# THE USE OF MILITARY STRATEGY
# IN NETWORK-CENTRIC WARFARE

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Total technological development and completely new threats and opponents in the form of nonlinearity have influenced modern warfare to change its shape and form to such an extent that most theorists believe that we are witnessing revolutionary changes in the character of war. The development of information technology particularly influences the development of new concepts of the use of the armed forces, with the most technologically advanced countries naturally leading the way.

The development of information technology has a huge impact on the modernization and transformation of the armed forces in the West. In order to reach a qualitatively new, higher level of precision and greater speed in conducting military operations, in the early 1990s, many segments of the US Armed Forces were specially equipped with modern technology, which is based on information networks. The revolution in military affairs and its implementation in the concept of network-centric warfare have become new military strategic models for the US Armed Forces.

Network-centric warfare has set new standards in warfare, relying on information superiority. In this paper, the relation between military strategy and its principles to network - centric warfare has been considered.

Kej words: *security, military strategy, information, information network, US*

## Introduction

The art of war has been developed through the history of civilization, through the natural human need to establish defence mechanisms against violent threats. This discipline has been gradually developed, in order to successfully study defence problems, which have increased as dangers to the survival of the society

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and state have increased and transformed. Nowadays, defence sciences are the main focus of the study of defence, in which military strategy, as an interdisciplinary science, in addition to studying strategic reality, has an integrating role for other scientific disciplines involved in studying the defence system.[1]

Regardless of how much technology has done, war as a social phenomenon has changed its physiognomy, and goals have always remained the same - to inflict as many material and human losses as possible, using all available permissible and impermissible means. Economic and material resources have defined the development of states in the process of the progress of scientific research projects in the field of weapons and military equipment. The dominant states in the development of new achievements are the United States, the Russian Federation, China and India. Therefore, it is not surprising that network-centric warfare, that is, warfare, as a model of modern struggles, arose in the United States in the 1990s. Network-centric activities were first implemented in the navy, and then in other branches of the armed forces. The goal was to develop cooperation, make information available and use networks that have already been in the US Armed Forces units. The network has already become new space, i.e. information space in which operations will take place at strategic level, with the maximal use of power instruments, starting with political, economic, military and information ones.

# The definition of strategy

The term strategy is developed in the armed forces, originates from the Greek words *stratos* – the military and *ago* - lead, which means observing enemy, coordinating one's own activities and looking for ways to outwit enemy. It is considered to be the science of commanding the armed forces, the art of war or a book on the art of war. The Military Encyclopedia defines strategy as "a system of scientific knowledge and skills (theory and practice) on preparing and waging war and using force to achieve certain military, political or economic goals." The initial meaning of strategy has changed in accordance with the society development and knowledge about the phenomenon of social conflicts. From a traditionalist understanding as the science of warfare, strategy has become the knowledge and skill of the highest level in some social activity. A part of strategy that the attribute "military" has been added to deals with the study of the field of human reality related to war, its preparation and conduct.

In modern literature, military strategy is considered to be the science that studies the entire military activity, finding in it the legalities that can be implemented in war practice in the conditions of some historical epoch and the conditions under which the future practice will be carried out, thus creating the necessary strategic theory. In our scientific and professional military literature, military strategy is considered as

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[1] Stanko Nišić, „*Vojna strategija u sistemu odbrane"*, Vojno delo, leto/2011, Beograd, 2011, p. 110.

"the skill of preparing and using military equipment in peace and at war within the integral state defence from all forms of armed threats to national interests and goals". However, in almost all other approaches, military strategy (as an element of state strategy) is defined as the skill and science of the preparation and use of national armed forces in order to achieve national policy goals, i.e it has a role to achieve the goals set by state policy (strategy) by military methods (force) and means.[2]

In defining (military) strategy, the Western theorists have most often used the definition of war by Clausewitz stating that "war is an extension of politics by other means". In such sense, the most widespread and retained definition of (military) strategy is the one given by Liddell Hart, who says that "strategy is the skill of using the armed forces to achieve the goals set by politics".[3]

Military strategy studies war as a whole, its physiognomy and the conditions of armed struggle; strategic problems of establishing, preparing and using the armed forces; military and strategic position of a country; strategic problems of mobilization and strategic development of defence forces; strategic command of the armed forces; system of logistic support to the armed forces in peace and at war; studies past wars, especially strategic level of military operations, the armed forces and military strategy of the surrounding countries, as well as potential allies and possible adversaries in future war.

