RESEARCH ARTICLE

Future armed conflicts - A new point of view

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Abstract

This article focusses on future wars and the resulting consequences for the development of the armed forces. The purpose of this study is to indicate the course of future armed conflicts on the base of the forecasts presented by the largest research centres as well as to signal the need to look at them from a new point of view, disregarding the current tense situation in the world. The subjects of the research are armed conflicts, and above all, the possible ways of conducting them in the future, as well as the domains in which they will be fought. The authors assume that the causes and forms of future armed conflicts will evolve. Changes will depend on the time and place of the outbreak of conflicts, the technology used, as well as the scale of their play. It is also assumed that future armed conflicts will take place in all domains, between equal opponents or between great powers and smaller states or organizations, which are weaker to them in every respect. In the paper, the authors took an attempt to answer the following questions: How will the geopolitical and economic situation in the world change, also in the context of progressing climate change? How will armed conflicts evolve in a changing world? How will future wars play out and what capabilities should military forces have to fight them? According to the analysis, the authors claim that future armed conflicts will: take place in all domains; require a rapid situation assessment and decisions; conducted in a complex environment; include hybrid strategies; increasingly difficult to resolve; non-linear; took the form of asymmetric activities; periodically conducted without electronic devices (an opponent can disable devices or track them); implemented by modular units capable of conducting independent activities at the lowest levels; saturated with robots and drones.

Keywords

geopolitics, international security, miliary security, armed forces

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Introduction

The development of technology, especially digital technology, determines new trends in politics, economy, media, and all other aspects of human life, changing the picture of the world as we know.[1] This phenomenon also has a huge impact on the way wars are fought.[2] As we can see today, there is a constant arms race between global and regional powers, also with the participation of non-state organizations (e.g. Hezbollah, Al-Qaeda). These organizations are often of a terrorist nature, aiming to gain an advantage not only technologically, but also in all other aspects of combat (e.g. decision-making process, tactics, psychological activities, activities in cyberspace, etc.). New technologies and weapons systems, such as directed energy weapons, hypersonic missiles or drones and autonomous vehicles armed with precision weapons, are changing tactics and operational art, forcing military commanders to look for ways to adapt to new conditions and make the most of new opportunities.[3] The nature of war, however, has remained relatively constant, from Sun Tzu, through Thucydides, Clausewitz, the two world wars, the Cold War period, and the present. War continues to be waged for political and economic gain and remains an extension of state policy.

However, technology is only one of the determinants affecting human civilization. Environmental changes caused by global warming may become extremely important.[4] The effects of these changes, mainly shortages of food and drinking water, will have a huge impact on the economic and geopolitical situation and may lead to serious disturbances and turbulence in the global world order.[5] Another equally important factor is the growing ideological extremism. Terrorist organizations will seek to change the balance of power in the world, for example through successive attempts to create an Islamic caliphate. This forces us to look into the future and indicate the possibilities of preventing future threats, including, and perhaps above all, military ones.

This article attempts to formulate a vision of future wars and the resulting consequences for the development of the armed forces, which should prepare for new challenges. The tasks and role of the armed forces in state policy largely determine their organizational structure, and the potential they should have depends on:

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[1] R. Zięba, "Contemporary Challenges and Threats to International Security," *Stosunki Międzynarodowe – International Relations* 52, no. 3 (2016): 9–31, https://doi.org/10.7366/020909613201601.

[2] P.M. Suresh, "Conflicts in Modern Society," *RESEARCH REVIEW International Journal of Multidisciplinary* 8 (2023): 21–25, http://dx.doi.org/10.31305/rrijm.2023.v08.n07.004.

[3] M.M. Neag and S. Pînzariu, "Fundamental coordinates of the profile of the future armed conflict," *Scientific Bulletin* 28, no. 1 (2023): 55, http://dx.doi.org/10.2478/bsaft-2023-0007; "Nicolae Bălcescu" Land Forces Academy, Sibiu, Romania, 66–72.

[4] T. Ide, "Rise or Recede? How Climate Disasters Affect Armed Conflict Intensity," *International Security* 47, no. 4 (2023): 50–78, https://doi.org/10.1162/isec_a_00459.

[5] H. Kissinger, *World Order* (New York: Penguin Press, 2014).

geopolitical conditions, the nature of the potential aggressor and allied countries, and the scale of convergence of strategic interests of the state and other international players. In the case of countries with a significant disproportion of potentials, the weaker usually bases its security on active participation in political alliances or tries to create regional security structures.

The development programs of the armed forces are usually based on known threats to the security of the state. In the modern armies of the world (USA, Great Britain), the transformation process depends not only on threats, but above all on three factors:

- long-term assumptions of the state strategy and the state security policy,[6]
- anticipated theatres of operations (areas where military operations may be conducted),
- own and enemy's potential as well as anticipated forms of conducting military operations.

