condor Legion undertaking the first large-scale aerial bombardment against the town of Guernica in Spain's Basque Country.¹⁰

But it was World War II that marked the turning point for urban combat, especially for high-intensity conventional interstate warfare.¹¹ As the massive professional armies of both the Axis forces and the Allies were forced to fight not only *for*, but *in* cities, some of the most destructive and decisive battles of the war took place in Kharkov, Warsaw, Caen, Arnhem, Aachen, Budapest, Berlin, and Manila. The battle for Stalingrad is the most famous urban battle of World War II and perhaps the deadliest single battle in history. Lasting five months, the fighting resulted in immense losses: the total military casualties for the Soviets and the Germans (and their allies the Italians, Hungarians, and Romanians) exceeded one million men. Of the 600,000 civilians who lived and worked in Stalingrad and its surrounding, only 1,500 remained in the city at the end of the battle – with hundreds of thousands killed, wounded, and displaced.¹²

During the Cold War, due to the considerable decline in the incidence of interstate conflicts after World War II, Western and Soviet cities were largely spared the horrors of urban siege, aerial and artillery bombardments, and heavy street fighting. But a number of cities across the rest of the world nonetheless became the focal points for anti-colonial rebellions, intrastate insurgencies, as well as conventional military operations.¹³ At a time when most armed groups subscribed to the Maoist strategy of the “People’s revolutionary war,” prioritizing leftist political indoctrination and rural guerilla tactics, the Battle of Algiers (1956-1957), for instance, became one of the first large-scale efforts to overthrow a colonial government by shifting the insurgency’s focus to operations inside the capital city. And with a similar objective of bringing the heretofore rural conflict into major urban centers, the North Vietnamese launched the Tet Offensive in the winter of 1968. The battle for Hue, South Vietnam’s second largest city and home to about 280,000 people, lasted nearly a month and proved one of the most vicious and lethal engagements of the entire Vietnam War.

Throughout the late 1960s to the mid-1970s, the British Army, which like the French has gained experience in dealing with nationalist uprisings

10. G. J. Ashworth, *War and the City*, London: Routledge, 1991.

11. A. Vautravers, “Military Operations in Urban Areas”, *International Review of the Red Cross*, Vol. 93, No. 878, 2010, pp. 437-452.

12. L. DiMarco, *Concrete Hell: Urban Warfare from Stalingrad to Iraq (Military History)*, Oxford: Osprey, 2012.

13. M. C. Desch, *Soldiers in Cities: Military Operations in Urban Terrain*, Carlisle: Strategic Studies Institute, 2001.

throughout its rapidly shrinking empire, was faced with the politically explosive challenge of conducting urban counterinsurgency operations in Northern Ireland. In the Middle East, in a more conventional interstate conflict context, the Israelis took heavy casualties in Jerusalem during the 1967 Six Day War and in the disastrous attack on Suez City during the 1973 Yom Kippur War. Lebanon's capital city, Beirut, also saw intense fighting and a great deal of destruction during the country's civil war and the First Lebanon War against Israel in 1982.

These Cold War era urban battles notwithstanding, the majority of conflicts during this time took the form of insurgency or rural guerrilla warfare in the mountainous areas and the dense jungles of countries such as Afghanistan and Colombia. Urban based-insurgencies, by comparison, have been relatively rare and mostly unsuccessful. Throughout the late 1960s in Brazil, for example, Rio de Janeiro and Sao Paulo became the main focus of leftist revolutionary activity, where the two main urban guerilla groups – ALN and VPR – carried out a series of bombing attacks on army barracks, assassinations, and high-level kidnappings. But as government repression escalated, and mass arrests and torture became widespread, these groups were effectively neutralized by 1971. The left-wing Uruguayan urban guerrillas, the Tumpamaros, met a similar fate in 1972.

Meanwhile in El-Salvador, Guatemala, and Peru, the attempted shift from rural guerrilla tactics to urban warfare tactics also proved largely unsuccessful when the much weaker insurgents encountered the better equipped and more powerful state forces. At the same time in Europe, throughout the 1970s and the 1980s, the urban terrorism campaigns of separatist groups such as Northern Ireland's IRA and Spain's ETA, as well as the left-wing and right-wing extremist groups in Italy, France, and Germany, also failed to accomplish their political goals.¹⁴

That urban-based insurgents have floundered is perhaps not surprising given that state power tends to be concentrated in cities.¹⁵ And since distance curtails force projection capabilities, scholars of classical insurgencies and civil wars have often argue that "regardless of their social characteristics," urban areas offer easier targets for state control than the pacification of large rural areas in the distant periphery of the country.¹⁶

Some scholars also claim that identity-based political mobilization is harder to inspire and coordinate among urbanites. This is in part because

14. B. E. O'Neill, *Insurgency and Terrorism: From Revolution to Apocalypse*, Dulles: Potomac Books Inc., 2005.

15. C. D. Kaufmann, "Rational Choice and Progress in the Study of Ethnic Conflict: A Review Essay", *Security Studies*, Vol. 14, No. 1, 2005, p. 200.

16. S N. Kalyvas, *Logic of Violence in Civil War*, Cambridge: Cambridge University Press, 2006.

compared to the territorially concentrated minority groups living in peripheral areas of the country, city-dwellers (arguably) do not feel the same strong attachment to the territory they inhabit and lack the tight-knit ethnic and religious networks that tend to characterize social identity groups in rural settlements.¹⁷ Deep attachment to a homeland territory and robust ethno-religious social ties ultimately serve as the basis for violent political mobilization in secessionist and identity-based conflicts. The weakness of such sentiments and networks in the urban environment therefore helps explain the relative scarcity of urban-based insurgencies.

Others have pointed out that advancements in military technology have widened the gap between conventional armies and irregular groups, making it even more difficult to organize and mobilize an urban-based uprising against the vastly superior government forces.¹⁸ Overall, as a RAND Corporation study of global insurgencies during the Cold War era has found, “urban insurgencies have traditionally been the easiest kind to defeat.”¹⁹

The end of the Cold War brought on the resolution of longstanding civil wars and conflicts in countries such as Angola, Mozambique, Guatemala, and El-Salvador, as well as the deployment of peacekeeping missions on an unprecedented scale. But the dissolution of the Soviet Union and Yugoslavia, failed democratization and peace processes, weak institutions, and regional instability also contributed to the outbreak of new civil wars and the recurrence of previously contained conflicts. And throughout the 1990s, we have witnessed the return of large-scale war to cities. The Siege of Sarajevo during the Bosnian civil war, for instance, was the longest siege of a capital city in the history of urban warfare, while the Battle of Grozny during the first Russo-Chechen war saw heavy street-by-street fighting reminiscent of World War II era Stalingrad. The 1993 Battle of Mogadishu turned into one of the longest and most intense firefights involving US forces since the Vietnam War, and led to end of the US mission in Somalia.

In 1996, US Marine Corps General Charles Krulak predicted that “the future [war] may well not be ‘Son of Desert Storm,’ but rather ‘Stepchild of Somalia and Chechnya’”. Trends in global conflict in the 21st century appear to confirm his prediction.

US counterinsurgency operations in Iraq between 2003 and 2011, for example, were concentrated predominantly in the country’s largest cities,

17. M. Toft, *Geography of Ethnic Violence: Identity, Interests, and the Indivisibility of Territory*, Princeton: Princeton University Press, 2003; J. Fearon and D. Laitin, “Ethnicity, Insurgency, and Civil War”, *American Political Science Review*, Vol. 97, No. 1, 2003.

18. M. Kocher, “Human Ecology and Civil War”, Ph. D. Dissertation, University of Chicago, 2004.

19. J. Morrison Taw and B. Hoffman, *The Urbanization of Insurgency: The Potential Challenge to U.S. Army Operations*, Santa Monica: RAND, 1994.

including Baghdad, Ramadi, and Fallujah.²⁰ The 2006 Second Lebanon War between Israel and Hezbollah was also predominantly fought in urban areas, and Israel has undertaken significant military operations in West Bank in 2002 and in the densely populated Gaza Strip in 2008, 2012, and 2014.²¹ The 2011 Libyan civil war began in the city of Benghazi, and ended when the rebels captured Tripoli, while the cities of Aleppo, Homs, and Eastern Ghouta right outside of Damascus have become the main battlefields of the war in Syria.

The battle to dislodge the Islamic State group from Mosul became the largest urban battle since the end of World War II. It lasted 9 months in spite of the striking imbalance of opposing forces: between 3,000 and 5,000 ISIS militants opposed nearly 100,000 Iraqi government forces, allied militias, and extensive air and logistics support from the US-led coalition.²² Meanwhile, in the Philippines, the five-month long battle of Marawi between government forces and pro-ISIS militants marked the country's longest urban war.²³ Fighting and protracted siege have caused immense harm to the Yemeni cities of Sana'a and Taiz over the course of the country's extremely violent multi-party civil war. And even in eastern Ukraine, where much of the fighting has been concentrated in the rural areas, state forces still continue to periodically battle Russian-backed separatists in the city of Donetsk.

These examples highlight both the proliferation of new armed conflicts where urban warfare has become a critical aspect of the broader campaign and the recurrence of previously-contained conflicts within which cities and urban areas have once again turned into war zones. Alongside these, we are also witnessing the transformation of longstanding conflicts where traditionally rural-based insurgent groups are increasingly targeting cities.

The decades-long conflict between Turkey and the PKK, for instance, experienced a strategic shift in the summer of 2015, when the historically rural PKK insurgency shifted its focus to cities such as Cizre, Silopi, Idil, and Sur in the majority Kurdish southeast.²⁴ In Afghanistan, the Taliban and local branches of the Islamic State have recently been on the offensive,

20. G. Gentile et al., *Reimagining the Character of Urban Operations for the US Army: How the Past Can Inform the Present and Future*, Santa Monica: RAND, 2017; D. E. Johnson, M. W. Markel and B. Shannon, *The 2008 Battle of Sadr City*, Santa Monica: RAND, 2013.

21. D. E. Johnson, *Hard Fighting: Israel in Lebanon and Gaza*, Santa Monica: RAND, 2011.

22. US Army, *Mosul Study Group: What the Battle for Mosul Teaches the Force*, No. 17-24, September 2017; T. D. Arnold and N. Fiore, "Five Operational Lessons from the Battle for Mosul", *Military Review*, January-February 2019.

