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NATIONAL DEFENSE UNIVERSITY

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Adapting to the transformation of warfare and important solutions to contemporary stalemate

By:

Colonel Kakhaber Chapodze Georgian Defense Forces

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Adapting to the transformation of warfare and important solutions to contemporary stalemate

By

Colonel Kakhaber Chapodze Georgian Defense Forces

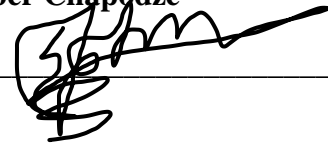
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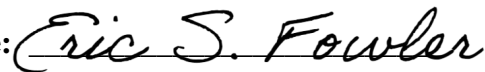
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Abstract

The nature and character of war have been the research subject since the first organized fighting between opposing parties. In the contemporary environment, challenges are in all dimensions of war and warfare conduct imposed by influential factors on the transformation of warfare. Transformation is the word that considers change based on significant factors. Historical examples show the effect technological progress had on the conduct of war and what mistakes were caused by the inadequate conduct of revolutions in military affairs that led to stalemates.

Arguments on whether the nature of war changes or not also establish stalemates in thinking about the war that undoubtedly sustained its fundamental nature unchanged. The character of warfare has undergone tremendous changes based on technology, social, cultural, theoretical, doctrinal, and organizational development in history, which created stalemates for states in adaptation to the above-mentioned influential factors.

The contemporary world is full of challenges in the physical and cognitive spheres. In the physical sphere, we must recognize any technological advance adequately, create an appropriate doctrinal basis for this, and make the necessary organizational changes in the composition of our defense forces so that the opportunities for technological progress are used to the maximum extent.

Cognitive spheres emphasize the importance of correctly defining the "dominant weapon" as the key to dealing with the challenges of war and warfare; "Dominant weapon" is perceived not only as a result of technological progress but also as a military theory, a cognitive process with the development of appropriate strategies, doctrines, and the introduction of organizational changes in the military forces.

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Dedication

To the brave Georgians heroes who gave their lives defending their nation's independence and enabling us to live on, who were, are, and will continue to be essential pillars to our nation's existence.

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Chapter 1 Introduction

The study of nature and the character of war have been studied since the first organized conflict between two opposing groups. Several brilliant military thinkers left their insights and thoughts in the form of works that study war and warfare in depth. Many of them may not have reached us. About 2,500 years ago, famous Chinese general and strategist Sun Tzu said: "War is a matter of vital importance to the state; the province of life and death; the road to survival or ruin.... It must be thoroughly studied."¹ The knowledge we have obtained throughout centuries is enough to understand that war is the most destructive and deadly action, resulting from states' foreign policy being reshaped and the international system changing. Carl von Clausewitz expresses the essence of war in his work *On War*: "War is an act of force to compel our enemy to do our will."² This phrase of the great military theorist clearly shows the harsh nature of war and the human and other factors that force the actors to fight.

Why has humanity been at war for the majority of its existence? This is a subject that is frequently posed. Causes of war can be found in classical theories of conflict studies. For example, in reviewing historical concepts associated with the "Just War" concept, in theories related to international relations and man the individual, inter-state conflict to intra-state war, and understanding causes of war based on an analysis of the social, political, and ideological, moral, economic, and technological factors that create war and its consequences.

Whether we like it or not, war is a characteristic phenomenon of the human race. However, despite numerous tries, no one has developed a hypothesis explaining why war is unavoidable. Regardless of the causes, it is clear that war is as early as man.

While we can speculate about the causes of specific wars, no single cause or set of causes can explain all wars.³ Even though we pray for peace, the best way to deal with war is to anticipate and prepare for it.⁴

Throughout history, the dynamic nature of war has stayed stable, while methods and means that affect the transformation of warfare are constantly evolving. Adapting to the transformation of warfare has consistently been a significant challenge and has established stalemates throughout history. In his work *Transformation of War*, Martin Van Creveld figuratively starts arguing about stalemate: “A ghost is stalking the corridors of the general staffs and defense departments all over the ‘developed world the fear of military impotence and even irrelevance.’”⁵ The statement serves as a thought-provoking way to highlight the complex and multifaceted challenges that decision-makers and military leadership of defense establishments in developed countries may face with the transformation of warfare.⁶

In navigating the complexities arising from the transformation of warfare, the thesis examines complex challenges of adaptation to the changing character of warfare by examining the historical and contemporary stalemates and identifying essential solutions for future strategic flexibility through cognitive approaches to warfare, integrating new technologies, with doctrines, and modifying military forces structure, offering a comprehensive framework for overcoming the current stalemates and forging a path towards a more agile and responsive military paradigm.

The research explains and systematically formulates the aspects of the changing character of warfare, the main mistakes made during recent history, which were caused by not taking into account the aspect of the transformation of warfare. The research is relevant in studying and analyzing the problems caused by the challenges of modern war. Analyzing the changing character of warfare and the experience gained from past wars will allow see the issues of the

present better and define ways to solve them; at the same time, we think about the future and be able to draw up valuable conclusions and recommendations to deal with the challenges that arise.

Theoretical research methods are general logical methods of reasoning (analysis, synthesis, deduction, analogy), and general methods - observation of current events and their analysis, description, explanation, and prediction. Analyzing technological developments and theoretical foundations using revolutions in military affairs, which implies technological development, doctrinal innovations, and organizational adaptation, as models for the study of the transformation of the character of warfare from WWI and WWII to relate each challenging historical aspect transformation to the contemporary challenges/stalemates and determine relevant recommendations.

Chapter 2 Enduring nature of war vs. changing character of warfare

Whether the nature of war or the character of warfare changes is the subject of constant discussion. Classical theories have formed a particular view regarding the aspects of the transformation of nature and character of war, after which it is appropriate to consider the aspects of the change or absolute nature and character of war, which are still controversial and hidden in mystery for modern military thinkers.

In military studies, different features of how battles are fought are described by the terms "nature" and "character." While some scholars use these terms interchangeably, others use them to draw attention to specific aspects of combat. War is, by its very nature, a strong (brutal, violent), interactive, and essentially political event. If one of these components is missing, you are discussing something other than war. When talking about war and its nature, it is evident that we are referring to a phenomenon that is war and that it has its nature as a whole, which is made

up of components that vary depending on the historical period. The character of war and warfare is made up of war and a war's nature.⁷

Since war is a political act (activity) that occurs within and between countries, these policies and societies will directly impact the nature of the conflict. There is no doubt that technology, law, ethics, culture, techniques of social, political, and military organization, as well as other variables that change through time, have an impact on warfare. As Technology evolved—from the cudgel to the spear, the bow to the arrow, the castle to the cannon, the machine gun, the tank, the ship, and the airplane—so did combat. As new weapons have been created, fighting tactics have altered. New tactics have been devised and improved to optimize the effects of technological advancements on weaponry. The character of war is determined by the technological, doctrinal, and organizational development of warfare in a specific historical era. Using the terms "character of war" and "conduct of war" in one context is possible. (See Annexes A)

In the context of the debate between the changing and the unchanging nature or character of war, it's appropriate to discuss the theoretical foundations of the evolution nature and character of war with an analysis of some of the assumptions in the first chapter of the Prussian strategist Carl von Clausewitz's book *On War*, in which he explains the nature and character of war. Clausewitz says: "War is an act of force to compel our enemy to do our will...the aim is to disarm the enemy."⁸ According to Clausewitz, this is the most critical issue because if the opponent is disarmed, he will not be able to interfere with your ultimate goals. "War is never an isolated act."⁹ States are interconnected in many ways – diplomacy, trade, movement, etc. After the outbreak of war, activities in these areas do not cease, and it is necessary to consider them during the war.

“War is not a single short blow.”¹⁰ Because of the effects of all the various events of war, it is not possible to predict at the outset how it will end. The commander should be able to present the outcome of events in the distant future and update or adjust plans according to the circumstances of the case. “In war, the result is never final.”¹¹ The effects of one war may be rejected by the second war, and in this case, being ready is a necessary condition for future war.