Before the main considerations, it is worth explaining the terms of armed conflict and war, often used interchangeably. The International Criminal Tribunal for the former Yugoslavia ruled on 2 October 1995 that an armed conflict exists whenever there is the use of armed force between states or prolonged armed violence between government authorities and organized armed groups or between such groups within the territory of one state. The concept of armed conflict is broader than the concept of war, as it includes all manifestations of armed struggle, while the term "war" refers to those conflicts in which societies (states) engage all or most of their resources and there is a very high intensification of military activity.[7]

The purpose of this study is to indicate the course of future armed conflicts on the base of the forecasts presented by the largest research centres as well as to signal the need to look at them from a new point of view, disregarding the current tense situation in the world. The subjects of the research are armed conflicts, and above all, the possible ways of conducting them in the future, as well as the domains in which they will be fought.

The authors assume that due to the dynamic changes in the geopolitical and economic situation in the world, accelerating technological progress and global climate change, the causes and forms of future armed conflicts will evolve. Changes will depend on the time and place of the outbreak of conflicts, the technology used, as well as the scale of their play. It is also assumed that future armed conflicts will take place in all domains, between equal opponents or between great powers and smaller states or organizations, which are weaker to them in every respect. These may be conventional international or internal conflicts, ranging in intensity from very limited

[6] Futures 2030–2045. Marine Corps Security Environment Forecast, United States Marine Corps Flagship, 2015.

[7] K. Żukrowska, "International security. Review of current state (In Polish)," IUSatTAX, Warszawa, 2011.

to full-scale conflicts. There will also be the so-called proxy wars, i.e. subliminal conflicts fought in the grey zone, hybrid and other, depending on the capabilities and goals set by the participating parties. It is certain that activities in cyberspace and outer space will play an increasingly important role, as will the automation and autonomy of means of warfare. Artificial intelligence will increasingly support people in their decisions, and in some cases will make decisions about taking specific combat actions.

The initial assumptions formulated above prompted the authors to answer several fundamental problem questions:

- How will the geopolitical and economic situation in the world change, also in the context of progressing climate change;
- How will armed conflicts evolve in a changing world;
- How will future wars play out and what capabilities should military forces have to fight them.

Research methodology

The conducted qualitative research was largely based on the critically analyzed intelligence reports and forecasts, and the article is a synthesis of these available reports. Authors used own observations and conclusions from military service, but also on the latest studies and documents issued by opinion-forming research centres.

On the basis of that generalizing conclusions were formulated, and these were further verified on the basis of the authors' personal experience gained during their many years of military service in operational and logistic positions, also performed during international military operations.

The authors formulated general conclusions obtained from non official reports of intelligence information on the Armed Forces of the Russian Federation and other key countries, as well as forecasts of the development of the future operational environment, issued by the Intelligence and Reconnaissance Analysis Directorate P-2 of the General Staff of the Polish Armed Forces, updated annually and forwarded to the information of commands and staffs. This information contains the current and future doctrine of the armed forces of foreign countries, as well as concepts for their development and use in anticipated armed conflicts. As directors and participants of the largest military exercises carried out in the Polish Armed Forces, the authors had access to analyses presented as part of the discussion of exercises, in which the characteristics of the contemporary operational environment, selected aspects of operational art and tactics, as well as conclusions for the development of the armed forces in the coming years were presented. In addition, the Polish Armed Forces Lessons Learn System delivers for authorised use current information on the latest experiences and conclusions from modern armed conflicts, which were also used in the article. All information obtained and presented in the article came from exclusively not classified documents.

Critical analysis of the acquired scientific literature and specialist reports made it possible to isolate and study the phenomena concerning the impact of various factors on the possibility of fighting an armed conflict. Then, by synthesizing the isolated components, conclusions were formulated that formed the basis for further research. The use of this research technique helped to obtain deeper knowledge about the subject of research, which was then generalized, which allowed to identify quite detailed trends and changes over the next several decades.

It was also useful to use a comparison. This method was necessary to study the development of the subject of research in time and space. Comparing the highlighted elements from the issues of future armed conflicts, it was possible to determine the occurring regularities, identify new phenomena, and on the basis of this, predict future changes and directions of their development.

The method directly resulting from this, which was also used, was inference. In the processes of drawing conclusions from premises based on the collected scientific material or formulating scientific judgments regarding the researched issues, the method of formal logic, i.e. analogy, deduction and induction, was used.

The reports and studies analysed in the work come mostly from polish sources, but it is worth noting that their content also includes analyses and perspectives on future wars from other countries. This is due to their nature and the way they are constructed, where when they are created it is assumed that such a report takes into account all possible foreign sources.

A changing world

In this part of the article, the authors intend to answer the first of the research questions, which is: How will the geopolitical and economic situation in the world change, also in the context of progressing climate and demographic changes?

There is a high probability that in the foreseeable future there will be several possible geopolitical phenomena for the Western world. The first is the limitation of political activity by the US and the adoption of the doctrine of non-interference in the international situation. This would result in the loss of its position as a world leader and would strengthen the position of China and Russia.[8] The second phenomenon may be the further growth of China's power, leading to the escalation of tensions between this country and its neighbours (Taiwan),[9] as well as the country's claim to the role of a world leader. On the other hand, the consequence of China's growing power will be a change in the balance of power in Asia, related to the fact that some countries opt for or against China's policy. An extremely important

[8] N. Aliyev, "Russian-Chinese cooperation and competition in Afghanistan and its implications for Central Asia," *Stosunki Międzynarodowe – International Relations* 58 (2022): 94–115, https://doi.org/10.12688/stomiedintrelat.17587.1.