23. J. Lewis, "The Battle of Marawi: Small Team Lessons Learned for the Close Fight", *The Cove*, January 21, 2019, available at: www.cove.org.

24. M. Konaev and B. Kadercan, "Old Dogs, New Tricks: Urban Warfare in Turkey's War with the PKK", *War on the Rocks*, January 3, 2018, available at: warontherocks.com.

targeting the capital city of Kabul and other urban centers in mass-casualty terrorist attacks. Furthermore, there has also been a notable upsurge in urban conflict in the rapidly urbanizing countries of Sub-Saharan Africa, especially in South Sudan, Somalia, Central Africa Republic, and Cote d'Ivoire, while armed groups such as Boko Haram and al-Shabaab have increasingly targeted cities in Kenya, Cameroon, and Nigeria.

In fact, over the past 20 years, rural violence has been declining and conflict is becoming increasingly concentrated in urban areas. And today, nearly half of the armed conflicts around the world are predominantly being fought in urban areas.²⁵

Urbanization, Fragility, and Modern Conflicts

The causes and dynamics of conflict and war are complex, contingent, and unique in each case. But the following factors and developments can help explain the shift from rural to urban armed conflict and the global upsurge in violence in cities: rapid urbanization and population growth, increased fragility fueled by growing inequality and political instability in developing countries, and the changing character of armed conflict.²⁶

Most basically, the shift from rural to urban armed conflicts mirrors patterns of increasing global urbanization, namely, the rapid and largely unplanned transition from predominantly rural to urban living, and the massive growth and expansion of urban areas.

The global urban population has increased from only 13% in 1900 to nearly 30% in 1950; in 2008, with some 3.3 billion people living in cities, it has crossed the 50% threshold for the first time in history. By 2050, it is estimated that two thirds of the global population will be living in urban areas. While urbanization as well as population growth are global trends, these processes are by no means happening at the same rate across the different regions. Nearly 90% of the projected 2.5 billion increase in the world's urban population will take place in Asia and Africa, and just three countries – India, China, and Nigeria – will together account for about 37% of this expected growth.²⁷

Historically, the move from small rural settlements to larger, dense urban areas has been closely linked to rapid industrialization and economic

25. OECD, *States of Fragility 2016: Understanding Violence*, Paris: OECD Publishing, 2016.

26. M. Konaev and J. Spencer, "The Era of Urban Warfare is Already Here", Foreign Policy Research Institute, March 21, 2018.

27. UNHABITAT, *World Cities Report 2016 – Urbanization and Development: Emerging Futures*, op. cit.

development and growth. Economic development has fueled urbanization, and in turn, urbanization has had a largely positive impact on economic growth and poverty reduction. In fact, approximately 80% of global GDP is generated in cities.²⁸ Yet, recent urbanization trends in the developing world, especially in sub-Saharan Africa, have undermined much of what we know about this symbiotic relationship between urbanization and economic development.

The cities of the developing world have grown and expanded in an unprecedented rate, while national and local economies have lagged behind, and governments have not kept up with the growing demand for public services and infrastructure. Furthermore, while inequality has increased around the world, urban areas are more unequal than rural areas. In fact, nearly one billion people now live in urban slums and informal settlements, largely without access to basic services such as housing, running water, electricity, and sanitation.

Youth are at the forefront of this unprecedented demographic shift toward cities, and it is estimated that as many as 60% of all urban dwellers will be under the age of 18 by 2030.²⁹ Unfortunately, however, young people all around the world are facing serious difficulties in finding employment, and the situation is especially precarious for urban youth in developing countries, where youth unemployment and poverty are particularly acute.

Research in Political Science and Economics shows that low levels of economic development, stagnant economic growth, and sharp inequalities among different social groups tend to correlate with internal conflict, human rights violations and repression, as poor and especially poor and populous countries tend to be more volatile, violent and vulnerable to repeat civil wars.³⁰ The multifaceted fragility that emerges from the combination of high population density, urban poverty, dwindling resources and poor governance therefore make cities like Cairo, Karachi, Khartoum, and Kampala particularly vulnerable to natural disasters, terrorism, criminal activity, and political and social unrest.³¹

The surge of urban warfare and the increase in violence in cities are also a function of changes in the character of armed conflict. These changes, to be

28. A. Grubler and D. Fisk, *Energizing Sustainable Cities: Assessing Urban Energy*, New York: Earthscan, 2013.

29. UNHABITAT, "Youth", available at: unhabitat.org.

30. J. Fearon and D. Laitin, "Ethnicity, Insurgency, and Civil War", *American Political Science Review*, *op. cit.*; P. Collier, V. L. Elliott *et al.*, *Breaking the Conflict Trap: Civil War and Development Policy*, Washington: World Bank, 2003; P. Collier, A. Hoeffler, and M. Soderbom, "Post-Conflict Risks", *Journal of Peace Research*, Vol. 45, No.4, 2008, pp. 461-478.

31. C. Raleigh, "Urban Violence Patterns Across African States", *International Studies Review*, No. 17, 2015, pp. 90-106.

more specific, refer to the decline of interstate warfare compared with the proliferation of intrastate conflicts, and the technological advances that impact how, when, and where armed conflict unfolds.

As previously noted, interstate conflicts have become exceedingly rare since the end of World War II. And today's conflicts predominantly involve government forces fighting different insurgent and terrorist groups, as well as armed groups battling one another. Increasingly, these armed non-state groups are learning the advantages they can gain by drawing conventional state forces into the urban terrain.

Cities, as Louis Di Marco explains, have always offered the defender “important asymmetric advantages in terms of cover and concealment that could offset the advantages of the attacking force.”³² In modern intrastate conflicts, however, the significance of this levelling function is multiplied precisely because of the inherent imbalances of power between conventional state forces and armed non-state groups. Moreover, for weaker insurgents or terrorist groups that lack the capacity or inclination to control urban territory or take the state's security forces head on, cities still offer an array of lucrative, high-visibility soft targets, including airports, metro stations, shopping malls, hotels, concert halls, restaurants, and religious and cultural sites – all of which are endowed with practical and symbolic value.

Finally, the urbanization of conflict is also being facilitated by advances in military and civilian technology especially in aerial or space-borne intelligence, surveillance and reconnaissance (ISR) capabilities which have made the classic rural guerilla warfare settings less safe for violent groups.³³ Traditionally rural-based insurgent groups are therefore increasingly shifting their focus onto cities, where they can easily blend into the population and make use of the urban terrain to make up for their relative weakness. Taken together, as Frank Hoffman has put it, “the complex terrain of the world's amorphous urban centers is fast becoming the insurgent and terrorist's jungle of the twenty-first century.”³⁴

The Urban Future of Conflict

Despite their longstanding distaste for urban warfare, a growing number of Western military strategists now acknowledge the need to prepare for war in cities. For instance, US Army Chief of Staff Gen. Mark Milley has recently emphasized the need to “man, train, and equip the force for operations in

32. L. DiMarco, “Attacking the Heart and Guts: Urban Operation through the Ages”, *op. cit.*

33. D. Kilcullen, “Cities Are Sponges That Soak Up Troops”, *The Cipher Brief*, October 22, 2017, available at: www.thecipherbrief.com.

34. F. G. Hoffman, “Neo-Classical Counterinsurgency”, *Parameters*, Summer 2007, pp. 71-87.

[...] highly dense urban areas,” seeing how in the future, “the American Army is probably going to be fighting in urban areas.”³⁵ Within the last decade, different branches of the US military, including the Marine Corps, the Army, and the Joint Chiefs of Staff, have all released new or updated strategic and doctrinal documents on operations in urban environments. Indeed, the most recently updated December 2017 US Army and US Marine Corps manual on Urban Operations clearly states that global urbanization patterns are “making military operations in cities both inevitable and the norm.”³⁶ In other NATO countries, such as France and the UK, leading defense officials have also stated that it is a question of when, not if, the military will be required to operate in cities.³⁷

Importantly, Western states are not the only ones coming to terms with the urban future of conflict. The Russian military and especially its special forces have gained significant urban combat experience in Chechnya, Dagestan, Georgia, and most recently, in Syria and Ukraine. Moreover, the country’s military modernization program emphasizes rapid deployment capabilities and readiness, new military equipment adept to urban terrain, and leveraging ‘hybrid warfare’ techniques to influence the population of target countries through information operations, proxy groups, and other influence measures.³⁸ Following its experience with urban warfare against the PKK, the Turkish military announced its intention to open an urban warfare school to improve their training and preparedness for combat operations in densely populated residential areas.³⁹ While both Singapore and Australia have offered training and support to the armed forces of the Philippines in their fighting against the Islamic State-linked militants, helping to buttress the military’s expertise in urban warfare.⁴⁰

The urbanization of conflict also has significant implications for humanitarian and development agencies which are tasked with “keeping

35. M. Tan, “Army Chief: Soldiers Must Be Ready to Fight in ‘Megacities’”, *Defense News*, October 5, 2016, available at: www.defensenews.com.

36. ATP 3-06 / MCTP 12-10B, *Urban Operations*, Headquarters, Department of the Army, December 7, 2017.

37. G. Pendelton, “Joint Urban Operations and the NATO Urbanization Project”, *The Three Swords Magazine*, No. 29, 2015, pp. 51-55.

38. C. S. Chivvis, “Understanding Russian ‘Hybrid Warfare’ And What Can Be Done About It”, Testimony presented before the House Armed Services Committee on March 22, 2017; A. Fox, *Hybrid Warfare: The 21st Century Russian Way of Warfare*, Fort Leavenworth: U.S. Army Command and General Staff College Press, 2017; S. Sukhankin, “Is Russia on the Doorstep of the Seventh Military Revolution?”, *Real Clear Defense*, April 6, 2018, available at: www.realcleardefense.com.

39. “Turkish Military to Found Urban Warfare School against the Outlawed PKK”, Stockholm Center for Freedom, September 9, 2017, available at: stockholmcf.org.

40. P. Parameswaran, “Singapore-Philippines Urban Warfare Training Kicks Off”, *The Diplomat*, December 5, 2017.

cities working for their people in the terrible conditions of conflict, disaster, and violence.”⁴¹ These efforts expand beyond the provision of immediate, life-saving humanitarian aid, including food, water, and health services, but also the repair and maintenance of damaged or destroyed critical urban infrastructure such as water treatment facilities, electricity, and hospitals.