“War is an act of policy; on its own, it would drive policy out of office and rule by the laws of its own nature.” This is one of Clausewitz's most important insights. Competent powers must wage the war. War only for the sake of war, not aimed at just political ends, is divisive and usually devastating, just as antiquity was pointed out in antiquity.¹² Clausewitz was a philosopher of the early war, never limited to explanations. To sum up, for Clausewitz, war is eternal and ever-changing. The essential nature of war remains unchanged, but methods and means are constantly evolving and changing. Carl von Clausewitz, the most comprehensive theory of war, described war's enduring nature. If his definitions still apply to the current environment, then the nature of war will always be the same. War has an enduring nature that demonstrates continuities like a political dimension, a human dimension, and the existence of uncertainty, fear, friction, violence, and a contest of wills. While these continuities are present in all wars, their nature will remain unchanged.¹³ (See annex J)

Clausewitz's classic approach to the stability of the nature of war and the evolving character of warfare has opposing ideas. Some scholars think that “technological achievements trigger changes in the nature of warfare.”¹⁴ First, in this case, we are dealing with the misuse of the terms “the nature of war” and “the character of war” and the widespread misrepresentation of the term over the years. Particularly if they mention the nature of the war but, in reality, discuss

the character of warfare. The nature of war is always unchanged, and the capabilities, methods, and techniques used to wage war change over time. (See annex A)

Second, the term can be understood as it is written in the modified form “nature of warfare,” and in this case, if we go by the word “nature” for a little while, “warfare” will remain, which is directly related to the character of war. War has a changing character and depends on the context of the historical period and the context in which the war was fought using the methods of that time warfare. War and warfare are different terms, and they have different meanings. Therefore, we should exercise caution while using them. Certainly, warfare doesn’t have a permanent, irreplaceable phenomenal “nature,” as it is simply a method of how war is waged.¹⁵

The character of war describes the changing way in which war as a phenomenon is demonstrated in the real world. Since the war, as Clausewitz writes, is a political act taking place in societies and among themselves, the specific character of war will be explicitly shaped by these policies and societies, which Carl von Clausewitz calls the “spirit of the age.”¹⁶ Sometimes, the word “nature” is misused, and the authors may have meant “the character of war” in its place. As U.S. Army Lieutenant Colonel Rob Taber mentions, the nature of something is the basic structure of it. Nature is essentially this “something”. The character of something combines all the different parts and details that make up this “something.”¹⁷

Theories speaking about the changing nature of war are controversial. When analyzing them in detail, they only deal with the issues of nature in a strategic context. In other cases, if they talk about one battle or engagement, the means, methods, and techniques of warfare in general, the discussion is about the change in the character of warfare. The character of war is changing and, as Clausewitz would say, has to be taken into account with a particular historical period and context.¹⁸ (See annex A)

Chapter 3 WWI and WWII Transformation of warfare

3.1 Aspects of transformation of warfare

In the context of the transformation of the character of warfare, it is essential to consider the revolutions in military affairs (RMA) with technological development, doctrinal innovations, and organizational and cultural adaptation. RMA typically starts with the development of Modern technology; that being said, increases in relative military efficiency cannot be achieved solely through technology. Numerous technological advancements have been made since the Industrial Revolution, some designed for military applications or other purposes. For instance, creating dependable internal combustion engines has enabled the building of self-propelled vehicles, such as automobiles and aircraft. As demonstrated by Blitzkrieg, significant transformation can only occur when, according to technologies, theoretical and doctrinal innovations, and organizational/structural adaptations that frequently necessitate or produce new military units that reflect the altered circumstances take place.¹⁹

When adequate military theories that discuss the proper employment of modern technology are mixed and integrated into logically consistent doctrines, it can be called Doctrinal Innovation. Organizational adaptation is the most profound change that requires significant bureaucratic recognition and institutional change. For example, the success of the Soviet deep operations doctrine took decades of testing the doctrine on training fields in the interwar period and even on actual battlefields during WWII to adjust the forces' organizational structure to the technological and doctrinal change. The success of "Blitzkrieg" required not only the technology of a tank and the logically consistent doctrine of conduct of battles using tanks but also the key organizational and cultural changes reflected in the new combined arms operations, concentrated

on the German armored division. Additionally, fully realizing the promise of new technologies required military organizations' intense training on their use and interoperability.²⁰

The major shift in the central aspect of battle is a feature shared by aspects of the transformation of warfare represented by RMA. There are situations where an improvement in the overall conduct of warfare is proportionate to the extent of change in a fundamental element of RMA. These advances or orders of magnitude have the power to fundamentally alter the rules of the game, making it nearly difficult for an organization that has not made comparable changes to compete successfully. Ultimately, this leads to the obsolescence of a basic capability in warfighting.²¹

Revolutions in Military Affairs (RMA) work well across the four generations of wars and are synthesized using all three elements from the examples mentioned above; if technology were developed in one generation of war, doctrinal innovation, and organizational adaptation would take some time to develop accordingly. For instance, Blitzkrieg's theoretical foundation was underpinned during World War I as a doctrinal innovation that was adequate for technological development but found organizational adaptation and use in the Third Generation of War during WWII.²²

To better understand the character of war and the essence of warfare at this point, it is important to evaluate the four generations of war chronologically and consider how it developed within specific historical contexts. A team of US analysts, including William Lind, developed the concept of "four generations" of war. Generally divided into four generations, it begins with the Peace of Westphalia from 1648 when the Thirty Years' War ended. (See Annexes B, C)

By rough calculations, the first generation of modern war lasted from the Peace of Westphalia 1648 to 1860. At this time, states established a monopoly on hostilities. Before it,

many different entities or groups of organizations could wage a war. Families, tribes, religious organizations, cities, business associations, and so on are a few examples. They could use not only the armies and navy but also many different capabilities, and now the military forces of a state cannot imagine a war otherwise than armed forces with their opposing armed forces.²³

In the first generation of modern war, military operations started to use linear and colonial formation tactics, where battles had an official character and the battlefield was orderly. The value of first-generation wars comes from the established order, battlefield-created order, and military culture. (See Annexes B, C) Most of the factors that differentiate the "military" from the "civilian" – military uniform, salute, thoroughly keeping hierarchy or rank, etc. - were the products of the first generation designed to enhance the culture of order. The problem is that the orderly battlefield began to break around the middle of the 19th century. There were still mass armies, soldiers who wanted to fight, gradually rolled-up muskets being introduced, and then muzzle-loaded rifles and machine guns - all of which led to earlier linear and colonial formation tactics becoming obsolete and later suicidal.²⁴

Second-generation war kept the battle line but focused on using technologies. Technological developments such as the Maxim machine gun enabled smaller units to operate more independently; they moved quickly, tactically, without mass casualties, and took advantage of cover and concealment, unlike the first-generation war.²⁵

During and after World War I, great importance was given to firepower, primarily indirect artillery fire. Its purpose was to defeat an enemy, whose doctrine was formulated as follows: "Artillery conquers, the infantry occupies."²⁶ Through centralized control, the actions of firepower were highly synchronized, where detailed, specific plans and orders were applied for infantry, tanks, and artillery assets. (See Annexes B, C)

Like the second one, the third generation war was the product of World War I. It was developed by the German army and is known as the "Blitzkrieg" or the Maneuver warfare. The basis of the third-generation war is not the firepower and defeat of the enemy but the agility, the unexpectedness, and the disorganization of the enemy, both physically and spiritually. From a tactical point of view, the third-generation military forces during the attack are trying to penetrate the enemy's rear area and cause its overall collapse from the rear to the front line. Instead of the motto: "Get closer and destroy," the motto here may be "Bypass and disrupt in the defense." The military force tried to trick the enemy and then cut him off.²⁷ War is no longer a clash in which opposing forces try to maintain or advance the battle positions.²⁸

Third Generation War, unlike the Second Generation, was no longer a linear combat. Not only tactics but also military culture changed during the third-generation war. Third-generation military forces have focused on the outside - the situation, the enemy, and the result the situation requires and not on the inside – the process and method. A significant achievement of this time was the leading of troops using mission orders and mission command in the modern sense. The use of the Blitzkrieg by the Germans during the French occupation demonstrated the speed and maneuverability against static artillery and trench defense for the first time. Germans could quickly break through the defensive lines and capture the enemy's rear areas using tanks, mechanized infantry, and close air support. The initiative was more crucial than compliance. Mistakes were more likely to be tolerated when they stemmed from excessive initiative as opposed to less, and self-control, not force, was required.²⁹

The Fourth Generation war is the most significant change since the Peace of Westphalia, even though some characteristics from the Third to the Fourth Generation are still present, such as initiative and decentralization. In the Fourth Generation War, the state's monopoly on war

ended. Nation-states around the world regularly fight and lose against non-state organizations like Hezbollah, Hamas, and al-Qaeda.³⁰ There will be several objectives for the Fourth Generation of warfare, which will have both transnational and subnational aspects. It is based on the fundamental idea that stronger political will can beat stronger military and economic might when used appropriately. The nonstate entity that fights war, typically against one or more states, will be the main participant in 4GW. Because the opposing forces bring different perspectives, ideals, and a different battlefield ethos to the fight, the resulting clash is inevitable to be asymmetric.³¹ (See Annexes B, C)

Aspects of transformation of warfare, RMA and Four Generations of Warfare are important tools to analyze war and warfare in depth in terms of width and context. RMA allows us to study warfare in-depth: To study campaigns and explore them thoroughly, referring to sources and applying various theories and cases of application of technological developments, doctrinal innovations, and organizational adaptation within the historical context. (See annex D) The four generations of warfare construct help to study warfare in width by observing, how warfare has developed over a long historical period.³²

Besides RMA and Four Generations of War analysis, it is important to study war and warfare in context. Contemporary leaders face Multidimensional challenges that often lead to stalemates simply not properly understanding the context of their social, cultural, economic, human, moral, political, and psychological dimensions because “the roots of victory and defeat often have to be sought far from the battlefield.”³³ (See annex D)

3.2 Analyzes of technological developments affecting the WW I and WW II transformation of warfare

In the days of Alexander the Great, the dominant weapon' was a large spear, eighteen to twenty-one feet long, the reach of which dictated Alexander's chosen tactics. Equipped with these weapons, his heavy infantry would hold back the enemy, pin him down, and thus allow his heavy cavalry to take advantage and charge. In the Middle Ages, the English longbow served a similar function, as killing French knights or their horses allowed the English to attack the enemy's center.³⁴

The discovery of gunpowder and the invention of firearms and artillery signaled that the end of the age of chivalry was approaching, and the breakdown of the medieval military organization in which knights played a crucial role became inevitable.³⁵

The innovatory fact was the introduction of gunpowder in military affairs, which essentially changed the geometry of the battlefield. For centuries, commanders operated in the "fog of war" because black gunpowder produced so much smoke that it was difficult to see a clear picture of the battlefield; towards this direction, a significant improvement was the development of white gunpowder in 1884 by a Frenchman named Paul Vieil, which produced almost no smoke.