[9] B.R. Green and C. Talmadge, "Then What? Assessing the Military Implications of Chinese Control of Taiwan," *International Security* 47, no. 1 (Summer, 2022): 7–45, https://doi.org/10.1162/isec_a_00437.

and clearly visible phenomenon is the growing imperial ambitions and revanchism of Russia, which is intervening more and more aggressively in its former republics.[10] However, in the case of Russia's defeat in the war in Ukraine, which is becoming more and more inevitable, it is possible that Russia will fall to the role of a secondary state, dependent in many political and economic aspects on China. In this case it will lose its current ability to influence the policies of European countries (at least for a period of several dozen - several dozen years).

Another negative scenario for the West would be the disintegration of the European Union (EU), which is less and less interested in the development of defence capabilities, mired in the immigration crisis, and falling under the increasing influence of right-wing and nationalist forces seeking to redefine the role and tasks of the EU, or even to dissolve it. Admittedly, the war in Ukraine made European countries aware of the need to rebuild their armed forces and maintain political and economic unity in the face of external threats. This allows us to look optimistically into the future of the united Europe, but intensive subliminal activities of Russia and China do not rule out such a scenario. At the same time, the Middle East will continue to grapple with Islamic jihadist terrorism, weak governance, economic issues and rising tensions between predominantly Shiite and Sunni states and Arab states and Iran and Israel already shaping conflicts in Syria, Yemen and beyond them.[11]

The process of the largest countries striving to change the world hegemony will be decisive. China is increasingly becoming a near equal competitor, challenging the United States on many fronts - especially economic, military, and technological - and seeking to change global norms. Russia is attacking Washington, but also European NATO countries, in every possible way, using a variety of techniques, including the use of force. Iran will remain a regional threat, but it may have a negative impact on a global scale, and North Korea will be a disruptive player on the regional and global stage.[12] Other players that may have an impact on global security, and certainly shape regional security, are India and Pakistan and their ongoing armed conflict, intensified by disproportionately fast population growth and economic and social problems. It is worth adding that, apart from individual countries, a relatively important role in the management of global security is played

[10] A. Kortunov, "The Russian-Ukrainian Conflict and the Future World Order," *Russian Politics* no. 8 (2023): 247–263, https://doi.org/10.30965/24518921-00802008.

[11] A. Cohen, "Living in a Covid-19 World," *The Milbank Quarterly, A Multidisciplinary Journal of Population and Health Policy* (2020): 227–234, https://doi.org/10.1111/1468-0009.12466.

[12] US National Intelligence, "Annual Threat Assessment of the US Intelligence Community," Office of the Director of National Intelligence, 2021, accessed July 27, 2023, https://www.dni.gov/index.php/newsroom/reports-publications/reports-publications-2021/item/2204-2021-annual-threat-assessment-of-the-u-s-intelligence-community.

by financial institutions, whose policies affect the course and dynamics of armed conflicts.[13]

The Russian aggression against Ukraine and the ensuing energy and food crisis in the world are the next breakthrough phenomena in the history of mankind that can change global trends in politics and economy.[14] After the end of the conflict, there are at least two possible scenarios: 1) In the event of a conflict won, even partially, by Russia, a new balance of power may emerge with a strong role of China, Russia, and Iran, with countries bordering on them in their sphere of influence, and countries of Africa and South America. 2) In the event of a conflict ending in Ukraine's victory, there may be a strong desire of the countries currently in the sphere of influence of Russia to join NATO structures or to create a new pact based on the alliance of these countries with the USA. At the same time, China will expand its spheres of influence by both Africa and South America, becoming a strategic player equal to the US.

Summing up, it should be assumed that the world will return to a bipolar or multipolar balance of power, with Western countries on one side and China, Russia, Iran, and several other countries claiming to be world powers on the other. Nevertheless, after the current crisis is over, globalization driven by technological progress in telecommunications and transport will continue to connect the world in all its domains (US Marine Corps, 2015).[15] The further development of human civilization will be determined by several key phenomena, such as:[16]

- the development of social media and the "internet of things" and all aspects of human engagement where knowledge, ideas and insights are available almost instantly;
- growing economic disparities between and within countries, nations and regions, with changing demographics - for example, aging Western populations and young African and Asian populations - moving to urban areas and megacities capable of delivering all the benefits of technological advances and information;
- increasing competition for natural resources, especially water;
- a system of global politics in which world and regional powers, as well as ideologically driven non-state actors, compete with the West, and especially

[13] E. Dolan-Evans, "Making war safe for capitalism: The World Bank and its evolving interventions in conflict," *Security Dialogue* 53, no. 6 (2022): 531–549, https://doi.org/10.1177/09670106221091382.

[14] J.C. Antúnez, "Understanding the Operational Environment: the Human Dimension," *Global Strategy Report*, 2021, https://global-strategy.org/author/antunez/.

[15] US Marine Corps, accessed July 25, 2023, https://news.usni.org/2015/12/29/top-stories-2015-u-s-marine-corps-operations.

[16] TRADOC Pamphlet 525-92, "The Operational Environment and the Changing Character of Future Warfare," Fort Eustis, Virginia, 2019, accessed July 27, 2023, https://adminpubs.tradoc.army.mil/pamphlets/TP525-92.pdf.

the United States, for leadership and influence in a shrinking world in terms of communications and resources.