Wars fought in cities and urban areas have also fueled some of the worst displacement crises since World War II. And in stark contrast to popular images of displaced people living in makeshift camps surrounded by open, barren land, nearly 60% of the world’s 19.5 million refugees and 80% of 34 million internally displaced persons live in cities and urban slums.⁴² Turkey alone, for example, hosts over 2.9 million Syrian refugees and the majority of them live in urban areas.⁴³ Worse still, as forced displacement crises have become increasingly protracted, now lasting an estimated average of 25 years, many cities that host refugees fleeing war in neighboring countries, such as Beirut and Nairobi, have seen the outbreak of violence or even war of their own.⁴⁴

The scale of urban displacement as a consequences of war has revealed a significant disconnect between the traditional comprehensive humanitarian service delivery model focused on camps, and the needs of urban populations in times of conflict and displacement. As a result, humanitarian organizations and development agencies have begun to rethink and adjust their response. For instance, in 2009, UNHCR released an updated policy on refugee protection and solutions in urban areas, replacing its 1997 policy statement which was based on the now outdated assumption that such refugees were “more the exception and less the norm.”⁴⁵

For countries emerging from conflict, rebuilding cities in the aftermath of urban warfare is a gargantuan task. The estimates for reconstruction needs in Iraq after the destructive war against the Islamic State, for instance, surpass \$88 billion. The destruction of cities, where much of the national economic activity is concentrated, has profound implications for a country’s economic development and growth. Moreover, there are also broader regional and potentially global consequences emanating from disruptions to productivity,

41. “ICRC’s statement at Habitat III”, International Committee of the Red Cross, October 19, 2016, available at: www.icrc.org.

42. United Nations High Commissioner for Refugees, *Global Trends: Forced Displacement in 2016*, June 2017

43. United Nations High Commissioner for Refugees, *Refugees*, 2017, available at: www.un.org.

44. United Nations High Commissioner for Refugees, *Global Trends: Forced Displacement in 2014*, June 2015.

45. United Nations High Commissioner for Refugees, *UNHCR policy on refugee protection and solutions in urban areas*, September 2009.

trade, commerce, investment, as well as increased migration and refugee flows. Unfortunately, ‘donor fatigue’ across the international community, competing domestic and geopolitical agendas, and corruption often mean that fundraising efforts fall short. Yet, without a substantial investment in stabilization, reconstruction, and inclusive social, economic, and political reform, countries face a higher risk of relapse into violence and the resurgence of war.

“Combat in Hell”: Understanding the Challenges of Urban Warfare

From Stalingrad, Seoul, and Manila to Beirut, Grozny and Mogadishu, the history of urban combat is fraught with massive civilian and military casualties, broken and exhausted state armies, and wholesale destruction of cities.⁴⁶ But to understand the multifaceted and continuously evolving challenges conventional military forces face in cities, we must first become closely familiar with the unique characteristics of the urban environment.

The Nature of Urban Environment

Each city is unique, and there are enormous differences between cities based on their individual historical, cultural, local, regional, and international context. Because of these significant differences between cities, as well as between the characteristics that distinguish urban areas from rural ones, there is no single standard definition of an “urban area,” or an “urban population” that is applicable or acceptable to all countries around the world, or even to countries within the same region. According to a UN Population Division list of definitions of used in censuses in 232 countries, the criteria for ‘urban’ includes population size, population density, type of economic activity, physical characteristics, level of infrastructure, or a combination of these and other factors.⁴⁷

Military strategists and analysts typically think of cities as “a layered and interacting series of complex adaptive systems involving actions, interactions, and transactions,” or “complex living organism with its own flows, networks, and rhythms.”⁴⁸ When considering this immense diversity and complexity, there are many frameworks for cataloguing and analyzing the factors that shape the urban environment and in turn, influence the

46. R. W. Glenn, *Combat in Hell: A Consideration of Constrained Urban Warfare*, Santa Monica: RAND, 1996.

47. C. Deuskar, “What Does “Urban” Mean?”, *Sustainable Cities*, June 2, 2015, available at: blogs.worldbank.org; United Nations Statistics Division, “Population Density and Urbanization”, available at: unstats.un.org; United Nations Population Division, “Definition of Urban”, available at: unstats.un.org.

48. P. Williams and W. Selle, *Military Contingencies in Megacities and Sub-Megacities*, Carlisle Barracks: United States Army War College Press, 2016.

conduct, trajectory, and ultimate success of urban military operations. But one useful and common approach is to view the urban environment as an urban triad, comprised of complex man-made physical terrain, the urban population, and the infrastructure upon the city depends.⁴⁹

Complex and multidimensional man-made physical terrain is superimposed on existing natural terrain (natural relief, drainage, vegetation, etc.) Building, streets, and other man-made structures and infrastructure vary in type, function, form, size, material, and construction, all arranged in different patterns – planned and unplanned. The physical terrain may be modern built and contain dozens of skyscrapers or developed around an ancient “old-city” core, with few buildings towering over two or three stories.⁵⁰ Each of these man-made urban features can have important consequences for how military forces, both conventional and irregular, operate and the tactics and techniques they employ. Modern areas with high-rise buildings, for instance, create problems for intervisibility, communications, and close air support as well as magnify the sniper threat – Sarajevo’s infamous ‘sniper alley’ being one example. At the same time, the “old city” with its narrow street and buildings of historical or religious significance impacts the movements and maneuver of forces and their ability to employ firepower.

Essentially all urban missions inevitably unfold amidst an urban population of significant size and density. Urban areas differ in terms of population size and density to quite a significant degree – ranging from small towns of several thousand inhabitants to megacities such as Shanghai or Karachi with a population of over 20 million people. And while rural areas usually contain relatively homogenous social groups, the population in cities is often much more diverse with respect to people’s cultural, political, socioeconomic, ethnic, religious, clan or tribal affiliations, and the sheer number of such groupings and identities compressed into a single geographic area. This human dimension, as the US Joint Urban Operations manual asserts “is the very essence of the urban environment.”⁵¹ And compared to other types of operations, civilian considerations have a disproportionately large influence on the conduct and success of urban operations.⁵²

49. Joint Publication 3-06, *Joint Urban Operations*, Joint Chiefs of Staff, November 20, 2013.

50. *Ibid.*

51. *Ibid.*

52. R. W. Glenn, *Heavy Matter: Urban Operations’ Density of Challenges*, Santa Monica: RAND, 2000.

Finally, the city's infrastructure links the physical terrain and the urban population. A robust, complex, interconnected and interdependent system of systems that provide the urban population with essential services such as electricity, water, sanitation, safety and law enforcement, health, education, transportation, and communications, as well as political and administrative functions, economic activity, and cultural organizations and structures. The urban infrastructure often serves the surrounding region and can be critically important to the continuous and efficient functioning of the entire nation, and even neighboring countries. For instance, in November 2018, the International Crisis Group warned that a decisive UAE-backed attack on the port city of Hodeida in Yemen would not only harm the local population but leave "an estimated 18 million highland Yemenis without supplies of staples like wheat and rice, or fuel, which Yemen imports by sea," predominantly through the Hodeida port.⁵³

Because of the intricacy and interconnectedness of urban services and public facilities, damage, disruption, or destruction of any portion of the urban infrastructure has a significant and cascading effect on other systems and services upon which thousands if not hundreds of thousands of people depend. Damage to essential infrastructure and services such as the water supply or electricity, for instance, has an immediately destabilizing and life-threatening impact on the city's residents. This, in turn, can alienate the local population, or disrupt the tempo and the general plan of operations by requiring commanders to divert resources away from other components of the mission toward repair, maintenance, and restoration of these critical services.

Taken together, density – of structures, people, and infrastructure – is then "overriding aspect of the urban environment."⁵⁴ As Russell Glenn of the RAND Corporation explains, "the number of structures, firing positions, avenues of approach, enemy, noncombatants, friendly force units, key terrain, and obstacles per cubic kilometer," as well as "the number of small-unit engagements, troop movements, and interactions with noncombatants per minute within that space," are much greater in cities than in any other environment.⁵⁵ It follows that urban areas then constitute one of the most complex and challenging environments for military operations.

53. International Crisis Group, "How to Halt Yemen's Slide into Famine", *Middle East Report*, No. 193, November 21, 2018.

54. Joint Publication 3-06, *Joint Urban Operations*, op. cit.

55. R. W. Glenn, *Heavy Matter: Urban Operations' Density of Challenges*, op. cit.

Shared Characteristics of Urban Military Operations

Urban military operations vary greatly in their objectives, scope, and intensity. These differences impact the tactics and techniques both friendly and hostile forces employ, the nature of the relationship between combatants and civilians, and ultimately, the overall trajectory and success of the mission. Yet, there are several characteristics that typically come into play across the range of military operations in urban environments.

Cities Level the Playing Field

Many of today's armed conflicts are characterized by extreme imbalances of military, economic, and technological power, and these asymmetries are only aggravated by the status inequality between sovereign states and non-state actors⁵⁶. Preponderance in all material aspects of the balance of power, however, does not necessarily translate to military effectiveness, let alone victory, on the urban battlefield.

It is well known that cities provide an advantage to the defender rather than the attacker. But with specific reference to asymmetric intrastate conflicts, as Robert F. Hahn II and Bonnie Jezior explain, there is also a consensus that "urban areas favor an under-modernized force."⁵⁷ As G.J. Ashworth summarizes:

[Cities] provide a physical environment that favors insurgent operations by allowing them to capitalize on their advantages of flexibility, short-distance rapid mobility through different terrain, and the possibility of physical concealment (merging with the civilian population and the like), while minimizing their inherent disadvantages of lack of fire-power, inability to deploy large units, and lack of long distance mobility.⁵⁸

In contrast, urban areas tend to negate the material and technological advantages of advanced modern militaries. The complex physical terrain – multistory buildings, intricate street patterns, underground transportation tunnels and other structures – as well as the presence of civilian populations make the movement and maneuver of large forces and heavy equipment difficult, if not impossible without causing massive destruction. Ground operations become decentralized as forces need to be fragmented to make

56. E. Stepanova, *Terrorism in Asymmetrical Conflict: Ideological and Structural Aspects*, SIPRI Research Report, No. 23, Oxford University Press, 2008.

57. R. F. Hahn and B. Jezior, "Urban Warfare and the Urban Warfighter of 2025", *Parameters*, Vol. 29, No. 2, Summer 1999, p. 76.