Innovations such as large numbers of rifled barrels, army mobilization, railways, the internal combustion engine, the telegraph, and other technological developments revolutionized combat and have been the primary drivers of cardinal shifts. For this study, it is essential to talk about how technological advancements during World Wars I and II changed the nature of combat while examining historical examples of successful and unsuccessful use of those new technologies.

One of the most significant technological developments before World War I was the development of the first rifled musket. For example, the Austrian rifled Lorenz musket, first used in 1854, was a significant advancement over the smooth-bore musket, which fired a bullet with more velocity and increased long-range shooting. A significant development was the invention of the bolt action gun. With a bolt action gun, the shooter no longer had to stand up to load it, and he was able to load the weapon while lying down under cover. The new weapon allowed the soldier to increase his rate of fire and no longer had to reload the weapon after each shot.³⁶

Another technological advancement was the Lee Medford muzzleloader, which was adopted by the British Army in 1888; this meant that the soldier no longer had to load a single cartridge into the weapon; he simply changed the muzzle.³⁷ In this regard, the Maxim machine gun, which appeared in 1886, was widely used by many countries before and during the First World War. Also, a new invention was the barbed wire, invented in 1870 by the American Joseph Glidden. With his invention, Glidden helped farmers to store their goods on their estates. Undoubtedly, the military was also interested in this fact and found its use in the Spanish-American and Russo-Japanese wars. Glidden's seemingly peaceful invention later found widespread use in World War I.³⁸ Barbed wire was placed in front of the trenches of the positions to prevent direct attacks. It slowed the pace of the enemy's attack and made them effective targets for the newly developed Maxim machine guns and grenades. Barbed wire was able to withstand the bombardments. It was easily replaceable in case of damage and had enough open space to produce automatic fire.³⁹

The next innovation is steam power. It first influenced naval battles and then - on land. The first small vessel that could be considered a steam warship was the Demologos, commissioned in 1815 for the United States Navy.⁴⁰ From the early 1820s, the British Navy

began building small steam warships, and by the 1830s, the navies of America, Russia, and France were experimenting with steam-powered warships.⁴¹ The impact of steam power on land increased the ability to move strategically quickly. It found its first intensive use during the American Civil War.

The second employment of steam power was the railway and its system that enabled states in the context of military application to move troops and supplies faster on long distances, enabling strategic mobility of soldiers. For example, the genius who developed the military-railway capabilities was the American railway designer-engineer Herman Hoft. The American Civil War was the first war in which large strategic units and strategic supplies were transported for the first time. From then on, railway junctions became objects of decisive importance for both sides of the war.⁴²

Another critical advance is the invention of the internal combustion engine and its appropriate use in military work. The first combat use of the internal combustion engine was in an airplane, which itself was an innovation. Italian Captain Giulio Javotti was the first person to carry out the world's first bombing from an aircraft on November 1, 1911. Javoti fired four hand grenades at Turkish troops encamped in Ain Zara, Libya, from a height of 600 feet.⁴³ Along with airplanes, early aviation relied on inflatable balloons. Balloons were used for reconnaissance, tracking, and adjusting artillery fire. These systems made artillery fire more accurate in World War I. The technological advancements mentioned above have had a major impact on tactics. In particular, it gave a great advantage to defense over attack, which later led to the stalemate of World War I, known as trench warfare.

The creation of the tank as an important stage of technological progress in military history dates back to 1914 when a small group of middle-ranking officers of the British Army

persuaded the British War Office and the government to consider creating an armored vehicle. One of their suggestions for this was to use a caterpillar tractor, which was used to pull heavy cannons. As a result, the early development of the tank was associated with the British Royal Navy. The first tank design, the "Little Willy," appeared during WWI in September 1915, and later improved models were developed to overcome trenches better; those appeared in the Battle of the Somme in September 1916.⁴⁴

WWI changed how wars were conducted in many aspects of the 20th century. New types and families of troops appeared. The war brought tank and anti-tank duels, air battles, strategic bombing, air reconnaissance, air defense, large battleships and cruisers, submarines, naval landings, and air support for ground operations... a new third dimension was added to the war space. Logistics was based on the internal combustion engine, and troops' operational and tactical management was based on electrical communications. The horrors of chemical weapons have become commonplace.

In terms of technological level, firepower, and fire control, artillery became the dominant means of fighting in World War I, the "dominant weapon," and indirect fire became the dominant form of fire production. In 1916, the so-called "Moving barrage fire" was used for the first time during the Somme campaign. The same applies to means of combat, such as tanks and chemical weapons, which were first used in the theaters of World War I. In World War I, artillery was the biggest killer on the battlefield - 75% of the enemy's casualties and combat losses came from artillery.⁴⁵

Innovations like machine guns multiplied the potential rate of fire for a small group of individuals; aviation increased its capabilities gradually, and mechanized warfare started to improve and slowly increased the speed to sustain maneuvers. Realization of change took years

with significant uncertainty regarding adapting to technological change with the doctrinal and organizational adaptation in particular time and space creating a stalemate that, in wartime situations, costs millions of lives sacrificed for nothing.⁴⁶

Before World War I, the French, German, and Russian armies worked on offensive doctrines. These doctrines arose mainly because all named armies had an inherent tendency to attack, resulting in selective interpretations of the wars of 1866 and 1870.⁴⁷ Inappropriate doctrinal and organizational adaptation to the technical shift in the second half of the 19th and the beginning of the 20th century was a key source of stalemate for the opposing parties during World War I. It became clear that these flawed doctrines and organizational structures had tragic consequences due to their misjudgment of the warfare conditions of the time. The conditions of war have changed due to technological changes, but the doctrines of armies have remained the same. Machine guns, rapid-fire artillery, and barbed wire greatly enhanced elements of warfare, such as armaments and force protection. Increasing firepower will generally help defense more than offense, and increasing mobility will do the opposite.

Until 1918, Armies could not develop appropriate means of response corresponding to the prevailing conditions. As a countermeasure, the Germans chose penetration (infiltration) tactics as a doctrinal innovation, while the British and French chose the tank as a technological innovation. Both countermeasures were correct and appropriate, and as World War II later showed, the enemy could be crushed due to this approach. However, it was tragic that the professional military did not correctly assess before the start of the war what the consequences of technological development could have in future wars. Had they done so, the death toll would probably not have been so numerous.⁴⁸

3.3 WW II Case study of applying technological developments, Doctrinal innovations, and organizational adaptation in strategies of Blitzkrieg and Deep operations

The case study investigates the dynamics of technological innovations, doctrinal shifts, and organizational adaptations in the execution of Blitzkrieg by the German Wehrmacht and Deep Operations by the Soviet Red Army during World War II. Analyzing specific instances, this study aims to illustrate how advancements in technology, changes in military doctrine, and organizational adjustments influenced the success and failures of these strategic approaches.

The bitterness of the defeat experienced during the First World War had a good influence and motivated military thinking and renewal. As a result, the Wehrmacht began the war with orderly doctrine, effectively organized force structures, and revolutionary tactics. The Germans realized that the mobility of armored vehicles, radio communication, and aircraft would change the battle conditions surrounding the war elements. They used this insight to create doctrine and force structures and develop tactics to exploit the new conditions. The mentioned combination, it can be said, turned out to be invincible, and for almost four years, no one was able to stop the blitzkrieg.⁴⁹

Specific historical contexts, technological advancements, and strategic necessities influenced the development of Blitzkrieg and Deep Operations. During the interwar period and the early stages of World War II. While Blitzkrieg aimed at rapid, mobile offensives to overcome limitations imposed by treaties, Deep Operations sought to address the challenges posed by the vast Eastern Front and early Soviet military setbacks. Developing these two maneuver strategies is the subject of discussion on how these strategies developed and proved right or wrong on the

battlefield and whether these strategies have stalemated according to aspects of the transformation of warfare.

Advances in motorized and mechanized warfare, especially the development of tanks and motorized infantry, offered new possibilities for swift and deep offensives. In the period between World Wars I and II, the Germans realized that the tank was the new dominant weapon in ground combat. Its importance was based not only on the fact that it was far superior to other weapons but also on the fact that its ability to move quickly over land determined the pace of battle. They were also aware that the tank had the function of striking.⁵⁰ With this tactical idea in mind, they, in the interwar period, developed a force structure and tactics that reflected their views.