Regardless of geopolitical changes, there will be areas of new technological trends that will play the greatest role in the future world, and which should be subjected to special analysis, and these will be:

- Big Data (large, variable and diverse data sets);
- cyberspace and space;
- artificial intelligence (AI);
- human-computer interaction;
- energy sources and storage;
- technology, technique and production;
- robotics;
- collective intelligence (CI);
- increasing the level of human performance.

There is no doubt that all the technological achievements of the future world will find their application in the army and will change the image of hypothetical armed conflicts.

One of the determinants of the future will be climate change. Man-made global warming has become a fact and will have a negative impact on human civilization. One factor contributing to this is the extensive military activity of global powers.[17] Whether humanity allows global temperatures to rise by up to 3.2°C above pre-industrial averages by 2100, as predicted by current analysis, or limit the temperature increase to 1.5°C above pre-industrial levels (as envisaged in the climate agreement of Paris of 2015) it will struggle with the problem of greenhouse gas emissions and its consequences for the next decades.[18]

Inevitably progressing shortages of drinking water and food are already forcing people to migrate from areas where existence becomes impossible.[19] The ice cover of the Arctic Ocean is getting smaller every year, which encourages the countries around it to explore new natural resources. Russia, Canada, Norway, Denmark, but also the United States and Great Britain, will try to establish their spheres of influence in this region. The Russian Federation already claims the area north of Siberia to the North Pole, claiming that it is an extension of the continental shelf that

[17] T.T. Na'puti and S.C. Frain, "Indigenous environmental perspectives: Challenging the oceanic security state," *Security Dialogue* 54, no. 2 (2023): 115–136, https://doi.org/10.1177/09670106221139765.

[18] S. Goodman *et al.*, "Climate Change and Security in the Arctic," *Report, Norwegian Institute of International Affairs*, January, 2021, https://climateandsecurity.org/wp-content/uploads/2021/01/Climate-Change-and-Security-in-the-Arctic_CCS_NUPI_January-2021-1.pdf.

[19] N. Zaslavskaya, "Regional dimension of international environmental cooperation: the European Union environmental policy and its relations with its neighbors in the case of Russia," *Stosunki Międzynarodowe – International Relations* 57 (2021): 24–43, https://doi.org/10.12688/stomiedintrelat.17413.2.

can only be exploited by the country that borders it. It has already established Arctic units in its armed forces, which, in their opinion, will ensure, also by force, access to resources.[20]

Migration of the population to cities will continue, mostly coastal ones, which have the best conditions for development due to communication reasons, so a large part of the population will live up to 160 km from the seacoast. By 2030, there will probably be 41 megacities with more than 10 million inhabitants.[21] All these phenomena must be considered when predicting the course of future wars.

In response to the progressing changes, the NATO Alliance developed a new strategic concept,[22] according to which the most important threats to the security of the Alliance's countries are Russia's aggressive policy, China's activity, threats in cyberspace, terrorism, organized crime, the proliferation of weapons of mass destruction and threats coming from the Middle East, Africa and States of the Sahel,[23] and North Korea. As an answer to that an increase in investment in new technologies was also announced.

NATO's three main tasks include: deterrence and defence, crisis prevention and management, collaborative security. Alliance also announced the strengthening of individual and collective resilience and technological advantage, as well as the promotion of actions to prevent climate change. Threats from China were also mentioned. It was recognized that the country's declared ambitions and policy pose a challenge to NATO's interests, security, and values. It was emphasized that China uses a wide range of political, economic, and military tools to increase its influence on the world and project power, while keeping its strategy and intentions hidden. Attention was also drawn to the danger of China's use of disinformation.

Chinese disinformation is a threat to NATO and individual member states. This threat is highlighted in paragraph 13 of the Concept, which states: "China's malicious hybrid and cyber operations and its confrontational rhetoric and disinformation target allies and harm the security of the alliance." It was also noted that China seeks to overthrow the current international order, including in space, cyberspace and at sea, using its economic advantage to create strategic dependencies and increase its influence, as well as to control key technological and industrial sectors, critical infrastructure and strategic materials and supply chains. The deepening of the Sino-Russian partnership is also a threat to NATO.

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[20] A. Angelakis *et al*., "Water Conflicts: From Ancient to Modern Times and in the Future," *Sustainability* 13, no. 8 (2021): 4237, https://doi.org/10.3390/su13084237.

[21] US Marine Corps, accessed July 25, 2023, https://news.usni.org/2015/12/29/top-stories-2015-u-s-marine-corps-operations.

[22] T. Tardy, "NATO's New Strategic Concept," NDC Research Paper no. 25, September, 2022, accessed July 27, 2023, https://www.ndc.nato.int/news/news.php?icode=1737.

[23] J.C. Kouladoum, M. Maiport and M. Ndinga, "Cultural conflicts and wellbeing in Africa," *Sustainable Development* (June, 2023): 1–13, https://doi.org/10.1002/sd.2614.