58. G. J. Ashworth, *War and the City*, op. cit.

headway through the city's streets and alleys. And moving into buildings, as Anthony King describes, "necessarily channel[s] assault teams down corridors or stairwells, separating them as sub-teams can quickly become separated and dispersed, unable to see or hear one another."⁵⁹ That warfare in the urban environment necessitates decentralized, small unit operations at the tactical level, then in effect erodes the numerical advantage that conventional state forces typically enjoy when facing non-state opponents.

Another way in which the city minimizes the power asymmetries between state forces and armed non-state groups is by reducing the utility of technologically sophisticated communications and navigation equipment. Buildings, walls, and other structures and obstructions interfere with and block communication signals and GPS signals in particular suffer constant interruption. Such conditions then severely circumscribe the situation awareness of the attacking force, which in turn undermines its ability to be effective on the battlefield.

Finally, in accordance with international humanitarian law, the presence of civilians in the urban conflict zone demands a particularly precise application of firepower in order to minimize the risk of high civilian casualties and damage to critical infrastructure. Military operations in cities, especially where local or international support is imperative for success, therefore typically call for more stringent rules of engagement that prohibit the use or limit the effectiveness of heavy weapons such as tanks, artillery, and airpower. These restrictions, combined with the fact that the complex urban terrain inhibits the performance of technologically sophisticated equipment, often mean that soldiers are forced to resort to unfamiliar or low-technology war-fighting and/or counterinsurgency tactics for which they rarely have the appropriate training or equipment.

Overall, the city's physical terrain and infrastructure present significant challenges for the movement and maneuver of forces, the use of firepower, intelligence gathering, and communications. At the same time, the means and methods of warfare available to conventional state militaries are also constrained by the legal, strategic, and political considerations surrounding the obligation to minimize civilian casualties and collateral damage. The city, then, in effect levels the playing field between conventional state forces and armed non-state groups.

59. A. King, *The Combat Soldier: Infantry Tactics and Cohesion in the Twentieth and Twenty-First Centuries*, New York: Oxford University Press, 2013.

Manpower Intensive, Protracted, and Costly

Partly because urban warfare favors the defender over the attacker, fighting for and in cities can be extremely manpower intensive, costly, and time-consuming.⁶⁰ Historically, the defender in urban warfare could rely on city walls and fortifications to delay the enemy until time turned in their favor, while the attacker laying the siege to the city planned to effectively starve the adversary into submission.⁶¹ In modern urban operations, siege warfare has been less common, but when employed, for instance with the Siege of Sarajevo during the Bosnian civil war, and more recently, in Syria and Yemen, it has been no less brutal on civilians and costly for combatants than in ancient times. Notably, when the fighting lasts longer than initially expected, the combined effect of insufficient logistical support and the loss of personnel can undermine the successful conclusion of the overall campaign.⁶²

Numerical superiority is essential for the attacking force, not only because of the massive combat power needed to conduct an assault on a city, but also to sustain the operation over time, especially as the force begins to suffer significant losses. For instance, during the First Chechen War, “The Russians discovered that a 5 to 1 manpower ratio was often not sufficient, due to the high casualty rates consistent with urban combat and the requirement to guard virtually every building taken.”⁶³ Yet, as the Russians’ costly defeat in this war demonstrates, more troops don’t necessarily guarantee success.

Urban warfare entails highly violent combat conduct at close quarters, which is physically exhausting, mentally stressful, traumatic, and “produces unique hazards and patterns of injury.”⁶⁴ One study examining 17 urban military operations and conflicts between 1939 and 1995 has found several characteristics that were similar across the cases, including the heavy toll on infantry, the high number of deaths from sniper fire, the major and complex threat posed by mine injuries, and the extreme difficulty of locating and evacuating the wounded especially by helicopter and under fire.⁶⁵ Despite significant advances in military medicine and body armor, one of the critical

60. R. F. Hahn and B. Jezior, “Urban Warfare and the Urban Warfighter of 2025”, *op. cit.*

61. L. DiMarco, “Attacking the Heart and Guts: Urban Operation Through the Ages”, *op. cit.*

62. MCW 3-35.5, *Military Operations on Urbanized Terrain*, US Marine Corps, April 26, 1998.

63. *Ibid.*

64. R. L. Mabry, J. B. Holcomb *et al.*, “United States Army Rangers in Somalia: An Analysis of Combat Casualties in an Urban Battlefield”, *The Journal of Trauma*, Vol. 49, No. 3, 2000, pp. 515-529.

65. R. A. Leitch, H. R. Champion and J. F. Navien, “Analysis of Casualty Rates and Patterns Likely to Result from Military Operations in Urban Environments”, US Marine Corps Commandant’s Warfighting Laboratory, November 1997.

difference-makers in terms of military casualty patterns remains the need to be exceptionally well prepared and organized for the special demands of urban operations. This, however, remains a tall order which few militaries have historically been able to live up to, especially not in the initial stages of battle.

Operational and Tactical Requirements

One of the fundamental operational requirements in urban warfare is to isolate the enemy combatants inside the city – to seal off, both physically and psychologically, the urban area of operations where the enemy is found from sources of support, denying hostile forces the freedom of movement, and severing ties between them and other enemy forces. Doctrine then mandates that urban offensive operations “proceed from the periphery inwards, enveloping or turning the adversary if possible, and penetrating or infiltrating the city if necessary.”⁶⁶

As the historian Louis DiMarco explains, “the history of urban conflict makes plain that when the enemy is isolated then success follows.”⁶⁷ During World War II, for instance, the American forces maneuvered and fought on the outskirts of the German city Aachen and by successfully isolating the city, were able to capture it and win despite being outnumbered 3 to 1. In contrast, the Russian’s failure to isolate the Chechen capital Grozny prior to the New Year’s Eve attack, left dozens of unguarded roads into the city. As the fighting unfolded, foreign fighters as well as reinforcements, weapons, and ammunition from neighboring towns entered the city undisturbed; moreover, when the tide turned against the Chechens, many of the militants were able to escape and regroup in the mountains.

The physical isolation of cities is a massive undertaking that requires large numbers of ground troops supported by airpower, space-based command and control, communications, and advanced ISR systems. Concurrently, informational and ultimately psychological isolation, which is an essential aspect of urban operations in the information age demands highly sophisticated capabilities in the cyber domain, close coordination with civil affairs, and psychological operations.⁶⁸ As such, some have raised serious doubts about the applicability of this operational doctrine in large cities and especially

66. Chief of Staff of the Army, Strategic Studies Group “Megacities and the United States Army: Preparing for a Complex and Uncertain Future”, June 2014.

67. L. DiMarco, *Concrete Hell: Urban Warfare From Stalingrad to Iraq (Military History)*, op. cit.

68. R. Orsini, “Surrounded, Yet Unaware: Achieving Isolation in Future Urban Terrain”, *Small Wars Journal*, May 30, 2018.

megacities.⁶⁹ That said, an argument can be made that the military does not need to isolate the entire city, only the enemy within. And while still difficult, that is a much more tractable task. During the Battle of Sadr City, for instance, U.S. forces isolated the Ishbilyah and Habbibiyah neighborhoods from the rest of Sadr City by building a 12-foot-tall concrete wall along Route Gold, thereby cutting Sadrist armed militia, Jaish al-Mahdi (JAM) from its lifeline in the Jamiliyah Market.⁷⁰

In addition to the critical role of isolation, success in modern urban warfare also depends in large part on a high degree of skill or experience in small unit tactics of squads, platoons, and companies and combined arms operations. Unlike conventional warfare in open terrain, modern urban warfare, as Michael Evans describes, is “a war of operational compression, microenvironments, and command decentralization.”⁷¹ These “micro-environments” range from narrow streets, alleys, and courtyards through a maze of rooms, corridors, stairwells, and rooftops. Fighting in such close-quarter settings is intensive, fast-paced, and decentralized. As a result, soldiers and especially dismounted infantry, which often stands at the helm of urban operations, must be highly trained for the unique physical and psychological challenges of managing rapid tactical transitions. That fighting is decentralized also places a particularly high premium on innovative and adaptive junior commanders and leaders, who are capable of operating independently in complex and highly uncertain environments.⁷²

At the same time, urban operations are “a combined arms fight,” which calls for the deployment of light and mechanized infantry with armored forces, and indirect fire and airstrikes in support of ground forces. Enablers such as special operation forces and snipers augment intelligence, surveillance, and reconnaissance tasks, while engineers ensure greater freedom of movement and maneuver.⁷³ Finally, given the complexity and uniqueness of the urban environment, it is perhaps not surprising that another key theme that emerges from an examination of a broad range of modern urban operations is the need for tactics, training, and equipment meant specifically for urban warfare.⁷⁴

69. Chief of Staff of the Army, Strategic Studies Group “Megacities and the United States Army: Preparing for a Complex and Uncertain Future”, *op. cit.*

70. D. E. Johnson, M.W. Markel and B. Shannon, *The 2008 Battle of Sadr City*, Santa Monica: RAND, 2013.

71. M. Evans, “City Without Joy: Urban Military Operations into the 21st Century”, *op. cit.*

72. TRADOC Pamphlet 525-3-1 31, *The US Army Operating Concept: Win in a Complex World*, Department of the Army, October 7, 2014.

73. ATTP 3-06.11, *Combined Arms Operations in Urban Terrain*, Department of the Army, June 10, 2011.

74. L. DiMarco, “Attacking the Heart and Guts: Urban Operation through the Ages”, *op. cit.*; Marine Corps Intelligence Activity, *Urban Warfare Study: City Case Studies Compilation*, 1999 available

Intelligence

Accurate and timely intelligence about the capabilities, location, and activities of the adversary, the terrain and layout of the city, and the characteristics of the civilian population is absolutely imperative to success in urban warfare⁷⁵. Cities, however, have unique characteristics that complicate information gathering. Multistory buildings, walls, and other structures and obstructions hinder the performance of conventional ISR systems and communication equipment. More specifically, conventional ISR systems are designed to collect information on targets operating on open terrain where observation from the air and ground is largely unrestricted. In cities, however, the battlespace is multi-dimensional; there are multiple avenues of approach, including via airspace and supersurface areas (roofs of buildings, stadiums, and towers), surface or ground level areas (streets, sidewalks, highways, and surface-level waterways), as well as subsurface areas (subways, tunnels, sewers, cellars, and underground shelters). Overhead imagery collection platforms are only effective on exposed areas such as rooftops and streets, while ground-based imagery systems cannot penetrate infrastructure or gain access to underground areas such as tunnels and cellars which are often the most difficult to maneuver.