Blitzkrieg Doctrine of Combined Arms emphasized the integration of various military arms, including infantry, armor, and air support, into a cohesive and rapidly advancing force. The German military, learning from the experiences of World War I, sought to break away from static trench warfare and promote dynamic, coordinated attacks.⁵¹ Blitzkrieg's doctrines focused on the strategic encirclement and rapid defeat of enemy forces. The idea was to create a strategic shock by bypassing heavily fortified positions and enveloping the enemy, cutting off their lines of communication and supply. Blitzkrieg also recognized the importance of psychological warfare. The attacks' rapid pace and shock effect aimed to disorient and demoralize the enemy, making it difficult for them to mount an effective defense.⁵² (See Annexes E, G)

The Soviet Union faced significant military defeats during the early stages of World War II, particularly against the German Blitzkrieg in 1941.⁵³ The Red Army recognized the need for a comprehensive and flexible military doctrine to counter the rapidly evolving character of warfare. The large Geographical Scale of the Eastern Front required a different approach to warfare. Deep Operations were designed to address the challenges of large-scale warfare,

focusing on creating strategic depth and the ability to conduct simultaneous offensive and defensive operations.⁵⁴

Deep Operations aimed at achieving operational flexibility and the ability to respond to dynamic battlefield situations. The doctrine emphasized decentralized command and control, allowing lower-level commanders to adapt to changing circumstances. Given the early setbacks against the German forces, Deep Operations sought to create strategic depth by preparing multiple defensive lines and developing the ability to absorb enemy offensives while maintaining counterattack capacity.⁵⁵ (See Annexes F)

The interplay between technological advancements, doctrinal innovations, and organizational adaptations was pivotal in shaping the application and success of Blitzkrieg and Deep Operations during World War II. The development of fast and heavily armored tanks, coupled with motorized infantry, provided the speed and firepower necessary for Blitzkrieg offensives—innovations such as the German Panzer divisions allowed for rapid breakthroughs. The integration of air support, especially close air support and the use of dive bombers, played a crucial role in disrupting enemy defenses and supporting ground forces. The Luftwaffe's coordination with ground forces became a hallmark of Blitzkrieg tactics. Advances in radio technology improved communication between different units, enabling rapid coordination and synchronization of attacks.⁵⁶ (See Annexes E, G)

In Deep Operations, the Soviet emphasis on artillery and defensive technologies was crucial for creating fortified defensive lines and repelling enemy offensives. Anti-tank artillery and fortified positions helped in slowing down enemy advances. The Red Army utilized aviation for reconnaissance, disrupting enemy supply lines, and strategic bombing. While the Soviet Air Force faced challenges early in the war, it adapted and played a role in deep offensive and

defensive operations. Also, improvements in infantry weapons, including small arms and anti-tank rifles, contributed to the effectiveness of Soviet infantry in both offensive and defensive operations.⁵⁷

As for the Doctrinal Innovations, Blitzkrieg emphasizes rapid maneuverability and exploiting weak points in enemy lines. The doctrine prioritized speed, surprise, and the use of combined arms to encircle and overwhelm the adversary. Integrating infantry, armor, and air support into cohesive units was central to Blitzkrieg.⁵⁸ The doctrine encouraged a synchronized and harmonized approach to warfare. The Red Army's Deep Battle Doctrine focused on creating operational depth, conducting simultaneous offensive and defensive operations, and facilitating the ability to counterattack strategically. It emphasized the importance of flexibility and adaptability in a dynamic battlefield. It is important to mention that Deep Operations incorporated the concept of operational art, where military operations were not just tactical engagements but part of a broader strategic plan. This involved the coordination of multiple fronts and the ability to switch between offensive and defensive postures.⁵⁹ (See Annexes E, G)

As mentioned before, Organizational Adaptation is the most challenging task in RMA. The German military reorganized its forces into Panzer divisions to establish Combined Arms Units, combining infantry, tanks, and artillery. This organizational structure allowed for rapid, self-sufficient mobile units to exploit breakthroughs. Blitzkrieg required flexible command structures to adapt quickly to changing battlefield conditions. Decentralized command allowed for local initiative and exploitation of opportunities.⁶⁰

In Deep Operations, the Red Army restructured its organizational hierarchy, introducing corps and fronts to facilitate better coordination across vast fronts. This hierarchical structure allowed for more effective command and control. Given the extensive nature of the Eastern

Front, the Red Army had to adapt its logistics and mobilization strategies to sustain large-scale operations. The ability to rapidly mobilize reserves and supplies was crucial for Deep Operations.⁶¹

Comparative Analysis of both Blitzkrieg and Deep Operations Interplay and interaction between technological development, Doctrinal innovation, and organizational adaptation was dynamic. Technological advancements influenced doctrinal shifts, which, in turn, necessitated organizational adaptations. For example, the rapid mobility of tanks and air support in Blitzkrieg required rethinking traditional infantry-focused doctrines. Similarly, Deep Operations, emphasizing strategic depth and multi-front engagements, influenced the development of specific technologies and organizational structures that could support such a doctrine effectively.⁶²

Blitzkrieg relied on flexibility, exploiting weaknesses for rapid advances, was highly effective in more open terrains, and aimed for quick, decisive victories. Blitzkrieg emphasized rapid, unexpected advances to bypass enemy strong points and disrupt defensive lines. The doctrine focused on isolating and encircling enemy forces to create strategic advantages, leading to the rapid collapse of opposition. Tactics employed by blitzkrieg were Combined Arms Maneuvers: Integrated use of tanks, infantry, and air support in coordinated strikes for maximum impact. The goal was rapidly penetrating enemy lines, causing confusion and preventing effective resistance. Germans organized their forces according to the requirements of maneuver warfare in specialized mobile Panzer Divisions with tanks, infantry, and supporting elements for fast, self-sufficient operations. Also, decentralized command is used by flexibility in command structures to exploit local opportunities and adapt to changing circumstances.⁶³ (See Annexes G)

Initial Successes of Blitzkrieg happened when German forces employed Blitzkrieg tactics to quickly overwhelm Polish defenses during the Invasion of Poland in 1939. After applying lessons learned during the invasion of Poland, the Germans reorganized the invasion of France, where Blitzkrieg's tactics led to the swift defeat of France, utilizing rapid maneuvers and encirclements.⁶⁴

Deep Operations focused on resilience, absorbing enemy offensives, and responding with strategic counter-attacks. Excelled in the vast, varied landscapes of the Eastern Front., had a more long-term perspective, considering sustained campaigns and the ability to withstand prolonged conflicts. Red Army Deep Operations focused on creating strategic depth by preparing multiple defensive lines and maintaining reserves. The doctrine emphasized the ability to absorb enemy offensives and launch well-coordinated counterattacks. They created strong defensive positions to absorb enemy attacks and wear down enemy forces. Maintaining reserves capable of launching counter-offensives to regain lost ground was important. As for the organizational adaptations, the Soviets developed front-level organizations. They were organized into fronts with corps and armies for better coordination and strategic flexibility. Deep operations depended on mobilizing reserves and rapidly sustaining operations across vast territories.⁶⁵ (See Annexes F)

Successes of deep Operations had been achieved in the Battle of Stalingrad (1942-1943), where the Red Army successfully defended against German advances, turning the tide of war towards launching a counter-offensive. Operation Bagration (1944) is an example of Deep Operations that contributed to the Soviet offensive that led to the destruction of the German Army Group Center.⁶⁶

Both strategies faced logistical challenges, with Blitzkrieg sometimes struggling to sustain rapid advances because Rapid advances sometimes strained logistical capabilities, leading to challenges in sustaining momentum. The important consideration is the effects of Weather and Terrain. Adverse weather conditions and difficult terrains could impede the rapid movement of mechanized forces. The Red Army faced significant setbacks early in the war, especially in 1941, before fully implementing Deep Operations. Also, coordinating large-scale offensives and counter-offensives across vast fronts required effective communication and logistical support. (See Annexes E, F, G)

In conclusion, while Blitzkrieg sought rapid conquest through encirclements and swift advances, Deep Operations prioritized resilience, strategic depth, and well-coordinated counter-offensives. The success of each strategy depended on factors such as geography, logistical capabilities, and the ability to adapt to changing circumstances on the battlefield. Ultimately, the success of both Blitzkrieg and Deep Operations lies in their ability to integrate technological innovations with doctrinal flexibility and organizational adaptability. This interplay allowed for the creation of effective military strategies that shaped the course of World War II.

Chapter 4 Contemporary and future warfare

4.1 influential technologies as Physical aspects of contemporary warfare

Since World War II, the tank as the predominant weapon has dominated until today, but technological advances on modern and future battlefields have rendered existing conventional armed forces, as they are currently organized, ineffective. Today, the tank still plays a central role in open-ground combat, but the question is: is this distinction justified in modern conditions? From the middle of the Second World War, the development of new weapons was almost entirely concentrated on destroying the tank. The tank faced each new threat with increased armor and mobility. But, of course, logic dictates that there must be a final limit somewhere - how far can the armor be improved, and what is the limit to the tank's weight so that the tank remains effective?

The fact that technical advancements are not adequately understood sets the stage for stalemate. To avoid stalemates, leaders need to ensure that the potential of technological growth is utilized to the fullest extent possible, an appropriate doctrinal foundation is established, and the required organizational changes in the composition of our defense forces' organizational structure are carried out. Historical examples demonstrated what effect technological advances had on the conduct of war and what mistakes have been made, which, as mentioned above, were caused by the inadequate conduct of revolutions in military affairs.