Cybersecurity and the development of new technologies have been identified as key areas of NATO's activities soon. The strategy notes that there are constant battles in cyberspace, and malicious actors aim to degrade NATO's critical infrastructure, disrupt government services, obtain intelligence, steal intellectual property, and obstruct the Alliance's military operations. It has also been noted that the Alliance's adversaries are investing in technologies that could limit the Alliance's access and freedom of action in space and target the civilian and military infrastructure of the Allies and undermine NATO's defences and security. New technologies bring both opportunities and threats. They change the nature of the conflict, gain greater strategic importance, and become key areas of global competition. For this reason, NATO leaders announced in the latest Strategic Concept to accelerate digital transformation, adapt NATO's command structure to the information age and strengthen cyber defence.[24]

Evolution of armed struggle in a changing world

In this part of the article, the authors intend to answer the research question about the evolution of armed conflicts in a changing world.

As mentioned in the previous chapter, the situation in the world in the next time perspective may be most affected by the loss of the US's status as the world's political, economic, and military hegemon in favour of the combined potential of China, Russia and other states aspiring to the title of world power. The key rivals of the West now think in terms of hybrid strategies that allow them to operate at a time and place of their choosing, often at a level below the threshold of warfare using proxies, mercenaries or even terrorists and criminals,[25] usually directly aimed at the will of the state, population or the decision making apparatus of a nation state or supranational organization/alliance such as NATO or the European Union. At the same time, if the EU fails to maintain its unity, which gives it the position of a world economic and political power, and if NATO fails to maintain or even develop its political and military efficiency, the West will cease to play the role of a world leader. The NATO Alliance, faced with equal opponents in the form of China, Russia, India, Iran, or Brazil, will have a big challenge in maintaining dominance in the economic, political, and military spheres.

Early signs of this trend were seen in the hybrid strategies adopted by Iran, and most notably in Russia's actions in Crimea, Ukraine, and Syria, which have been dubbed "Russia's next-generation war". While many of these ideas are not new, the fundamental difference, which began around 2017, is the ability of the claimant powers to match traditional operations, hybrid strategies, and asymmetric warfare

[24] Tardy, "NATO's New Strategic Concept."

[25] К.Ю. Примаков и С.С. Бідняк, "International protection of human rights during armed conflicts (In Ukrainian)," *Розділ xi. Міжнародне право. УДК 341.231.14* (2023): 417–420, https://doi.org/10.24144/2788-6018.2023.02.72.

tactics with new technologies and capabilities that prevent, hamper, or complicate the West's ability to use of force until they have achieved their political goals. In particular, this strategy can be seen in the example of Russia and China, which have made a lot of effort to develop and implement advanced capabilities: anti-access, precision depth strike, electronic warfare and concealment, space reconnaissance and anti-space weapons, information activities (including psychological operations, propaganda, disinformation, manipulation and others), weapons of mass destruction and combat in cyberspace. By contrast, North Korea and Iran have focused on narrower, less versatile, and less technically advanced variants of these capabilities.[26]

The armed forces of the US and Western European countries have been involved in stabilization operations for the last several years, which has changed their combat potential and character, and above all, reduced the ability to conduct multi-domain and full-scale military operations. This was noticed and used by countries aspiring to the title of world powers, such as Russia and China, or regional powers, such as North Korea and Iran.[27] It is possible that the disarmament of the West and the conviction that it was incapable of large-scale military operations encouraged the Kremlin regime to launch an armed attack on Ukraine.

Thus, the most important conclusion from the analysis of contemporary armed conflicts is the inevitable evolution of military operations from stabilization and asymmetric to warfare, fought with an equal adversary (called peer enemy) using the latest military conventional technology, combined with conflicts/subliminal operations and proxy wars.[28] Unlike previous wars, the primary condition for victory in a future technological conflict will not be fire and armour superiority, but IT and psychological supremacy. AI - supported command and reconnaissance systems will enable faster decision-making and implementation, and therefore provide initiative and advantage over slower-acting enemy units and enable precision-guided weapon strikes.[29] They will also allow for efficient and, above all, more effective conduct of the information war, both directly with the enemy as well as with his immediate and further surroundings. This does not change the fact that other forms of armed conflicts may be undertaken, such as subliminal and hybrid actions, and although they will not decide about the victory in the war of superpowers,

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[26] TRADOC Pamphlet 525-92, "The Operational Environment and the Changing Character," Fort Eustis, Virginia, 2019.

[27] TRADOC, "The Operational Environment (2021–2030): Great Power Competition, Crisis, and Conflict," 2021, https://oe.tradoc.army.mil/2021/05/26/the-operational-environment-2021-2030-great-power-competition-crisis-and-conflict/.

[28] A. Moghadam and M. Wyss, "The political power of proxies: why nonstate actors use local surrogates," *International Security* 44, no. 4 (2020): 119–157.

[29] N. Świętochowski, "Future Armed Conflicts. Third World War Delta (In Polish)," Publishing Office of the MULF, Wrocław, 2020.

they will be a source of success if they are conducted at the same time. It is safe to say that the new dimension of the conflict is a combination of the above-mentioned actions. The threat of using weapons of mass destruction, including nuclear, chemical, and biological weapons, will still be valid. Nuclear arsenals continue to be an effective deterrent and there is no doubt that more states and even worse, terrorist groups or criminal and criminal groups may acquire them.