Consider the experience of the US military in Iraq. As Army Colonel Ralph O. Baker observed during his brigade's deployment to Baghdad, "our imagery operations, electronic reconnaissance, and standard combat patrols and surveillance operations were simply ineffective," and yielded "almost no actionable intelligence." He therefore initiated a transition to a human intelligence-centric system that relied on an extensive network of Iraqi informants.⁷⁶ This required units to fundamentally change their intelligence organizations, collection assets, and analysis processes, as well as find and train additional personnel.

The quality of intelligence obtained during the planning and preparation phases of the operation can have a decisive impact on its ultimate success. The Russian invasion of Chechnya in 1995, for example, was a poorly planned operation fraught by extremely inaccurate intelligence assessments of the Chechens' military capabilities and resolve. As they advanced into the Chechen capital city of Grozny, many Russian lower-level

at: smallwarsjournal.com; Asymmetric Warfare Group, *Modern Urban Operations: Lessons Learned from Urban Operations from 1980 to the Present*, November 2016.

75. U.S. Army doctrine defines intelligence as "the product resulting from the collection, processing, integration, evaluation, analysis, and interpretation of available information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations". ADRP 2-0, "Intelligence", Washington: Department of the Army, August 31, 2012.

76. R. O. Baker, "HUMINT-Centric Operations: Developing Intelligence in Urban Counterinsurgency Environment", *Military Review*, March-April 2007.

commanders did not even have maps of the city or their area of operations. As a result, Russian forces were unable to coordinate their actions and movements effectively or surround and isolate Grozny. This lack of high-quality intelligence and poor lines of communications were also responsible for many incidents of friendly-fire as well as an extremely high rate of civilian casualties.⁷⁷ Errors in initial intelligence also led to the eventual defeat of British forces in Arnhem and the Germans in Stalingrad during World War II, as well as the Israelis in Suez City during the Yom Kippur War.⁷⁸

Overall, as Ralph Peters explains, “from mapping to target acquisition, from collection to analysis, and from battle damage assessment to the prediction of the enemy’s future intent,” intelligence requirements in urban environments surpass those of traditional battlefields by a significant margin.⁷⁹ The difficulties inherent to intelligence operations, however, cannot be reduced to the physical uniqueness of urban terrain. The human factor is just as important. Indeed, while many sources of intelligence (imagery, communication intercepts, etc.) are degraded in urban areas, the presence of noncombatants means that the sources of human intelligence effectively multiply.⁸⁰ As such, human intelligence is arguably “the most important and most prolific type of intelligence gathered in the urban environment.”⁸¹

Urban Populations: a Strategic Feature

While military operations vary greatly in their objectives, scope, and intensity, essentially all urban missions inevitably unfold amidst a sizable civilian population.⁸² As such, it is critical to assess how the presence of civilians may influence combat operations and vice versa. Now, as previously noted, in congruence with international humanitarian law, the presence of a large civilian population in the urban conflict zone necessitates the imposition of more stringent rules of engagement. According to the US

77. O. Olikier, *Russia’s Chechen Wars 1994-2000: Lessons from Urban Combat*, Santa Monica: RAND, 2001; T. L. Thomas, “The Battle of Grozny: Deadly Classroom for Urban Combat”, *Parameters*, Summer 1999.

78. MCW 3-35.5, *Military Operations on Urbanized Terrain*, US Marine Corps, April 26, 1998.

79. R. Peters, “Our Soldiers, Their Cities”, *Parameters*, Spring 1996, pp. 43-50.

80. S. Gerwehr and R. W. Glenn, *The Art of Darkness: Deception and Urban Operations*, Santa Monica: RAND, 2000.

81. FM 2-91.4, *Intelligence Support to Urban Operations*, Department of the Army, March 20, 2008.

82. There are examples where civilians have either been largely evacuated prior to the onset of major ground operations or have fled out of fear or necessity, as happened before operation Vigilant Resolve in Fallujah (2004) or the Battle of Grozny (1999). Yet, even in such cases, thousands often remain behind; the elderly, sick and destitute, or unable to leave for other reasons. The population then, more often than not, serves as the center of gravity in urban military operations. FM 2-91.4, *Intelligence Support to Urban Operations*, *op. cit.*

Marine Corps manual on *Military Operations on Urbanized Terrain*, in the majority of urban battles since 1967, the rules of engagement imposed one or more of the following restrictions on the attacking force: minimize civilian casualties and/or collateral destruction, avoid alienation of the local population, reduce the risk of adverse public opinion, preserve facilities for future use, preserve cultural facilities and groups, and/or limit the use of specific group or air weapons.⁸³

These legal (and moral) obligations to protect civilians and safeguard infrastructure can generate competing demands with respect to resource allocation, targeting decisions, and limitations on fire support to friendly forces. The restrictions on warfighting techniques, weapons systems, and targets may also create operational limitations that increase the risk of friendly military casualties. As a whole, these humanitarian imperatives and subsequent military directives influence the likelihood of successfully completing the ultimate task of defeating the enemy.⁸⁴ That said, failure to abide by international humanitarian laws and state-specific directives designed to protect civilians and critical infrastructure can lead to international condemnation, loss of public support for the forces of the ground, and ultimately undermine the entire operation.⁸⁵

The presence of civilians in the urban conflict zone also has immense implications for intelligence collection and psychological operations. As the US Army Intelligence Support to Urban Operations manual states, “to effectively operate among an urban population and maintain their goodwill, it is important to develop a thorough understanding of the society and its culture, to include values, needs, history, religion, customs, and social structure.”⁸⁶ In practicality, however, developing a thorough population analysis can be a daunting task because of the complex cultural, political, socioeconomic, religious, and ethnic tapestry of most cities. Indeed, the sheer amount of detail and information needed to produce a comprehensive account of the population as a “thinking and active component of the operational area,” requires sophisticated intelligence gathering and analysis capabilities as well as many other advanced technological and socio-cultural competencies.⁸⁷

83. MCRP 12-10B.1, *Military Operations in Urban Terrain*, US Marine Corps, May 2, 2016.

84. Joint Publication 3-06, *Joint Urban Operations*, Joint Chiefs of Staff, November 20, 2013.

85. R. S. Cohen, “Just How Important Are ‘Hearts and Minds’ Anyway? Counterinsurgency Goes to the Polls”, *The Journal of Strategic Studies*, Vol. 37, No. 4, 2014; G. R. Dimitriu, “Winning the Story War: Strategic Communication and the Conflict in Afghanistan”, *Public Relations Review* Vol. 38, 2012.

86. TC 2-91.4, *Intelligence Support to Urban Operations*, Headquarters, Department of the Army, December 2015, p. 1-17.

87. Joint Publication 3-06, *op. cit.*

That cities are heterogeneous, diverse, and complex also means that during stability operations or population-centered counterinsurgency campaigns information operations geared toward influencing civilians' perceptions and attitudes, countering enemy propaganda, and other public affairs functions can become exceedingly complicated and taxing. The US forces deployed to Baghdad in 2003, for example, learned the hard way that treating Iraqis as a "single, homogenous population," was entirely "inappropriate" and "ineffective" given the city's diverse and at times, hostile populations.

Urban Warfare and Violence in the 21st Century

The history of urban warfare is one of both continuity and change. The difficulties of moving and maneuvering large forces and heavy equipment through narrow city streets and alleys, fragmented command and control, and the enormous suffering and destruction caused by the use of massive firepower in the middle of a civilian population are common threads that run through the experience of militaries in cities. Yet, changes in global demographics, advancements in military and civilian technology, and increasing pressure to abide by international humanitarian principles designed to protect civilians at times of conflict have given rise to an array of new legal, political, strategic, operational and tactical challenges in modern urban warfare. Moreover, the growing trend among Latin American countries to use military forces to combat urban violence fueled by organized crime and drug-trafficking is blurring the line between traditional definitions of armed conflict, state repression, political and criminal violence. These developments and dynamics will likely characterize and shape future operations.

(Mega)Cities Swallowing Armies

Over the course of the 20th century, militaries have become much smaller due to a combination of global and domestic political, demographic, socioeconomic, and technological factors and shifts. Whereas the massive militaries of centuries fought primarily in the countryside, encompassing and at times besieging cities, as Anthony King explains, “they were simply too big to fight in cities.”⁸⁸ Even during the battle of Stalingrad, for example, which was one of the canonical urban battles of World War II, most of the Nazi forces, including the Wehrmacht’s Army Group South (B) and even a significant proportion of General von Paulus’s 6th Army, were not deployed into the city, but held the countryside surrounding it. Yet, with the technologically empowered trend toward smaller, more lethal forces, today, “combatants are able to maneuver on the new battlefield in a manner quite impossible in the twentieth century.” This is in part why we have witnessed

88. A. King, *The Combat Soldier: Infantry Tactics and Cohesion in the Twentieth and Twenty-First Centuries*, New York: Oxford University Press, 2013.

the proliferation of urban combat operations in the 21st century, as “armies no longer just fight *for* cities but [...] are forced to fight *in* cities themselves.”⁸⁹

While militaries have become much smaller, cities have grown and expanded at an unprecedented rate. One of the major demographic trends of the recent decades has been the remarkable increase of large cities and megacities, those with a population of over 10 million inhabitants, especially in the low and middle income of the world, and particularly in the global south. In 1950, there was only one megacity – New York City. By 1990, there were ten. By 2019, their number has increased more than threefold, and today, there are a staggering 31 megacities, Tokyo, Delhi, Shanghai, Mexico City, Mumbai, and Sao Paulo being the largest ones. By 2030, the United Nations estimates there will be 41 megacities, where close to 9% of the global population will live.⁹⁰ In addition to their sheer size and scale, megacities stand out as a unique category of human habitats due to two interrelated factors: rapid and explosive population growth and potential volatility.