The tank was an innovation, and its full use as a new technology took place in full swing later in World War II, which had a doctrinal (theoretical) base and an organizational structure prepared accordingly. But today's high-precision ammunition (with an automatic targeting system) can attack tanks from both the ground and air space, posing significant problems for the durability of tanks and armored personnel carriers on the battlefield.⁶⁷ It is safe to say that today,

hiding a tank on the battlefield is as difficult a task as hiding an elephant in the wild. It doesn't matter what type of camouflage or protection tanks have. Something massive cannot be unnoticed by modern anti-tank weapons.⁶⁸

In the contemporary world, new technologies are beginning to enter service. The best-known among them are robots, sophisticated anti-ballistic missiles, laser weapons, stealth technology, space, and cyber weapons. Also, chip technologies, sensors, and computers are becoming more sophisticated and complex.⁶⁹ This part of the study focuses on contemporary technological developments and the necessary conditions for employing these capabilities wisely. One major unanswered concern regarding the use of emerging technology like robotics in the future is whether or not humans will soon be replaced by robots in combat. Should we fear that by blending artificial intelligence robots, we will lose control over these systems, and systems will control us rather than control them?

Emerging technologies such as artificial intelligence and robotics will become important determinants of defensive and offensive capabilities in the future. New technologies operated by troops in the field or from thousands of miles away affect various missions such as surveillance, reconnaissance, and neutralizing roadside bombs. In this regard, it is important to mention modern unmanned systems, which can make a significant contribution to boosting modern militaries' capabilities as combat multipliers. These changes have led to organizational, training, doctrine, and operations changes.⁷⁰

What is a robot in general? Robots are "... human-made devices with three main components: first, "sensors" that monitor the environment to detect changes in it; the "processors" or "artificial intelligence" that decides how to make a decision and the "effector"/"executive body"/ that acts on the environment in a way that reflects the decisions

create some kind of change in the world around the robot. When these three parts work together, the robot functions like an artificial organism."⁷¹

It is important to compare and contrast the capabilities of humans and robots. Human beings consist of five main components: a body structure, a muscular system to move the body structure, a sensory system that receives information about the body and the surrounding environment, an energy source to activate the muscles and sensors, and a brain that processes the sensory information and tells the muscles what to do.⁷² Of course, some intangible attributes remain, such as intelligence and morality, which are discussed below in the disadvantages of robotics. Still, at this point, there is much similarity in comparison on a physical level.⁷³

The robot consists of the same components. A typical robot has a moving physical structure, some motor, a sensor system, a power supply, and a computer "brain" that controls all these elements. They are machines that replicate human and animal behavior.⁷⁴ Existing robotic technologies in military affairs are developing in the following directions: unmanned aerial vehicles (UAVs), unmanned ground vehicles, autonomous ships, and submarines. The mentioned technologies include three main directions- land, air, and sea, but are not limited. Similar technologies progress in cyberspace and space dimensions.

The defense sector has used drones, or drones equipped with infrared cameras, GPS, and lasers, for years — from small reconnaissance and surveillance aircraft to medium-sized armed combat aircraft and spy planes. For example, the Defense Advanced Research Projects Agency (DARPA) is working on semi-autonomous Gremlin drones that can be launched and received from a base platform.⁷⁵ Pocket-sized intelligence bots are also being tested in the US. Meanwhile, the defense ministers of Germany and France recently announced plans to create a new unmanned combat aircraft called the Euro drone.⁷⁶

Drones (Unmanned Aerial Vehicles) for military purposes can perform specific tasks more efficiently, at lower costs, and save lives. They can also be sent when flying using a pilot is considered too risky or difficult. Unmanned aerial vehicles can operate in the airspace 24/7 and use weapons with greater precision.⁷⁷ Also, unmanned ground vehicles are becoming critical to ground missions to act as Combat multipliers of ground soldiers. Humans are not at risk by sending robots to do the task. Their capabilities also offer better civilian protection, even after hostilities have ended, as they can defuse bombs and mines left over.⁷⁸

Autonomous submarines scan and track the oceans and, if necessary, engage in combat against enemy ships. It may sound like science fiction, but there are already test samples of the said technology. For example, the US Defense Advanced Research Projects Agency (DARPA) 40-meter autonomous submarine "Sea Hunter" can develop a speed of 27 knots, work autonomously, and go on a mission for up to three months.⁷⁹ Autonomous submarines and ships that use computer systems, GPS, sonar, laser, infrared, and other sensors improve surveillance and are highly cost-effective. Sea Hunter operating costs are estimated at \$15,000 to \$20,000 per day, while the daily cost of operating a destroyer is \$700,000.⁸⁰

Now, consider both the advantages and disadvantages of using military robots. In terms of advantages, we can distinguish the reduction of danger: if a robot is destroyed, it is less catastrophic emotionally and politically than the death or injury of a human soldier. Robots Cost: Despite high development and maintenance costs, robots cost less than human soldiers. A soldier's long-term costs include health care, disability pay, pensions, etc. Robots are always on duty, never get tired, do not waste time, do not fear, and do not have emotions. Robots can focus on details for longer than humans. Robots can be changed and reprogrammed easily, unlike humans.⁸¹

Regarding disadvantages, Robots have limited intelligence, no morals, and no ability to judge right and wrong. Robots do not yet have a judgment of right and wrong but are strictly programmed to perform certain tasks based on specific data. Second, integrating robots into combat requires a significant shift in military doctrine to optimize the use of robots across all elements of the war. Third Vulnerability of Computerized Systems: All combat computerized systems must be hardened to withstand the combat environment, cyber-attacks, and even an electromagnetic pulse that can destroy computer and electronic systems.⁸²

Emerging technologies like robotics and artificial intelligence will play a significant role in determining future warfare conditions and conduct; by conserving human energy and reducing casualties, soldiers can last longer on the battlefield and reduce time, all to a tremendous military advantage. The relationship between military robots and the military is undergoing dramatic changes. This technology, rightly or wrongly, is changing the defense capabilities of nations, from monitoring adversary activities to conducting combat missions. The new technologies must be thoroughly tested, trained on, and integrated with everything else to maximize their strengths, minimize their weaknesses, and reach their maximum potential.⁸³

4.2 More on stalemates of utopian versus dystopian scenarios of employing evolving technologies in future warfare

Because warfare conditions are greatly influenced by emerging technologies like robotics and artificial intelligence, the Application of emerging technologies in modern warfare becomes a major and challenging task. The application of these technologies can be discussed under contrasting utopian and dystopian concepts that explore the ideas of ideal societies and nightmarish worlds, employing new advanced capabilities in positive or negative ways. When these ideas are applied to contemporary warfare, they assume a complex character that reflects

the different scenarios in dystopian or utopian environments. The stalemate is the proper application of Emerging technologies. First, solve the problem of Control over artificial intelligence and robotics, then consider the social implications of employing new technologies, involving actors, destructive technologies, and all associated risks.⁸⁴

The most desirable course of action for modern thinkers is the utopian setting of warfare. In a utopian modern warfare setting, conflicts are resolved diplomatically rather than violently. To maintain global stability, international cooperation, dialogue, and conflict prevention mechanisms would be prioritized. Utopian warfare might involve using advanced technologies for humanitarian purposes, such as rapid response to natural disasters, providing aid to affected regions, and ensuring the well-being of civilians. Nations collaborate seamlessly, pooling resources and expertise to address common challenges like terrorism, cyber threats, and the proliferation of weapons of mass destruction. Collective security measures would be in place to deter aggression warfare, which involves strict adherence to international laws and ethical guidelines. Military interventions would only occur when necessary and always with a focus on minimizing civilian casualties and respecting human rights. However, things are not and will not be ideal in contemporary and future worlds, and a significant stalemate and dangerous course of action is the loss of control of technologies and other means of warfare that can lead to a dystopian warfare setting.⁸⁵ (See annex H)

Dystopia in Modern Warfare is a major reason for stalemates imposed on decision-makers. A dystopian vision of modern warfare may involve powerful states or entities employing absolute control over populations, using advanced surveillance and information technologies to suppress dissent and monitor citizens. Autonomous Weapons and AI are at Risk. For example, in dystopian warfare, artificial intelligence and autonomous weapons could be used in combat

without limits, with disastrous results. Machines could make decisions about life and death if sufficient regulation and control are not in place. Cyber Warfare capabilities and their Threats could cripple societies, disrupting essential services, manipulating information, and causing widespread chaos. Non-state actors and rogue states might exploit vulnerabilities for their gain. Weapons of mass destruction in dystopian scenarios can create environmental degradation and biological and chemical threats. ⁸⁶(See Annex H)

It's crucial to remember that real-world circumstances typically fall somewhere between these extreme utopian and dystopian scenarios. It is important to prevent possible dystopian futures. The way that modern warfare affects countries is greatly influenced by the moral use of technology, respect for international law, and initiatives to advance world stability. To achieve a more utopian vision, it is necessary to deal with the underlying causes of conflict, promote cooperation, and ensure that technological improvements are morally justified.