The need to face an equal opponent by the US armed forces, as well as other NATO armies, will change the course of a hypothetical armed conflict, which will be radically different from military operations conducted by NATO countries, for example in Iraq and Afghanistan at the beginning of the 21st century. The following phenomena will dominate future military activities:[30]

- threats occurring in all spheres and areas of human activity (multi-domain);
- military operations conducted in difficult terrain, including dense urban areas and even megacities;
- hybrid strategies/operations in the "grey economy", subliminal activities;
- permanent threat of using weapons of mass destruction;
- advanced anti-access systems (A2/D2);
- new weapon systems (robots, autonomous weapons, artificial intelligence, cyberspace, outer space, hypersonic missiles, etc.);
- information as a decisive weapon.[31]

Over the last few decades, the United States, along with European NATO countries, have been the most important player in the development of military technologies. Capabilities for efficient information processing, reconnaissance at all levels of command, the use of unmanned systems and increasingly distant precision weapons have been developed. The world's highest financial outlay has allowed the US military to operate most effectively in space, air, on and under water, and to dominate conventional land combat capabilities. For many reasons - the growth of China's economic and political power, the effective geopolitics of the powers growing next to it, the revival of Russia's superpower ambitions, the global diffusion of technology, as well as the focus on the implementation of stabilization operations - the primacy of America and NATO began to erode. Western military strategists and planners are facing a future in which guided munitions and military network technologies have spread widely and are used by both state and non-state

[30] TRADOC Pamphlet 525-92, "The Operational Environment," Fort Eustis, Virginia.

[31] V. Sticher, J. Wegner and B. Pfeifle, "Toward the Remote Monitoring of Armed Conflicts," *PNAS Nexus* 2, no. 6 (2023), https://doi.org/10.1093/pnasnexus/pgad181.

actors in the full range of military operations, which will significantly change the picture of the future battlefield.[32]

Even though the Russian-Ukrainian conflict is a conventional conflict, led by two similarly technologically advanced armies, although with different combat potential, it shows the importance of future aspects of the battlefield - Ukraine, thanks to the help of Western countries, can balance the Russian advantage with efficient reconnaissance (assisted by NATO systems) and delivered in an increasing number of precision weapons. This confirms the authors' assumptions about the large impact of technology on the way armed conflicts are conducted.

Future wars

How will future wars play out and what capabilities should the armed forces have to fight them? According to forecasts, future wars will be waged in two specific phases of human development, followed by a situation in the world that is difficult to predict today. These will be: 1) the period of accelerated human development (which is to last until 2035) and 2) the period of questioned equality, lasting in the years 2035–2050.[33]

The period of accelerated human progress is a time when potential adversaries of the US and NATO can take advantage of the development of new technologies, create new doctrines, and change strategic concepts for effective impact in all domains of combat (operations). It will bring many potential changes in military technology, such as:

- modernization and development of portable anti-tank guided missile (ATGM) and anti-aircraft missile launchers will develop faster than active protection systems, which will pose a threat to armoured vehicles and helicopters, and even aircraft;
- many robots and autonomous weapons systems will be developed, allowing for staff reduction;[34]
- space will become more and more crowded and satellite systems placed in it will no longer be as safe as before, they will be difficult to monitor and will be exposed to destruction by anti-satellite missile systems, as a consequence the role of satellite communication and navigation systems will be limited;
- new types of chemical weapons that are difficult or impossible to detect and protect will be developed;

[32] R. Work and B. Shawn, *20YY Preparing for War in the Robotic Age* (Center for a New American Security, 2014).

[33] TRADOC Pamphlet 525-92, Fort Eustis, Virginia.

[34] S.I. Gimiga, "The impact of robotics and artificial intelligence on future military conflicts," *The Bulletin of "Carol I" National Defence University* no. 11 (2023): 69–78, https://doi.org/10.53477/2284-9378-22-96.

- camouflage, cover and deception systems, coupled with extensive anti-access (A2AD) systems, will add to the situation of uncertainty, challenging multidisciplinary reconnaissance and guidance measures;
- ground artillery (barrel and rocket) will have a very long firing range with precision and disruptive missiles; this will allow it to participate in combating A2AD systems, including anti-aircraft defence systems;
- missiles with an operational range will have increased precision using inertial guidance systems, resistant to electronic interference;
- the increasing computing power of IT systems will allow for the collection and processing of huge amounts of data from the battlefield obtained by numerous data sensors (Big Data, quantum computing), and artificial intelligence (AI) supporting a human in the decision-making process will significantly speed up the decision-making process.

The second period will be characterized by breakthrough changes in the use of modern technologies, including the use of AI and the development of the ability to integrate and synchronize them on many levels of action. Mastering activities in the information area will be crucial, which can lead to the creation of the desired narrative about the course of the conflict aimed at breaking the will to fight. The ability to visualize and understand the battlefield will also be important, because its course and change in character can lead to questioning its very nature, which can lead to doubts as to whether the conflict is real at all and whether the threat exists. This can consequently lead to the intentional breaking of the enemy's will to fight, and thus defeating him in the information and psychological domain.