Concurrently, as urban population has increased, the land area covered by cities has increased at an even higher rate. The causes and consequences of urban expansion or “sprawl” vary by region and a country’s level of economic development. But as a whole, many specialists consider it to be wasteful in terms of land and energy consumption, a cause of pollution and greenhouse gas emissions, and both a manifestation and confounder of inequality and exclusion, with long term negative consequences for a range of issues including increased vulnerability to natural disasters, health hazards, social and political unrest, and violence.⁹¹

Although the principle tenants of strategy and warfare apply in both small and large cities, and the challenges of military operations in urban environments remain quite consistent, difference in scale between megacities and other urban areas can in fact become a difference in kind.⁹² Consider for instance the fact that military doctrine for urban warfare calls for isolating and enveloping a city, proceeding from the periphery inward, and either besieging the urban area until the enemy within surrenders or penetrating and storming the city if necessary. The scale of megacities, however, renders this approach impractical and unfeasible: physically controlling tens of millions of people spread over hundreds of square miles

89. *Ibid.*

90. UNHABITAT, *World Cities Report 2016 – Urbanization and Development: Emerging Futures*, *op. cit.*

91. *Ibid.*

92. P. Williams and W. Selle, *Military Contingencies in Megacities and Sub-Megacities*, Carlisle Barracks: United States Army War College Press, 2016.

in a highly complex urban environment requires military forces the size of which few countries can master, and probably none can politically sustain. Indeed, as Phil Williams and Werner Selle point out, “a megacity...could swallow up a military division in a way that a city of a million people could not.”⁹³ Moreover, while physical isolation appears insurmountable, in the age of ubiquitous cellphone use and internet access, virtual isolation seems even more improbable.⁹⁴

As the strategic, geopolitical, and economic significance of megacities continues to grow, the drivers of instability – from rapid and unplanned population growth to dwindling resources, environmental stressors, socioeconomic inequalities and political grievances – are likely to create an imperative for military intervention in megacities. Across the spectrum of military operations, from humanitarian relief to stabilization to counterinsurgency to high intensity conventional war, megacities will present unprecedented challenges even for the most advanced militaries in the world. As a 2014 report the Chief of Staff of the U.S. Army stated, “Although the Army has a long history of urban fighting, it has never dealt with an environment so complex and beyond the scope of its resources.” The U.S. Army, the report continues, and the Department of Defense community more broadly, “neither understands nor prepares,” for military operations in megacities and large cities.⁹⁵

Emerging Technologies

In asymmetric warfare between conventional state forces and armed non-state groups, conventional forces have generally maintained technological superiority with respect to intelligence collection and processing and high-speed communications. Among other advantages, technological superiority enables information superiority over adversaries, that is, the ability to influence and control the flow of information going into and out of the operations area. Attaining information superiority and asserting control over the information environment is all the more critical in urban warfare as it allows the state’s force to cut off local hostile forces from their strategic leadership, prevent them from disseminating their message and communicating with the city’s civilian population and the outside world, shape public opinion in their favor and win the “battle of narratives.”

Emerging technologies, however, and especially social media platforms such as Facebook, Twitter, and YouTube, have made it harder for states to

93. *Ibid.*

94. Chief of Staff of the Army, Strategic Studies Group “Megacities and the United States Army: Preparing for a Complex and Uncertain Future”, *op. cit.*

95. *Ibid.*

achieve information superiority and control the information environment during urban military operations. And while armed groups are learning to exploit the connected, networked nature of modern cities with new tools at their disposal, governments, military forces, and intelligence agencies are struggling to keep up.

Another area where emerging technologies are undermining the traditional dominance of conventional forces is air superiority. Indeed, recent years have seen armed groups increasingly using commercially available rotary-winged drones and even military-grade unmanned aerial systems for reconnaissance, surveillance, and other combat support missions in various conflict zones in the Middle East, Africa, and Ukraine.

Now, it is true that emerging technologies such as social media and drones can and have been used in rural settings. But the impact of their use and misuse is magnified in urban environments where the connected and networked nature of modern cities serves as an amplifier – affecting more people and reaching further and faster across different countries and cultures than previously thought possible. As armed groups continue to adapt, innovate, learn and copy tactics from one another as well as from the experiences of conventional forces fighting in urban environments, it would be smart to pay close attention to their use of emerging technologies, which will likely characterize future urban operations.

Social Media

Social media platforms such as Facebook and Twitter, peer-to-peer messaging like WhatsApp and Telegram, and live-casting, image, and video sharing platforms such as YouTube, Snapchat, or Instagram, are altering how armed non-state groups organize, mobilize, network, and communicate – with critical implications for the conduct, severity, and scope of violence and conflict in cities.⁹⁶

These different functions are worth discussing in some detail. As a tool for organizing operations, these networking and communication technologies provide armed non-state groups with multiple channels to securely share information and convey instructions and orders between different units and locations. For example, during the 2008 Mumbai attacks, members of the Pakistani terrorist group Lashkar-e-Taiba used Skype, cell phones, and satellite phones to communicate with their commanders in Pakistan, who in turn kept track of Twitter, satellite, and cable news and

96. J. M. Rickli and A. Kaspersen, “The Global War of Narratives and the Role of Social Media”, World Economic Forum, June 8, 2016, available at: www.weforum.org.

update the assault team on the ground in real-time. Because the Indian forces were unable to cut off adversary communications and separate the attackers in Mumbai from their command and control node in Karachi, these raiders managed to withstand the early loss of their team leader and evade Indian police and counterterrorism units. Of course, armed groups in rural settings also utilize social media and mobile technology to share information and communicate. But the ramifications of armed groups successfully leveraging these tools reach an entirely different scale in crowded, highly networked cities; indeed, the Lashkar-e-Taiba terrorists were able to besiege one of the world's largest cities with attacks on civilians and public places for almost three days.⁹⁷

Along similar lines, social media has become an increasingly effective tool for recruitment, with potential consequences for the balance of forces in urban conflicts. It is true that individuals throughout history have travelled across countries and continents to join rebellions and fight wars for ideological, religious, and monetary reasons. But the proliferation of cell phone technology and even more so, the unprecedented, Internet-enabled interconnectedness have seriously heightened this threat. Social media has helped ISIS draw at least 30,000 foreign fighters, from nearly 100 countries, to the urban battlefields of Syria and Iraq.⁹⁸ Waging war in the virtual sphere can therefore make a tangible difference on the physical battlefield.

Finally, the prevalence of media in cities and more ubiquitous access to the Internet and social media are making it extremely difficult for governments to establish and maintain control of the information environment during military operations, and in turn, to shape public perceptions in their favor. In recent conflicts, for instance, between Turkey and the PKK, and Israel against Hezbollah in Lebanon and Syria or Hamas in Gaza, all conflict parties have made use of Facebook, Twitter, and YouTube to promulgate their version of events with respect to the civilian and military death tolls, the targets of attack, weapons and tactics employed, as well as the overall origins, legality, and morality of the conformation at hand. Enabled by the high visibility of violence and carnage in cities and the democratization of information, social media has become the new battlefield for the “war of narratives”.

97. D. Kilcullen, *Out of the Mountains: The Coming Age of the Urban Guerrilla*, New York: Oxford University Press, 2013.

98. E. T. Brooking and P. W. Singer, “War Goes Viral: How Social Media is Being Weaponized Across the World,” *The Atlantic*, November 2016.

UAVs

With the proliferation of relatively cheap, commercial off-the-shelf unmanned aerial vehicle technology, commonly known as drones, armed non-state groups are increasingly incorporating these systems to support their operations, especially in asymmetric or “hybrid” conflicts. Over the past several years, for instance, ISIS, Hezbollah, Hamas, the Houthi rebels in Yemen, the Donetsk People’s Republic as well as Colombian and Mexican drug cartels such as *Cártel de Jalisco Nueva Generación* have all made use of commercial and even military grade drones for intelligence, surveillance, and reconnaissance.⁹⁹

And in October 2016, ISIS became the first non-state group to kill troops on the battlefield using drones armed with explosives. The severity of the tactical threat from these drones became undeniable within a few months of that incidence, as the group was flying tens of aerial bombardment missions each day, demonstrating precision strike capabilities by effectively dropping grenades from these platforms down into hatches of tanks, and showcasing swarming tactics, flying up to a dozen drones at a time.¹⁰⁰ The drone threat became so serious at one point that the US-backed Iraqi offensive to dislodge ISIS from Mosul “nearly came to a screeching halt, where literally over 24 hours there were 70 drones in the air.”¹⁰¹

The tactical-level air force capability that drones provide non-state group marks a truly revolutionary development in a world where states have grown accustomed to irrefutable air superiority and dominance. As John Spencer has noted, “for the first time since the Korean War, the US military has to worry about enemy bombs dropping on them in combat.” A threat that did not emerge from a peer-competitor’s multibillion dollar aircraft deploying precision-guided munitions on an open battlefield, but rather from “cheap, commercial drones dropping low-tech explosives during urban battles.”¹⁰² With continued and often unpredictably rapid advances in autonomy, artificial intelligence, optical navigation, and swarming capabilities (large groups of drones flying and operating as a single unit), drones at the hands of non-state groups will only become more dangerous

99. “World of Drones”, *New America*, October 8, 2012, available at: www.newamerica.org.

100. M. Jacobsen, “The Strategic Implications of Non-State #WarBots”, *Real Clear Defense*, December 15, 2017, available at: www.realcleardefense.com.

101. D. B. Larter, “SOCOM Commander: Armed ISIS Drones Were 2016’s ‘Most Daunting Problem’”, *Defense News*, May 16, 2017, available at: www.defensenews.com.

102. J. Spencer, “How Drone Swarms Could Change Urban Warfare”, *C4ISRNET*, December 11, 2017, available at: www.c4isrnet.com.

and impactful in the future, including for potential terrorist attacks in the West.¹⁰³

Humanitarian Consequences and Impact on Civilians

War is a ruinous phenomenon regardless of where it unfolds. But fighting in cities endangers the civilian population more so than any other operational environment. Nearly half of all war-related casualties worldwide between 2010 and 2015 were in Iraq, Syria, and Yemen, where fighting in towns and cities has been extremely destructive.¹⁰⁴ According to a 2017 report from the International Committee of the Red Cross, wars in cities have accounted for 70% of all civilian deaths in Iraq and Syria over the past three years, illustrating just how deadly urban warfare is for civilians.¹⁰⁵

What explains the high rate of civilian casualties in urban warfare? At the most basic level, there is the fact that some belligerents don't abide by the law of armed conflict. International humanitarian law mandates that conflict parties take precautionary measures to protect civilians, including doing everything possible to verify that targets are military objectives, and taking all feasible precautions in the choice of means and methods of warfare in order to avoid and minimize civilian casualties and collateral damaged.¹⁰⁶ But in many of today's conflicts, civilians are *deliberately* attacked, displaced, starved, injured, and killed, and essential civilian infrastructure is damaged and destroyed.