## The theory and practice of military strategy

The theory of military strategy consists of systematized scientific knowledge about the entire reality in the defence sphere, which relates to both preparation and execution of defence strategic activities. The theory of military strategy contains the system of statements about military strategic reality, which represent generalized experience, as well as statements of normative theory that is suitable for predicting future reality. However, strategic thinking should not stop at static reality. It should also extend to dynamic changing reality, striving to reveal the causality of future conflicts, as well as methods of waging "war in peace". In that sense, it is worth considering the scope of the new theory of *postmodern military strategy*, which marks the Information Age. In the new information space, the main strategic operations, both intelligence and military ones, are taking place, as well as their media, diplomatic, economic and technical support. The military, intelligence services, journalism, diplomacy, technical discoveries, economic processes and civil population are also integrated into such a comprehensive information network.[4]

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[2] Stanko Nišić, „*Vojna strategija u sistemu odbrane*", Vojno delo, leto/2011, Beograd, 2011, p. 113.

[3] Mitar Kovač, *Istorija ratne veštine 1920-2000*, VIZ, Beograd, 2000. godine, p. 384.

[4] Stanko Nišić: *Vojna strategija u sistemu odbrane*, Vojno delo, leto/2011, Beograd, 2011, p. 115.

*Military and strategic practice* is manifested as a very complex social pheno-menon that encompasses the entirety of the activities of military leaders and armed forces in the processes of the preparation and conduct of military operations at strategic level. For a complete understanding of military and strategic practice, it is necessary to consider the causal relation and interdependence of the practice of armed struggle and the overall reality of war, military and strategic reality. The reality of war is further complicated in the conditions when direct communication in decision-making between statesmen and strategic military leaders is disrupted, as well as between strategic, operational and tactical level of military operations mana-gement. Such complex war reality and the consequent war practice have to be analyzed and explained, thus contributing to the theory of military strategy and other disciplines of defence sciences. This is necessary, especially since future war and strategic reality in general will become even more complex because the number of actors participating in it is increasing.[5]

# The tendencies of military strategy development

The current theory of military strategy does not contain norms on preparations for the future reality of war, i.e. it does not contain the forecast (probable theory) of the future strategic reality. Therefore, there is the lack of knowledge on preparations for defence in these new conditions. It is necessary to define a subject (a set of possible problems) using probability hypotheses, and then to study the future strategic reality in postmodern conditions. This would significantly improve the effective theory of military strategy. Even today, military strategy is constantly expanding and enhan-cing its knowledge by analyzing the resolution of new conflicts by military force in new conditions. In the field of predicting the character of future conflicts, military strategy relies on security assessments of the state strategy in which defence strategists also participate. On the basis of these predictions, the strategy, in its practical part of activity, makes strategic preparations of the armed forces. Therefore, it is important that knowledge in the field of defence at the level of national security is scientifically based (objective). Otherwise, the preparation of military force can be problematic for the theory of military strategy, if it is used to carry out unrealistic, irrational goals and tasks of defence. It is particularly important to notice the specificity of strategic problems - they can never be effectively solved when they have already been fully manifested. This implies the need to find strategists in the team that develops state interests and goals, as well as plans in the field of national security, who will persevere in an objective and timely analysis of the strategic reality. The role of military strategy is to prepare homeland defenders in all segments of society, as well as to prepare professional soldiers and officers for successful cooperation with allies, without which no small country can count on ratio-

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[5] Ibid, pp. 114-115.

nal defence. Therefore, the choice of allies in future war should be the subject of interest and military strategy in peace.[6]

No war has been repeated in the same way as the previous one. This is not the case in other activities, especially production ones. Nevertheless, experiences from past wars are still significant for new war practice. The theoretical significance of past experiences is reflected in confirmation or refutation of the doctrinal principles that the preparation and conduct of military operations have been based on, as well as the skills that have been used in them.[7]

Military strategy as a science can also contribute to a more realistic definition of doctrinal views on state defence, i.e. state strategy, by using results of the research on dangers that threaten state security to indicate the state and prospects of the development of phenomena in that field in the immediate and wider environment. It is the realistic forecast of conflicts and armed struggle in the future and the circumstances within which the military can be engaged in them. Such an approach to military strategy and the attitude on using its knowledge in the defence doctrine overcome shortcomings in previous military doctrines, which based their views mainly on past experiences, i.e. were not much oriented on the future reality of war. The consequences of such an unscientific defence doctrine, as well as state strategy, were fatal for the preparation and deployment of the military, which was surprised by warring events that it had to accept.[8]