Potential new military technologies by 2050 include:[35]

- scalable, lethal and non-lethal scalable directed electromagnetic (laser) weapons capable of incapacitating aircraft and unmanned aerial vehicles (UAVs), including drone swarms, as well as destroying artillery and missile missiles on the flight path;
- electromagnetic rail guns that accurately throw kinetic projectiles over very long distances;
- energy materials providing increased muzzle energy of thrown projectiles;
- biotechnology that allows for the modification of human DNA leading to an increase in the capabilities of organisms;
- Internet of All Things - every device, both military and commercial, will have network connectivity, everything will become a sensor and everything can be hacked; on the one hand, it will become an opportunity to gain

[35] TRADOC Pamphlet 525-92.

an advantage over the opponent, on the other hand, it will be another sensitive area whose protection will become crucial;

– more efficient energy sources are often dependent on renewable sources and reduced consumption; small nuclear reactors will potentially be a viable source of stable energy.

Revolutionary technologies, once developed and implemented, will provide a decisive advantage over opponents who will not be similarly equipped, although this technological advantage may most likely prove to be temporary.

In future wars, the West (United States, NATO, EU) will face at least five potential adversaries - one of them equal (China) and five less powerful (Russia, Iran, North Korea, India and a coalition of terrorist groups) in four various types of conflicts (anti-terrorist operations, subliminal conflicts, asymmetric conflict with a secondary adversary, highly intensive conventional conflict with an equal adversary), fought in at least four different geographical regions of the world (Europe, Middle and Far East, Africa).

The proliferation of advanced technologies, coupled with the speed of human interaction and ubiquitous connectivity, means that no single state or organization will have an absolute strategic advantage in terms of combat capabilities, and in the event of temporary superiority, rivals will quickly adapt and close the gap.[36]

While mid-century militaries will be more capable than ever before, their ability to fight high-intensity conflicts will become limited. The future conventional conflict will be extremely destructive due to the use of technologically advanced weapons. Combat will be played out extremely fast thanks to the ability of AI-enhanced commands to interact quickly. The strike will be carried out at such great distances and with such precision that even well-trained and equipped troops in the struggle with an equal opponent will quickly suffer significant losses in manpower and equipment, which will be difficult to replace. Therefore, military forces will only be able to conduct short-term campaigns before being forced to replenish costly equipment and, even more difficult, invaluable personnel. Robotics, unmanned vehicles, and the operation of integrated combat units consisting of soldiers and autonomous systems will offer new combat possibilities, but the survival of increasingly vulnerable troops will remain crucial in war. Under such conditions, the military will be forced to balance sophisticated strike capabilities with less capable, cheaper alternatives, and to carefully balance the ratio of troop numbers to autonomous systems.[37] Since the skills and experience that people must acquire or gain to be

[36] TRADOC.

[37] I. Petrović and M. Gordić, "Unmanned aerial systems as a revolutionary tool in modern armed conflicts," *Баштина, Приштина – Лепосавић, св* 60 (2023): 2–18, https://doi.org/10.5937/bastina33-45159.

effective on these battlefields will be time consuming and costly and will be quickly used up on the devastating battlefield, military personnel will need to consider how advances in artificial intelligence, bioengineering, human-machine interaction, and other areas of science that explore human performance enhancement can help reduce staff training time.[38]

The domains of combat will remain the same as today: land, air, sea, cyberspace, outer space. The most important capabilities for the future armed forces will be: range, precision, information and automation, which will be derived from the state of technological knowledge possessed.

When considering the range of influence, one should take into account their ability to strike, but also to carry out expeditionary tasks. High anti-access capabilities of potential opponents may prevent the operation of their own aviation and it will become necessary to use missiles with an operational range. On the other hand, progressing climate changes may cause some regions of the world to become inaccessible to the armed forces and it will be necessary to carry out combat tasks by aviation based on distant airports and logistics facilities.

The need to respect the humanitarian law of armed conflicts is not subject to discussion in the democratic world, but even disregarding this imperative, it must be emphasized that in the light of increasingly better media reports from the battlefield, showing losses among non-combatants, negative political and social consequences may arise. Due to the fact that with the progressive urbanization of the world, many conflicts will take place in densely populated areas, the use of precision weapons, capable of selectively striking targets and minimizing the side effects of fire, becomes a necessity.

Today we can already see how important the ability to influence in cyberspace is. There is no doubt that the armed forces of Western countries must put more emphasis on their development, as Russia and China have already done, but also North Korea and Iran. Cybernetic attacks on the government sphere, armed forces and critical infrastructure of a state can paralyze them and make them unable to take any reaction to aggression from the outside. In addition, the energy and information paralysis of the country will arouse serious public dissatisfaction. Future armed forces must therefore have appropriate instruments to fight in cyberspace in order to maintain their ability to operate efficiently. Taking into account the future digitization of the battlefield, cyberspace will become an increasingly valuable tool for espionage, sabotage and diversion, and information will be increasingly used as a weapon. Effective conduct of activities in this field will require not only a strong emphasis on information (psychological) operations, but also a rethinking of the role of public opinion as a key element in the success of state military operations.

[38] TRADOC, "The Operational Environment (2021–2030)."