Russia, for example, has been consistently accused by humanitarian agencies and various state actors of repeating in Syria and Ukraine tactics it has applied in its operations in Chechnya – including the deliberate targeting of civilian objects such as schools, hospital and residential districts, as well as the use of sieges and denial of relief efforts and aid leading to mass starvation. Noting the mass exodus from Syria's urban battle zones, NATO's Supreme Commander in Europe has directly accused

103. M. Jacobsen, "The Strategic Implications of Non-State #WarBots", *op. cit.*

104. Conflict-related deaths in Syria, Iraq and Yemen represented 47% of the global total between 2010 and 2015. This statistic is based on data from the Geneva Declaration Secretariat, *Global Burden of Armed Violence 2015: Every Body Counts*, Cambridge: Cambridge University Press, 2015.

105. International Committee of the Red Cross, "I Saw my City Die: Voices from the Front Lines of Urban Conflict in Iraq, Syria, and Yemen", Focus, June 2017.

106. S. Muhammedally, "Minimizing Civilian Harm in Populated Areas: Lessons from Examining ISAF and AMISOM Policies", *International Review of the Red Cross*, Vol. 98, No. 1, 2016, pp. 225-248.

Moscow of “weaponizing migration” through its deliberate use of imprecise weapons.¹⁰⁷

When it comes to understanding the sources of risk to civilians in urban warfare, the choice of weapons is just as critical as the choice of targets. The London-based NGO Action on Armed Violence, for example, has found that civilian casualties represent 92% of those killed or injured as a result of the use of explosive weapons in densely populated urban areas; this is compared with to 34% when these weapons were employed in other areas.¹⁰⁸ As such, the ICRC has declared that the use of explosive weapons with a wide impact area should be avoided in densely populated areas, due to the significant likelihood of indiscriminate effects.¹⁰⁹

The ICRC disaggregates the concept of wide impact area (or wide affects) into three categories: due to large destructive radius of the munitions (e.g. large bombs or missiles or improvised explosive devices (IEDs)); due to the lack of accuracy of the delivery system (such as unguided indirect fire weapons, including artillery and mortars); and where a weapon system is designed to deliver munitions over a wide area (multi-launch rocket systems or cluster munitions).¹¹⁰ Overall, while the large-scale carpet-bombing of cities seen during World War II has not happened in recent conflicts, the use of explosive weapons with wide area effects, aerial bombardment and heavy-artillery shelling of civilian areas have been a standard feature of urban warfare in the 21st century.

Political and strategic motives aside, developments in weapons technology that improve the accuracy of munitions are perhaps the most obvious way to reduce the risk of civilian injuries, death and urban destruction. Military decision makers largely believe that precision weaponry is capable of yielding proportionality and discriminate targeting, resulting in limited civilian casualties and collateral damage. Yet, in the context of densely populated urban environments, especially against a well-trained, entrenched, and highly zealous adversary, precision weapons present a paradox. As US Army Major Amos Fox explains:

107. “NATO Commander: Russia Uses Syrian Refugees as ‘Weapon’ against West”, *Deutsche Welle*, March 2, 2016.

108. “Explosive States: Explosive Violence in Populated Areas in 2014”, Action on Armed Violence, Report, June 22, 2015.

109. International Committee of the Red Cross, “International Humanitarian Law and the Challenges of Contemporary Armed Conflicts”, report to the 31st International Conference of the Red Cross and Red Crescent, Geneva, November 28 – December 1, 2011, pp. 40-42.

110. S. Muhammedally, “Minimizing Civilian Harm in Populated Areas: Lessons from Examining ISAF and AMISOM Policies”, *op. cit.*

The judicious use of destructive force is fundamentally irrelevant if it does not eliminate the threat within the first strike or two. When precision strikes do not achieve their desired effect within the first strike and threats reposition to another structure, they expand the potential for collateral damage and civilian casualties. As a result, precision strikes' ineffectiveness of eliminating the threat creates the conditions in which residual threats move from structure to structure, trailed by precision strikes, leaving a swath of death and destruction in their wake.¹¹¹

Consider the US-led coalition campaign against ISIS in Iraq and Syria, which has been lauded as “one of the most precise air campaigns in military history.”¹¹² Moreover, American and coalition officials insist that “extraordinary efforts” are taken to protect civilians – from the collection and analysis of highly precise intelligence, to the imposition of strict targeting procedures and bureaucratic hurdles, and meticulously calibrated angles of attack to ensure minimal collateral damage. But according to a recent Associated Press report, between 9,000 and 11,000 civilians were killed in the nine-month battle for Mosul – nearly ten times higher than previously thought. Entire neighborhoods were razed to the ground, and the UN estimates that at least 40,000 homes will need to be repaired or rebuilt. And while casualty figures are still highly disputed, the investigation suggests that Iraqi or coalition forces are responsible for at least 3,200 deaths from airstrikes, artillery fire or mortar rounds.¹¹³

Part of the challenge is that even when the protection of civilians is a priority, as Nathalie Durhin explains, “the very nature of cities makes it complicated for armed forces to apply the principle of distinction” with respect to civilian objects and military objectives.¹¹⁴ In other words, in a densely populated urban environment, separating military targets from the civilian population can be extremely difficult because the very infrastructure civilian populations rely upon – roads, bridges, power stations, food distribution centers, and clean water sources – can also be used by enemy forces for military purposes.

111. A. Fox, “Precision Fires Hindered by Urban Jungle”, Association of the United States Army, April 16, 2018, available at: www.ausa.org.

112. A. Khan and A. Gopal, “The Uncounted”, *The New York Times*, November 16, 2017.

113. S. George, “Mosul Is a Graveyard: Final IS Battle Kills 9,000 Civilians”, *AP News*, December 20, 2017.

114. N. Durhin, “Protecting Civilians in Urban Areas: A Military Perspective on the Application of International Humanitarian Law”, *International Review of the Red Cross*, Vol. 98, No. 1, pp. 177-199.

Along similar lines, another explanation for the high rate of civilian casualties in urban conflict zones has to do with the intricacy and interconnectedness of urban services, and the fact that damage to infrastructure has a massive and immediate impact on large numbers of people. For example, a high-impact explosive weapon hitting a single pipe can deprive 100,000 people of water and may also destroy the neighborhood's sewage system, which can cause thousands of people to become ill and exacerbate the already overwhelming burden on hospitals.¹¹⁵ Civilians in rural areas often have other mechanisms for coping with losing access to basic services (e.g., water wells, farm land, fishing, etc.). But city residents rarely have such alternatives, and are therefore more vulnerable to disruptions in essential services.

It's important to note that states and conventional military forces are certainly not the only type of belligerents at fault of victimizing civilians in urban warfare. A great deal of human suffering and destruction has been caused by armed non-state groups that often intentionally target and kill civilians when they believe it can help them achieve their political or military objectives.¹¹⁶ Islamic State militants, for instance, have not only used thousands of men, women, and children as human shields to reinforce and safeguard their positions, but also intentionally smuggled and coerced civilians into buildings to bait a coalition attack and cause civilian casualties for propaganda purposes.¹¹⁷

Equally important is the fact that some state actors and multinational coalitions have demonstrated high levels of respect for international humanitarian law, adopting policies to protect civilians caught in the crossfire in urban conflicts.¹¹⁸ For instance, from 2007 onwards, NATO's International Security Assistance Force (ISAF) in Afghanistan adopted policies that restricted the use of certain air-delivered weapons, refined its collateral damage estimation methodology, and emphasized training to reduce civilian casualties. By the end of its mission in 2014, the number of civilian casualties attributed to ISAF operations decreased by almost 75%. The African Union Mission in Somalia was also able to reduce the impact of the conflict on civilians by limiting the use of artillery and other indirect fire

115. International Committee of the Red Cross, "I Saw my City Die: Voices from the Front Lines of Urban Conflict in Iraq, Syria, and Yemen", *op. cit.*

116. N. S. Kalyvas, *Logic of Violence in Civil War*, Cambridge: Cambridge University Press, 2006; R. M. Wood, "Intrastate Conflict and Civilian Victimization", *Oxford Research Encyclopedias*, August 2016.

117. W. Williams and C. Ford, "Changes to Rules of Engagement Approval Levels and Civilian Casualties", *Just Security*, May 1, 2017.

118. International Committee of the Red Cross and InterAction, "Outcome Report: When War Moves to Cities: Protection of Civilians in Urban Areas", Roundtable, May 2017.

munitions in populated areas, especially in Mogadishu.¹¹⁹ These examples show that with requisite political will it is indeed possible to take meaningful steps to protect civilians and limit collateral destruction in modern urban warfare.

Urban Violence and Organized Crime

The nature and scope of urban violence and conflict vary a great deal across different cities, countries, and regions. In Latin America and the Caribbean, where over 80% of the population lives in cities,¹²⁰ urban violence is primarily linked to organized crime and related illegal and illicit economies, especially transnational drug trafficking.¹²¹ The region is home to 42 out of the 50 most murderous cities in the world: 17 in Brazil, 12 in Mexico, five in Venezuela, three in Colombia, two in Honduras, and one in El Salvador, Guatemala, and Jamaica, with murder rates ranging from just below 35 per 100,000 inhabitants to over 111 per 100,000.¹²² The severity of this violence certainly varies across the region, with countries such as Costa Rica and Panama much less affected by what many experts have described as a ‘homicide epidemic.’ It is also important to note that even in those cities afflicted by exceeding high murder rates, violence tends to be highly concentrated. According to Robert Muggah of the Brazilian Igarape Institute, nearly 80% of homicides in large and medium-sized Latin American cities take place on just 2% of the streets.¹²³ Still, as a whole, the region remains the only one in the world where rates of homicide have been on the rise since 2000.¹²⁴

The causes of urban violence are multifaceted, complex, and ultimately, particular to each country. But there are also shared characteristics, many of which are rooted in the countries’ legacies of authoritarianism and civil war. These include the proliferation and fragmentation of criminal gangs and drug trafficking organizations fueled by regional developments such as the increasing demand for drugs in the United States and the influx of weapons and money across borders, impunity and weak institutions, deep-seated

119. S. Muhammedally, “Minimizing Civilian Harm in Populated Areas: Lessons from Examining ISAF and AMISOM Policies”, *op. cit.*

120. R. Muggah and I. Szabo de Carvalho, “Latin America’s Cities: Unequal, Dangerous, and Fragile. But that Can Change”, World Economic Forum, June 13, 2016, available at: www.weforum.org.