## *The relationship between military strategy and doctrine*

There are three levels of waging war - strategic, operational and tactical. Military strategy considers strategic level, military doctrine considers operational level, and tactics considers tactical level. Doctrine is a link between strategic, operational and tactical level of waging war. Military doctrine operationalizes the principles defined by military strategy, i.e. it defines the ways of achieving the goals set at strategic level. Doctrine provides answers to the question of how to use the armed forces and connects tactical military operations with the achievement of the goals of military strategy.

According to Slavko Barić, when we consider doctrine, we talk about operational art of war, i.e. planning, preparing and leading/coordinating a series of related military operations (campaigns) that achieve strategic goals defined in military strategy. Nowadays, two methods of classifying military doctrines are accepted. The first method has been suggested by the US political scientist Barry Posen, who classifies military doctrines into offensive, defensive and deterrent doctrines. The second method of classifying military doctrines is based on the ways in which the

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[6] Stanko Nišić: *Vojna strategija u sistemu odbrane*, Vojno delo, leto/2011, Beograd, 2011, p. 114.
[7] Ibid, p. 117.
[8] Ibid, p. 117.

armed forces are used. In accordance with this approach, military doctrines can be classified into enemy attrition doctrines aimed at attacking its forces, and maneuver doctrines, which are not aimed at destroying enemy forces, but seek to break its will to fight and disrupt its cohesion. Unlike the previous approach that distinguishes between attack and defence, this difference disappears here - both types of doctrines can be implemented equally successfully in attack and defence. Therefore, the mentioned classification of doctrines has great advantages over Posen's classification.[9]

### Attrition and maneuver doctrines

Military doctrines based on *the concept of enemy attrition* emphasize the destruction of the enemy centre of power, which includes the destruction or coercion to surrender its armed forces. In essence, the supporters of this approach advocate a traditional approach to war, which has been clearly defined by Clausewitz: the defeat and destruction of the enemy armed forces is still a key part of every military campaign. In compliance with this view, the armed forces that have adopted attrition military doctrines prepare to wage conventional high-intensity conflicts against enemy military organization. In order to achieve this goal, the development of the armed forces focuses on the development of high-tech weapons systems and equipment that should be available in a sufficient number to ensure victory over enemy (achieving greater firepower and number in relation to enemy). Attrition doctrines emphasize the centralized control over large military formations (divisions, corps, armies); officers are required to act in accordance with standard operating procedures, and individual initiative and innovation are pushed to the background.[10]

*Maneuver military doctrines* are also based on the use of speed and mobility, but the main goal is not the destruction of opposing forces, but the destruction of its cohesion - through the neutralization of the opponent decision-making system. The maneuver approach is best illustrated by the OODA loop by John Boyd – the disruption of certain phases in the mentioned model of decision-making and decision implementation can lead to the collapse of an opponent, who is no longer capable of monitoring situation on the battlefield and timely acting. The doctrines based on the concept of maneuver put the quality of personnel in the first place and encourage initiative and innovation. Command is decentralized, and the key decision-making during fight is left to younger officers who, instead of literally following defined operating procedures, are encouraged to solve problems. However, a problem with

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[9] Slavko Barić: *Vojne strategije i asimetrično ratovanje*, National security and the future 4 (11) 2010, St. George Association / Udruga sv. Jurja, Zagreb, 2010, pp. 77-78.

[10] The examples of military operations based on attrition doctrine are military campaigns in the American Civil War (e.g. Grant's campaigns in the final stage of the conflict), initial battles between German and French armies in 1914, the German invasion of Poland in 1939, Operation Desert Storm (the Liberation of Kuwait) in 1991. Source: Slavko Barić: *Vojne strategije i asimetrično ratovanje*, National security and the future 4 (11) 2010, St. George Association / Udruga sv. Jurja, Zagreb, 2010, p. 79.