The growing possibilities of artificial intelligence allow for the automation and autonomy of combat systems, both sensors and effectors, but above all they can improve the decision-making process. This will shorten the decision-making cycle, especially in the targeting process. Decision dominance is a new term meaning that commanders sense, understand, decide, act and evaluate faster and more effectively than their opponents. On the other hand, the use of artificial intelligence and calculations based on machine learning is to relieve them and staff from performing time-consuming functions, which will speed up the decision-making process.

With the above in mind, on the future battlefield, highly saturated with artificial intelligence, it is the decision-making dominance of commanders that will be the most important factor in achieving victory in a clash of equal parties to the conflict. This will also translate into the size and quality of command posts at all levels. They will be characterized by small numbers and quantities of people and equipment (most people will be replaced by digital/computer systems) and high mobility, and the man (commander) and his comprehensive preparation for the skilful use of the capabilities of intelligent machines will determine the success of the activities.

In turn, shortening the decision-making cycle in the targeting process will reduce the size of combat elements capable of independently performing tactical tasks on the battlefield to the level of mainly platoon, and at most company, battle, and task groups. The changes mentioned above will result in a completely new approach to the tactics of military operations at the tactical and operational level, as well as the process of preparing the commanders of the lowest command levels as those whose efficient actions will determine the success of the operation.

Conclusions

In concluding considerations about future wars, it should be emphasized that they are constantly changing, and efforts are constantly being made to overcome the constraints of the previous war. The changes consist in the implementation of new technologies, such as, among others, more effective sensors, satellite communications, drones, and precision lethal and non-lethal weapons.

Armed forces systematically make predictions about how they will be able to win tomorrow's wars. Defining the future with such precision as to effectively include it in strategic military planning is a huge challenge. Nevertheless, it can be assumed that future hostilities will be:

- take place in all domains;
- require a rapid situation assessment and decision-making process;
- include the proliferation of weapons of mass destruction;
- conducted in a complex, overcrowded environment;
- include hybrid strategies;
- increasingly difficult to resolve;
- non-linear;

- fought in the form of battles of various intensity scales;
- often carried out without the support of artillery, ships or air forces;
- took the form of asymmetric activities;
- periodically conducted without electronic devices (an opponent can disable devices or track them);
- implemented by modular units capable of conducting independent activities at the lowest levels;
- saturated with robots and drones, which, however, may turn out to be ineffective against robots and drones or systems to combat them developed by an equal opponent.
- In order to effectively carry out tasks on the future battlefield, the armed forces must:
- be capable of disrupting and defeating enemy forces in all domains;
- have an effective (interference-resistant) C2 system (the lack of an effective common C2 isolates dispersed units and threatens failure);
- have the ability to penetrate complex and advanced enemy defence systems;
- be able to dynamically manoeuvre troops, including equipment and personnel serving them, and the supply system, both in defensive and offensive operations;
- base decisions on current data as well as on a certain intuitive approach supported by analyses and proposed solutions coming from automated data exchange networks equipped with artificial intelligence,
- be resistant to new forms of threats in the form of chemical, biological or nuclear weapons; growing preparedness to combat current and emerging ABC threats will enable tactical and operational formations to continue fighting, survive and ultimately win;
- with equal technical and potential sides of the conflict, the commanders will have a picture of the battlefield transmitted in real time at all levels of command, and thus the necessary knowledge to make decisions at the same level as the enemy at the same time; the ability to make the right decision faster, i.e. decision dominance, will be necessary to win;
- the ability to conduct joint operations and joint fire at the platoon and company level will determine success at the tactical and operational level;
- proper selection and training of the platoon and company commander will be the basis for success.

The paper presents only selected aspects and determinants affecting the nature of the future armed struggle. The article may become a good introduction to further discussion and a thorough consideration of individual elements affecting military operations. Such factors may include, only briefly mentioned here, biotechnology, nanotechnology, artificial intelligence, information activities and many others.

The research issues in this case are extremely extensive and cannot be summarized in a short study. It should be noted, however, that the basic lesson from the past regarding forecasting the nature of future armed conflicts is not to focus on one trend, a single conflict or a region of the world, but to attempt a holistic approach to research, which makes it possible to characterize general trends and phenomena, allowing for the formulation of correct strategies, developing armed forces.

It is worth adding that despite the generalized conclusions indicated in the article, they cannot be applied equally to all regions of the world. Despite globalization, not all countries have the same level of technological development and access to modern technologies. Therefore, it cannot be expected that technology will spread evenly among all entities in the future. It is possible that some countries will specialize in a specific technology that they will assume as the most promising, which may result from their price, availability or changing conditions, e.g. international law in the context of limiting nuclear weapons.

Data availability

Apart from the documents cited in the Bibliography, the authors used:

- Reports of intelligence information on the Armed Forces of the Russian Federation and other key countries;

- Forecasts of the development of the future operational environment, issued by the Intelligence and Reconnaissance Analysis Directorate P-2 of the General Staff of the Polish Armed Forces;

- Analyses presented as part of the discussion of exercises, in which the characteristics of the contemporary operational environment, selected aspects of operational art and tactics, as well conclusions for the development of the armed forces in the coming years were presented;

- Reports of the Polish Armed Forces Lessons Learn System.

The mentioned above documents are not classified, but they are not for public use. An average person does not have access to the above documents; to obtain such access, one must report to the relevant military authorities and undergo a verification procedure by the appropriate military services.