121. T. Clavel, “Why Latin America Dominates Global Homicide Rankings”, *InSight Crime*, March 12, 2018, available at: www.insightcrime.org.

122. Consejo Ciudadano para la Seguridad Pública y la Justicia Penal, “Metodología del ranking (2017) de las 50 ciudades más violentas del mundo”, March 6, 2018.

123. “Shining Light on Latin America’s Homicide Epidemic”, *The Economist*, April 5, 2018.

124. R. Muggah and I. Szabo de Carvalho, “There Is a Cure for Latin America’s Murder Epidemic – and It Doesn’t Involve More Police or Prisons”, World Economic Forum, April 4, 2017, available at: www.weforum.org.

corruption within the judiciary and law enforcement, as well as entrenched urban poverty, inequality, and unemployment, particularly among the youth.

Faced with rising levels of urban violence, several countries in the region, including Brazil, Colombia, El-Salvador, Mexico, and Jamaica have resorted to using heavily-armed military units to pacify restive neighborhoods and slums.¹²⁵ Although the police are generally the first line of defense against crime, they often lack the resources and personnel to deal with criminal groups and especially the powerful drug cartels. Moreover, despite numerous attempts at reform, the police it is widely (and often justifiably) perceived as corrupt and inefficient. The military, on the other hand, is one of the more respected state institutions in most Latin American and Caribbean countries. As such, public support for deploying armed forces to help fight crime when violence escalates has been relatively high.¹²⁶

In February of 2018, for example, Brazil's President Michel Temer went as far as putting the military in charge of all public safety responsibilities in Rio de Janeiro after local law enforcement failed to control the rising rate of violent crimes in the city. Now, the military is slated to remain in Rio until the end of the year. Unfortunately, however, recent experiences with Brazil's broader pacification program and the military intervention in Rio in particular do not inspire much confidence.

Last year, the military intervened in Rocinha, Brazil's largest favela, to help the embattled police stop the escalating violence between rival drug gangs. But the deployment was short lived, and the military forces left while the fighting was still ongoing. At the same time, the 14 month long military occupation of Complexo de Mare – a massive favela network in northern Rio and home to over 130,000 people – which began ahead of the 2014 World Cup, also did little to improve the overall security of the residents there, and ultimately failed to uproot the drug gangs that control much of the area.

Despite these shortcomings and challenges, Brazil's increasing reliance on its military for internal and public security functions reflects a broader trend in a region plagued by high levels of urban violence related to organized crime and drug trafficking. Mexico, for example, has recently passed a controversial internal security law cementing the role of the military in domestic law enforcement on a national scale.

125. V. Felbab-Brown, "Bringing the State to the Slum: Confronting Organized Crime and Urban Violence in Latin America: Lessons for Law Enforcement and Policymakers", Brookings, December 5, 2011.

126. D. Pion-Berlin and M. Carreras, "Armed Force, Police and Crime-fighting in Latin America", *Journal of Politics in Latin America*, Vol. 9, No. 3, 2017, pp. 3-26.

The Mexican military has been heavily involved in the ongoing war on the drug cartels since 2006. But this December 2017 law formally endowed it with the power to identify domestic security threats, spearhead public security operations, and collect information from civilian institution. Notably, the legislation was pushed through as Mexico experienced a particularly violent year. With 29,196 homicides recorded, 2017 surpassed the previous high of 27,213 homicides during the peak of the drug war in 2011, marking the highest annual tally since comparable records began in 1997.¹²⁷

Critics of the legislation are concerned about this expansion of the military's jurisdiction over public security. They also warn that the lack of transparency in national defense manners will only exacerbate the conditions that allow impunity to persist amidst mounting accusations of human rights abuses by military forces. More fundamentally, there is still the question of whether deploying the military to combat criminal groups is even a viable strategy for reducing crime and restoring security. In fact, several studies have documented an increase in violence in areas in Mexico where the military was sent to fight the cartels.¹²⁸ Indeed, a myopic focus on security is unlikely to be successful, since treating the root causes of urban violence necessitates political will and resources for a comprehensive, long-term investment in social services and economic opportunities in the poor and crime-affected urban slums.

127. E. Meixler, "With over 29,000 Homicides, 2017 Was Mexico's Most Violent Year on Record", *Time*, January 22, 2018.

128. Human Rights Watch, *Neither Rights nor Security: Killings, Torture, and Disappearances in Mexico's "War on Drugs"*, 2011; V. Espinosa and D. B. Rubin, "Did the Military Intervention in the Mexican Drug War Increase Violence?", *The American Statistician*, Vol. 69, No. 1, 2015, pp. 17-27.

Conclusion

Military strategists and doctrine have long urged against fighting in cities, where the complex urban terrain, civilian populations, and intricate infrastructure present conventional forces with a litany of challenges that render definitive victory – without the utter destruction of a city – extremely difficult to attain. War, however, is an inherently social phenomenon, and as such, it tends to unfold where people live.

Today, 55% of the world's population lives in urban areas, and nearly half of the armed conflicts around the world are predominantly being fought in cities. By 2050, the United Nations estimates that 68% of the global population will be urban. As governments struggle to keep up with the ever-expanding needs of their rapidly growing urban populations, weak rule of law, overburdened housing, transportation, and infrastructure systems, environmental degradation, and entrenched inequality and marginalization, will generate and amplify much of the political and social friction that will fuel future violence and conflict around the world. There is therefore little doubt that that high intensity urban warfare, terrorism, crime and drug-related lethal violence, as well as social and political unrest will increasingly intersect, combine, and overlap in cities, with civilians paying the highest price.

An examination of modern urban military operations reveals that the fundamentals remains largely consistent: urban warfare is a manpower and resource intensive, highly violent, decentralized type of combat that demands capable and flexible small-unit leadership; combined arms operations are essential, with infantry and armor closely aligned and ground forces are supported by air power; good intelligence is critical albeit often hard to attain, and perhaps most importantly, the presence of large civilian populations inevitably complicates nearly all aspects of urban operations. In asymmetric warfare between conventional state forces and armed non-state actors, the city levels the playing field. It is therefore not a coincidence that despite of their vastly different motives, aims, and capabilities, insurgent groups, terrorists, criminal gangs, narco-traffickers, and transnational organized crime syndicates are increasingly choosing to operate, target, and fight in cities.

But the cities, militaries, and conflicts of the 21st century are also evolving in important ways. With the increase in large cities and megacities in the 21st century, professional militaries – which have grown smaller, more lethal, and technologically sophisticated – must contend with urban environments of an unprecedented size, scale, and complexity. The presence of the media in urban conflict zones and the ubiquitous, Internet-enabled access to social media effectively reduce the ability of government forces to control the information environment and shape public opinion. At the same time, armed groups have proved highly capable in using social media for recruitment, propaganda, as well as to organize and coordinate combat operations. Armed groups are also increasingly using drones for combat support operations. This is a consequential innovation in modern conflict, and especially in urban warfare, providing non-state actors with a tactical level air force capability that will only grow more dangerous with future advances in unmanned, automated, and artificially intelligence technologies.

With the expansion of civilian protection norms since the end of the Cold War, Western countries in particular are also facing greater pressure to minimize civilian harm and collateral damage in urban warfare, specifically with respect to their choice of targets and weapons.

Finally, the deadly urban violence fueled by organized crime, drug-trafficking, and heavy-handed state responses in Latin America demonstrates the severity and complexity of violence in cities outside of armed conflict situations and will likely become an increasingly common phenomenon throughout the rapidly growing cities of sub-Saharan Africa.

Looking to the future, states and militaries thinking about and planning for urban warfare will be wise to keep two simple rules in mind.

- ***Technology is not a panacea for urban warfare.*** The trend toward robotics, automation, and autonomy in military technology is geared toward insulating military personnel from the risks and effects of the modern battlefield, while enhancing lethality and precision strike capabilities. It is well known, however, that the urban environment reduces the utility of technologically sophisticated equipment. Moreover, the destruction of Mosul, for instance, raises serious questions about the ability of precision strike technology to effectively minimize collateral damage and harm to civilians. It is also revealing that by resorting to ancient techniques like subterranean warfare (i.e. tunnels), armed groups like Hamas and ISIS have repeatedly shown themselves capable of evading detection and targeting by highly advanced ISR systems.

The contrasts between how conventional forces and non-state actors are using technology have important implications. While militaries are increasingly relying on technology to remove personnel from the battlefield, armed actors are using emerging technologies and especially social media to bring in more troops and reinforcements into the very same conflict zone. In urban warfare, however, the advantages derived from technological superiority are significantly reduced and large numbers of ground troops are still needed to attack, clear, and hold cities. Taken together, then, these opposing approaches to the role of technology in war can in effect minimize the power imbalances in asymmetric conflicts, which can then lead to longer and more destructive battles.

The use of ancient techniques such as siege warfare and tunnel warfare alongside contemporary technologies such as social media and drones suggest that the future of urban war, much like its past, will be marked by an amalgamation of time-honored methods and innovative means. Preparing for the future of war in cities will require expertise in both.

- ***Military force alone cannot solve multidimensional urban problems.*** For countries suffering from high rates of urban violence linked to organized crime and drug-trafficking, such as Brazil and Mexico, there are no easy solutions. But the militarization of internal security functions and the deployment of heavily-armed military units to pacify restive neighborhoods and slums where the gangs and cartels have taken control are likely adding to the problem rather than contributing to its long-term resolution. In contrast, holistic strategies attuned to local needs of the population in the marginalized urban slums appear far more powerful. In Medellin, Colombia, for example, increased security and policing designed to dismantle the violent drug cartels were supplemented by a substantial investment in public services, transportation networks, and infrastructure in the poorer areas of the city. While not without faults, these efforts led to a massive decline in homicide rates and a marked improvement in socioeconomic conditions for the city's poor communities.

In closing, with a growing proportion of the world's violent conflicts now being fought in cities, future efforts and policy interventions designed to prevent, contain, reduce, and recover from urban violence and conflict will face even greater political, financial, bureaucratic, and socio-cultural obstacles. Given the complexity of these challenges, states, international organizations, NGOs, and civil society all have a role to play. It is certainly true that with 50 million people now living in urban areas affected by conflict, the political, financial, bureaucratic, and socio-cultural challenges

are substantial and can appear overwhelming. But the ramifications of failing to act in defense of cities are far greater. Ultimately, as the world urban population continues to grow, the future of global security will be determined by what happens in cities.



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