maneuver doctrines may be the fact that their implementation is an incentive to win a decisive victory in short time, or to wage short-term war. Because, insisting on winning a quick victory is also a great risk; if the development of events does not start as planned, the possibility of a catastrophic defeat opens up. In the case of attrition strategies, such a possibility is much smaller, since their essence is the gradual attrition of opponent; if an individual operation fails, success will be achieved in the long run, since even after unsuccessful operation, opponent is weakened. An example of this approach is the battles fought on the Eastern Front in 1941.[11] Maneuver doctrines offer the possibility of a quick victory, which is possible only if the weak points of opponent are precisely defined (hubs that will cause the collapse of command and logistic system of the armed forces, and also its political and economic system) and military force is used precisely in combination with other elements of national power.[12]

# The principles in the theory of war

Military strategy is said to offer general views on the conduct of armed conflict. It represents a discipline within the art of war that defines strategic concept, structure and manner of the use of the armed forces. In essence, military strategy should answer three key questions: where the armed forces will be used, who they will be used against and how they will be developed (given the factors of armed struggle). Military strategists have always strived to reduce war practice to a series of general rules that can be learned and implemented in all situations. The first principles in the theory of war have been related to strategy in its traditional meaning. Along with the development of the theory and practice of the art of war, principles appear predominantly in doctrines, while general principles remain in military strategy in modern conditions. This hypothesis is reinforced by the fact that modern military strategy mostly exists in theory and that doctrines and concepts take precedence in practice. In this context, the theory of the art of war is mostly about doctrinal principles today.

## *The principles of military strategy*

Jomini has noted that the main principles of strategy include the following: 1) to gradually bring the main forces of the army to decisive points on the battlefield by strategic combinations and, if possible, to enemy communications, without exposing

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[11] Slavko Barić: *Vojne strategije i asimetrično ratovanje*, National security and the future 4 (11) 2010, St. George Association / Udruga sv. Jurja, Zagreb, 2010, pp. 74-75.

[12] The examples of military operations based on maneuver military doctrines include the actions of the Israeli Armed Forces in the 1967 Six-day war, the US landing near Incheon in the Korean War, and the US advance towards Baghdad in 2003 in the operation *Iraqi Freedom*.

their communications; 2) to bring by a suitable maneuver the main forces to the place where only small enemy units are located; 3) at the beginning of battle, to conduct a tactical maneuver in the same way in order to reach the decisive point on the battlefield with the main force, i.e. in the part of the enemy position that is important to weaken; 4) the main forces should be not only directed to the decisive point, but also to start the action energetically and harmoniously, to express the simultaneous effort of all forces. Jomini has concretized this very general and abstract statement with numerous specific examples from military history, emphasizing that it has been proven that the greatest successes and defeats are the consequences of adherence to or violation of the main principles.[13]

In his book *Strategy*, Milisav Živanović has stated the following principles of modern strategy: 1) war should begin with all the strength at the disposal of state; 2) develop the entire armed forces simultaneously (do not leave strategic reserves); 3) the fate of war is decided on the main battlefield, thus the secondary goals are sacrificed to the primary one; 4) direct the main actions at the enemy armed forces, and the occupation of political and trade headquarters and geographical points is important if enemy is harmed; 5) in initial operations, initiative should be taken into one's own hands, and enemy should be left to think only about defence, and not about striking; 6) conduct operations with such a calculation that at the decisive moment and at the decisive point of the battlefield, greater strength can be gathered, and if possible better than enemy; 7) bring armies and parts of the armed forces to the battlefield - the place of collision in certain directions according to the main idea of operation; 8) use a tactical victory as much as possible by continuous pursuit, and in the direction of the main idea of operation; 9) perform all march maneuvers quickly and continuosly, so that they can be used suddenly; 10) place the stronger side or flank to enemy, and cover the weaker one; 11) in any case, operational routes should be secured.

The US Operations Doctrine (FM-3.0) states nine principles of war. These are: objective, offensive, mass, economy of force, maneuver, unity of command, security, surprise and simplicity. In the Doctrine for Joint Operations (JP 3-0), in addition to these principles, three additional ones are stated: perseverance, legitimacy and restraint.[14]

## The principles in doctrines and concepts

According to the Western military theory, modern military strategies are the sum of several concepts that provide guidelines for waging war, explaining how military equipment should be used to achieve goals. They provide a common, comprehensive vision of the use of combat effectiveness against enemy in a given situa-

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[13] Edvard Erl, *Tvorci modernih strategija*, Kultura, Beograd, 1952, p. 98.