4.3 Cognitive aspects of contemporary war

In addition to technology, it is essential to look at the mental and cognitive aspects of Contemporary war. It can be military theory, military strategy, or the scientific approach to war, the art of war, and dynamics of war. To look at this issue differently, it is crucial for modern warfare to consider both physical and cognitive aspects. The physical aspect is related to technologies and their development and organizational changes; based on technologies, the cognitive aspect is defined by developing appropriate strategies and doctrinal development to adapt to technological advances on the modern battlefield. (See annex I)

One of the state's most important and most difficult tasks in modern war is correctly defining the "dominant weapon:" military theory, complex technologies, or a combination of both. The outcome of the war depends on the choice. According to the physical and Cognitive

aspects of dominant weapons as challenging tools for adapting to the changing character of warfare, science, art, and dynamics of war are essential aspects to be considered by commanders. Given the evolving nature of war, commanders must be flexible in the modern world and receptive to the questions of science, the art of war, and the dynamics of war. (See annex I)

Science includes many aspects of warfare, such as ballistics law and mechanics, disciplines such as fires, weapon effects, troop movement and deployment methods, and tempo. Science cannot describe the full phenomenon of warfare and needs the support of another important aspect of war art: the use of creative or intuitive skills that is a matter of the art of war. Through discussion and experience, the art of war creatively uses the science of war according to the situation and considers science as a whole.⁸⁷ (See annexes I, J)

The art and science of war still do not cover the full phenomenon of warfare. In this particular situation, it is important, according to the abstract nature and character of war, to consider the dynamics of war, which is primarily the competitive interaction of people, not the dynamics of war science and art. Generally, warfare is a dynamic process of human competition that requires knowledge of war science and the creative use of the arts but is ultimately governed by the human mind. Understanding the science and art of war and applying it effectively in training or real-world situations is possible, but as far as the dynamics of what goes on in people's minds (in the minds of two opposing commanders), recognizing them is a big challenge.⁸⁸ (See annexes I, J)

The contemporary transformation of warfare poses significant challenges to military organizations and governments, leading to prolonged stalemates and complex conflicts. These challenges include evolving technologies, abstract dimensions of warfare (asymmetric threats, Hybrid warfare), and Cognitive aspects of applying proper strategies to avoid stalemates. This

set of critical factors addresses the contemporary challenges in adapting to the transformation of warfare, providing a comprehensive framework for tackling the evolving character of conflict and reducing the likelihood of protracted stalemates. (See annex I)

In his book *Transformation of War*, Martin van Creveld discusses issues that brought war into an abstract dimension that made it difficult to understand the phenomenon of war. M. van Creveld's work also has its message – mainly, modern “strategic” ideas about the problems above are fundamentally flawed and incomplete and rely on the "Clausewitz" image of the whole world, either outdated or false. In this regard, Creveld contradicts Clausewitz's basic assumptions.

“We are standing today, not at the end of history but at a historic turning point. Just as Alexander’s exploits only reached the Middle Ages as a dim, fantastic tale, so in the future, people will probably look back upon the twentieth century as a period of mighty empires, vast armies, and incredible fighting machines that have crumbled into dust.”⁸⁹

Mary Kaldor shares van Creveld's view. The thesis, clearly shown in his work, *New and Old War*, avoids the classicist approach to war, formulated as follows: “War between nation-states takes the form of anachronism (an old remnant that does not fit into modern life).” There is a new kind of war that can be described as war a mixture of organized crime and massive human rights abuses. Old-fashioned thinking about the war has dramatically exacerbated the situation in the typical new Iraq war – with less attention being paid to rebels, chaos, and occupation by other types of conflict.”⁹⁰

In “irregular” –unconventional conflicts, the participants use the tactics of the "rebels" and try to avoid the battle instead of engaging in it. Max Boot, a representative of the US Foreign Relations Council, in his book *Invisible Armies*, writes that Tribal warfare, dating back to

Mesopotamia 5,000 years ago, is the norm, while interstate war is the exception. Guerrilla warfare, a modified form of warfare, is as old as mankind.⁹¹ Conventional warfare methods produced by state actors against non-state actors have lost their power, and we must confront this reality.

The new wars will be fought with various combinations of state and non-state networks. War actors will achieve political, not physical, goals by controlling people through fear and terror. The war is no longer financed only by the state but by various sources that will continue the violence.

The complexity of state or non-state players' activities in a nonlinear, abstract construct causes stalemate; as a result, the nature of warfare varies depending on the actors' actions. In the context of power struggle and influencing different actors with hard or soft power. The Fourth Generation war highlights the threat of invasion by immigrants as baseline reasons for future tensions between the states and influencing motives on actors.⁹² 2008, the Russia- Georgia war demonstrated Russia's ability to use force in large-scale kinetic war. Today, Russia's transition from hard power to soft power is a new approach. For example, there have been conflicting opinions and debates on the Case of the entry of over 100,000 Russian nationals into Georgia after Putin announced a new wave of mobilization.

The presence of new Russian migrants raises concerns about political, economic, cultural, and security impacts. Some predict economic growth, while others predict increased crime, corruption, and Russian soft power. Short-term risks include sabotage threats, increased vulnerability to Russian espionage, and an influx of security agents. Georgia faces internal confrontation, recruitment issues, and damage to its reputation. Russian propaganda, soft power, and territorial security pose significant threats in the long term; with the concentration of

Russians in Georgia enhancing Russian propaganda effectiveness, it is a matter of concern about the potential use of Moscow's "discrimination" against the Russian-speaking population to strengthen its political influence.⁹³

The above-mentioned significant challenges and stalemates lead to a “fog of war” that covers the minds of modern thinkers/strategists. “War is the realm of uncertainty; three-quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty. A sensitive and discriminating judgment is called for; a skilled intelligence to scent out the truth.”⁹⁴ The fog of war is a pervasive conceptual fog that surrounds decision-makers, which is the uncertainty in situational awareness experienced by actors in the war. Uncertainty regarding one's capability, adversary capability, and adversary intent during an engagement, operation, or campaign. (See annexes A, I, J)

In this thesis, Clausewitz emphasizes the most complex forms of warfare and warns us, “The first, the supreme, the most far-reaching act of judgment that the statesman and commander have to make is to establish by that test the kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into, something that is alien to its nature.”⁹⁵ This is Clausewitz's most important point about the nature of war. He is concerned about the significant stalemate, that senior commanders are planning a war for which they are prepared rather than a war that will take place.

Chapter 5 Conclusion and recommendations

The advancement of technology, the development of new doctrines, and organizational structures were primary drivers of fundamental change in the character of warfare. The proper application of technological advancements in war, which greatly altered the conditions of warfare, has been a problem in both the past and the present, and established stalemates. Future warfare conditions will continue to be drastically transformed by new technological advancements and the new abstract character of war, requiring the modification of old strategies, military doctrines, and force structure to escape stalemates and effectively employ its capabilities to achieve the desired end state.

Innovation is critical to a military's capacity to establish and maintain a competitive advantage. Focusing on specific problems or challenges can considerably enhance an organization's efforts to innovate. The modern armed forces must be adaptable enough to investigate technology that, while not immediately eliminating a threat, could become problematic if competitors—past, present, or future—pursue them with vigor.⁹⁶ The business sector is usually where actual technology development is carried out. Military organizations typically set requirements and provide funding for research and development. In addition to defining the proper requirements for capabilities and systems, military organizations must be able to identify areas in which investments, research, and development are necessary.⁹⁷

To realize the full potential of the new technologies, they must be extensively tested, trained with, and integrated with everything else to maximize their strength and minimize their weakness because there are always ways to counter them. Doctrinal/theoretical innovation is an abstract construct in military organizations. Breakthroughs in doctrinal/theoretical innovation should come from academic researchers or operational practitioners with exceptional insights.

Technology and process innovation are often closely linked in both commercial and military organizations since doctrine and tactics, techniques, and procedures are the operating systems for military organizations. Organizations in both sectors need to have robust capabilities for learning from operational success and failure if they avoid rigid adherence to approaches or doctrines that are not working.

The nature and character of war and warfare issues are widely discussed in the works of many military theorists. There are many contradictory opinions and arguments. According to the present work, we must properly analyze contradictory theories, contemporary approaches, historical experience, and context. It is necessary to identify the relevance of this challenging issue to the modern era.

From a theoretical analysis of the transformation of warfare, we can see that the basis of von Clausewitz's military theories was the wars waged by nation-states. We may or may not wage such wars in the future. The warfare changed character in the post-World War II and 21st centuries. These challenges give reasons for further research. By analyzing this challenge and adapting the thinking of war theorists, we can solve the dilemmas posed by the abstract form of war. It is essential to rethink Clausewitz's principles.

We need to take advantage of technical opportunities for improvement. Identify technological progress, properly define the predominant weapon of the age, whether will be physical or cognitive in nature, provide the necessary theoretical and doctrinal foundation, and make the required organizational changes because, in the Contemporary world, challenges Arise in multi-domain settings.

Based on the challenges of the modern era, it is necessary to use a broader range of considerations and analysis methods than the capabilities of national strengths to achieve a relevant

end state. Particular attention is paid to guerrillas, rebels, and the war against terrorists, which requires careful consideration of governmental, political, and especially the broad areas of theories to succeed in warfare.⁹⁸

Certainly, warfare other than technology is affected by law, ethics, culture, social, political, and military organization methods, and other factors that change over time and with which the techniques and methods of warfare are changing, but the nature of war remains unchanged. Adapting to the changing character of warfare requires strategic planning, investment in research and development, training and education, and international cooperation. It also demands a practical approach to identifying and addressing emerging threats and challenges as they evolve in a dynamic global security environment. We must stay well-informed of changes and challenges posed by the transformation of warfare. Whoever is the first to practice these changes in the art and science of war will have a significant advantage and avoid stalemates. If we ignore the changes of war, one day, we will find that we are not adequately prepared for the challenges.

Annexes

Annex A - Nature of war vs character of warfare⁹⁹

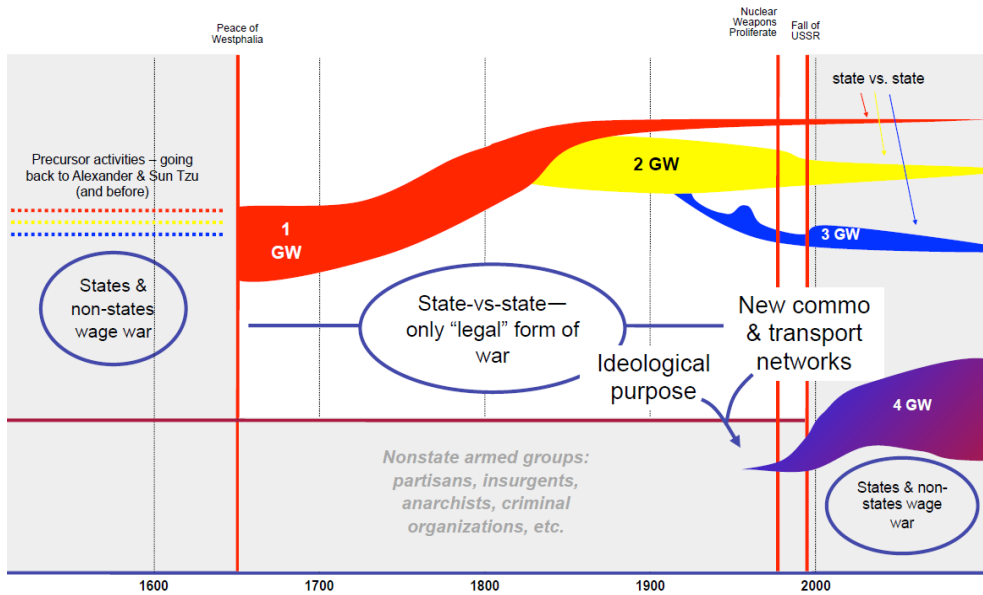
NATURE OF WAR	CHARACTER OF WARFARE
Unchanging, Enduring principles	Changing over time
Throughout history, the dynamic nature of war has stayed stable, while methods and means that affect the transformation of warfare are constantly evolving.	Depends on the context of the historical period and the context in which the war was fought using the methods of that time's warfare.
The cognitive aspect of war	The physical aspect of war
Nature is essentially this "something". More philosophical by nature.	The character of something is a combination of all the different parts and details that change over time, and make up this "something."
The cognitive aspect of war applies to equally	
Strong (brutal, violent), interactive, and essentially political events.	Explicitly shaped by these policies, technology, law, ethics, culture, and techniques of social, political, and military organization.
More probabilities, and chances Like poker game	Determined by the technological, doctrinal, and organizational development of warfare in a specific historical era
Art of war and Dynamic of war	Doctrine (tactic technics, procedures) to improve to optimize the effects of technological advancements on weaponry.
Friction and uncertainty	Contributes to friction and uncertainty

Note: Illustration, Nature of war vs character of warfare, is Original to the Author.

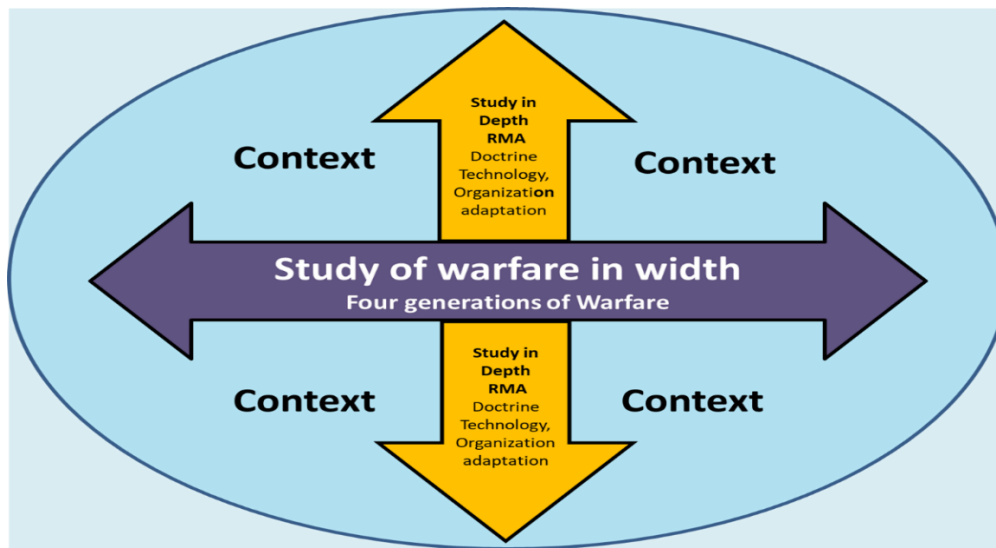
Annex B Chronological framework of four generations of warfare¹⁰⁰

GENERATION	PERIOD	BASIS
First	1648 to present	Technology
Second	1815 to present	Technology
Third	1918 to present	Ideas
Fourth	Emerging	Technology
Fourth	Emerging	Ideas

Annex C The Generations of War Model¹⁰¹

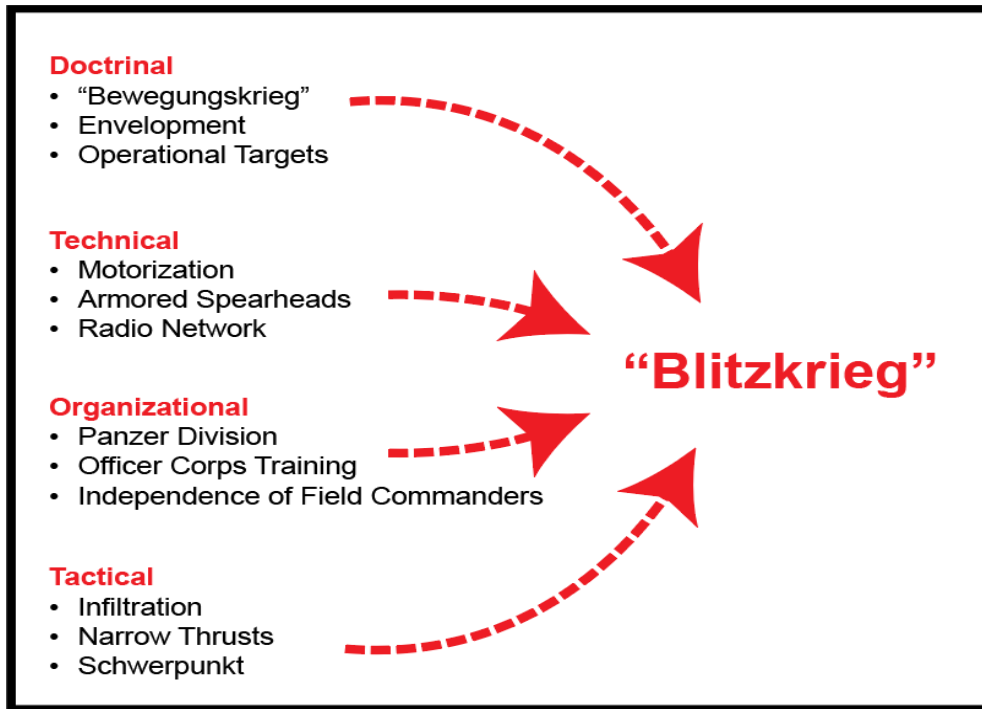


Annex D Aspects of transformation of warfare RMA, and study of war and warfare in width, depth, and context.¹⁰²

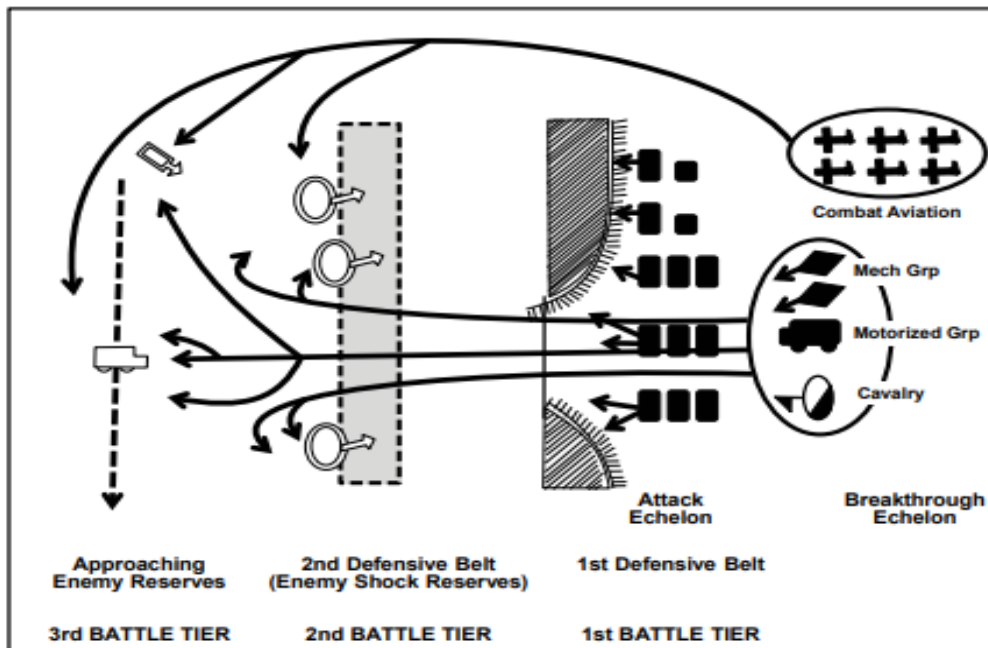


Note: Illustration, Aspects of transformation of warfare RMA, and study of war and warfare in width, depth, and context, are Original to the Author.

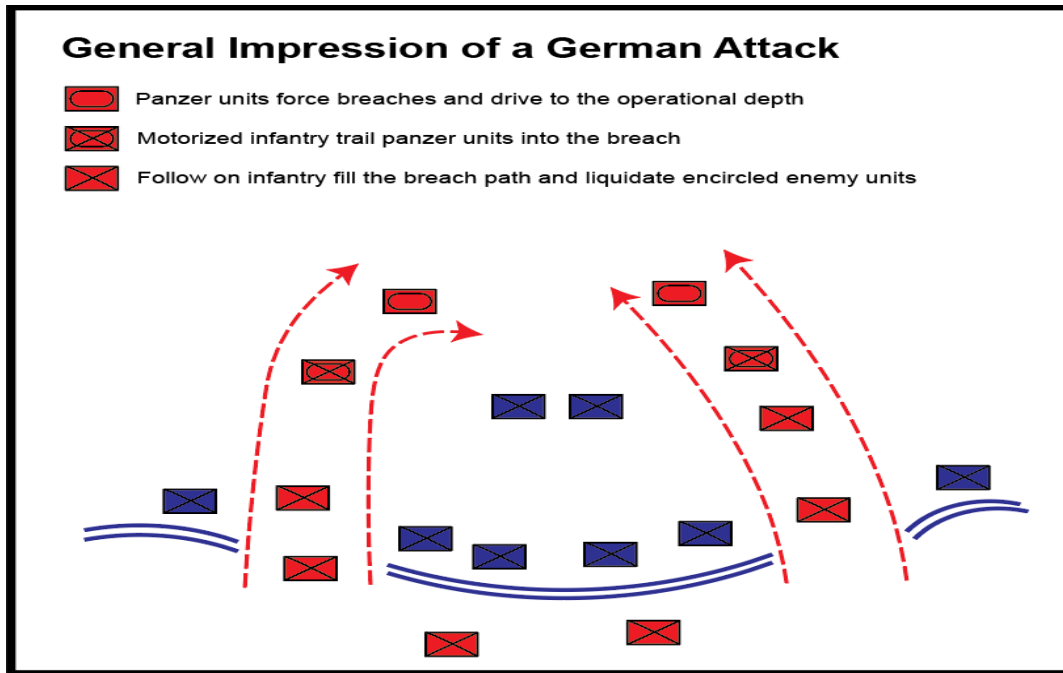
Annex E Conceptual representation of Blitzkrieg¹⁰³



Annex F Conceptual representation of deep operations¹⁰⁴



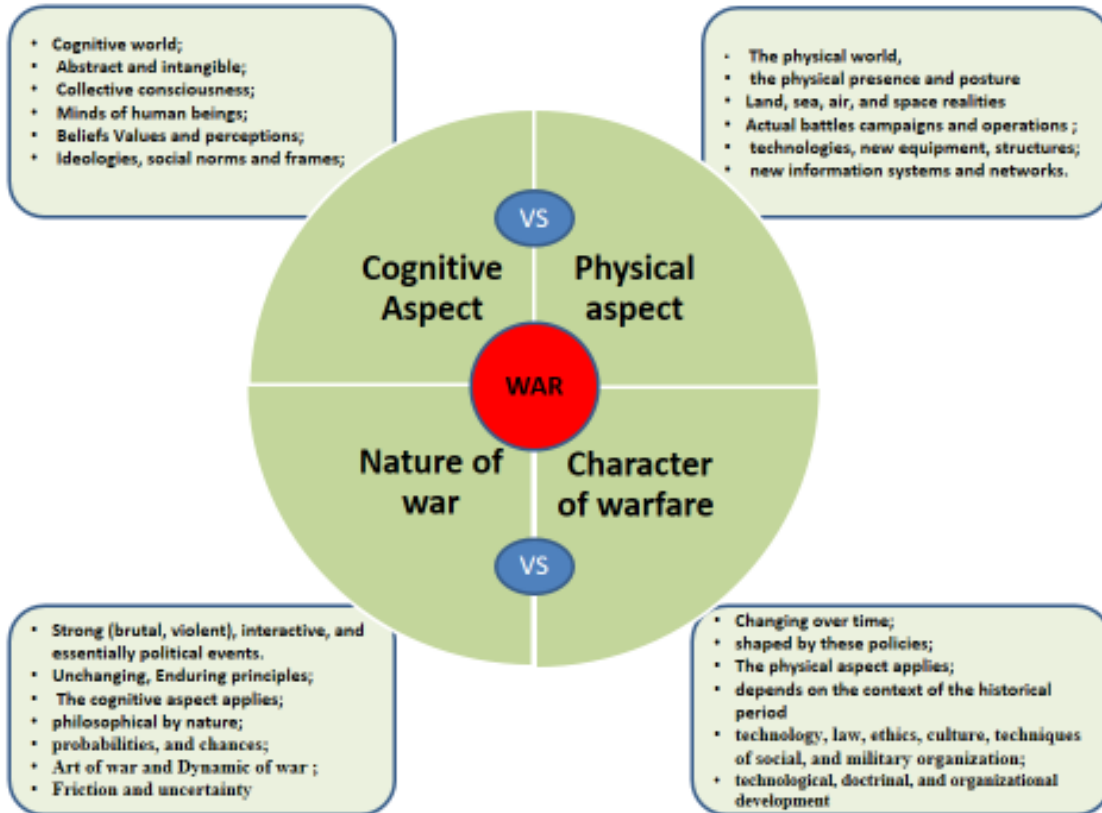
Annex G Blitzkrieg schema of Maneuver ¹⁰⁵



Annex H Compare and contrast utopian and dystopian scenarios of warfare employing advanced technologies ¹⁰⁶

UTOPIAN SCENARIO OF WARFARE	DYSTOPIAN SCENARIO OF WARFARE
System is Stable International cooperation, dialogue, and conflict prevention mechanisms would be prioritized to maintain global stability.	System is unbalanced Insufficient International cooperation, dialogue, and conflict prevention mechanisms for global stability.
conflicts are resolved through diplomatic means	conflicts are resolved through violence
Full control of means	Less control of means
New technologies and Artificial intelligence are positively employed	New technologies and Artificial intelligence are harmfully employed
examples	
Collective security measures would be in place to deter aggression warfare involves strict adherence to international laws and ethical guidelines.	Lesser collective security contract. Powerful states or entities employ absolute control over populations, using advanced surveillance and information technologies to suppress dissent and monitor citizens.
Using advanced technologies for humanitarian purposes, such as rapid response to natural disasters, providing aid to affected regions, and ensuring the well-being of civilians.	Artificial intelligence and autonomous weapons are at risk and are used in combat without limits, with disastrous results. Decisions about life and death could be made by machines if sufficient regulation and control are not in place. Cyber Warfare capabilities and their Threats could cripple societies, disrupting essential services, manipulating information, and causing widespread chaos.
Nations collaborate seamlessly, pooling resources and expertise to address common challenges like terrorism, cyber threats, and the proliferation of weapons of mass destruction.	Non-state actors and rogue states might exploit vulnerabilities for their gain. Weapons of mass destruction in dystopian scenarios can create Environmental Degradation, and Biological and Chemical Threats.

Annex I War as a whole with the phenomenon nature of war and character of warfare, cognitive and physical aspects¹⁰⁷



Note: Illustration, is modified from source by Authors

War is a violent clash of interests between or among organized groups characterized by the use of military force. It is characterized by friction, uncertainty, fluidity, danger and disorder.

The object in war is to impose our will on the enemy.

Uncertainty is the “**fog of war.**”
All decisions in war will be based on incomplete, inaccurate, or contradictory information.

THE NATURE OF WAR

The **human will** is the central factor in war.

War is shaped by human morals and emotions.

The **science of war** includes those activities directly subject to the laws of ballistics, mechanics, and like disciplines.

The **art of war** requires the intuitive ability to grasp the essence of a unique military situation and the creative ability to devise a practical solution.

(Note: The infographic includes icons of a microscope and a palette with a sword, corresponding to the 'science of war' and 'art of war' sections respectively.)

Endnote

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