[14] *Operations*, FM 3-0, Headquarters Department of the Army, February 2008, pp. 147-149.

tion.[15] The word concept (Latin *conceptum, concipere*) in the Dictionary of Foreign Words and Phrases by Vujaklija means plan, draft, first written part (of a book, document) or idea. The military theorist Božidar Forca believes that concepts are, in essence, doctrines.

Strategists have always waged wars according to some rules, that is, concepts. Two thousand years ago, Sun Tzu wrote about the skills of *deception, surprise, maneuver, morality and local superiority* in war. Two millennia later, the same concepts have remained unchanged, despite major technological changes. Military practitioners and theorists have implemented them over the centuries due to their universality and a fundamental character, so they can be considered general *principles of war*. Along with new military equipment such as planes and nuclear weapons, new concepts have appeared, while those related to the use of cold weapons have become obsolete. Thus, the Airland Battle Doctrine includes the principles of *initiative, agility* and *synchronization*. The following principles have been stated as the principles of the Army operations: initiative, mobility (agility), depth, synchronization and universality.[16]

In our Operations Doctrine, the principles are stated as guidelines for all military activities and as a basis for the proper use of forces in operations. The success of operations is the result of adequate interpretation, consistency and implementation of the main principles such as goal selection and focus, grouping of forces, unity of effort, awareness, perseverance, moral strength, activity and initiative, surprise, protection of forces, maneuver, economy of force, sustainability and adequacy.[17]

## Network-centric warfare

The development of information technology has had a huge impact on the modernization and transformation of the armed forces, especially in the West. In order to reach a qualitatively new, higher level of precision and greater speed in conducting military operations, in the early 1990s, many segments of the US Armed Forces were specially equipped with modern technology, which is based on information networks. The revolution in military affairs and its implementation in the concept of network-centric warfare have become new military strategic models for the US Armed Forces.[18] Together with the process of redefining security policy, in

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[15] Bowdish, Randall: *Military Strategy: Theory and Concepts*, PhD thesis, University of Nebraska, Lincoln 2013, p. 133.

[16] Bowdish, Randall: *Military Strategy: Theory and Concepts*, PhD thesis, University of Nebraska, Lincoln 2013, p. 162.

[17] *Operations Doctrine of the Serbian Armed Forces*, Joint Operations Command of the Serbian Armed Forces General Staff, Belgrade, 2012, pp. 29-30.

[18] Željko Mušukić, Hatidža Beriša, Aleksandar Ćiraković: *Mrežnocentrično ratovanje – stanje i perspektiva*, ICDQM-2018, 21. Međunarodna konferencija „Upravljanje kvalitetom i pouzdanošću" i 9. Međunarodna konferencija „Life Cycle Engineering and Management", u organizaciji Istra-živačkog centra DQM, 29-30. juna 2018, Prijevor, Čačak.

accordance with the new state of risks and threats after the end of the Cold War, such development of situation is the main driving force for the transformation of the Armed Forces of the Western European countries.[19]

## The concept of network-centric warfare and military innovation

The US military expert Admiral Jay Johnson defines network-centric warfare as *the concept of operations based on information superiority that generates the increased combat power through network sensors, decision-makers and executors, in order to achieve joint situational monitoring, increased command speed, higher pace of operations, greater lethality, increased survival rate and degree of synchronization*. In essence, NCW transforms information superiority into combat power by effectively connecting well-informed entities on the battlefield.[20]

The term "network-centric" means connecting units and commands through information systems, which are based on interoperability, computers and communications. It involves cooperation and exchange of information, which creates preconditions for quickly gaining advantages in military operations. This connection enables the superiority of information technology to be transformed into combat power.[21] The notion of network-centric warfare is mentioned in literature as concept. Having this in mind, network-centric warfare can also be viewed as a segment of *military innovation*.

There is no generally accepted definition of the process of military innovation. The US theorist Adam Grissom defines military innovation through three factors: 1) innovation changes the way military formations operate on the battlefield. This means that only those measures that directly affect the action of military forces in combat can be classified as military innovation. Some administrative measures (e.g. changing the procurement process of military equipment) cannot be considered innovation if they do not lead to the mentioned result; 2) military innovation has a strategic effect - it changes the way of waging war. Minor changes in military organization that do not have this effect cannot be classified as military innovation and 3) innovation is equated with increased combat efficiency. Moreover, military innovation can be defined as "a change in operational practice that creates great increase in combat efficiency that can be measured through results on the battlefield".[22] Innovation includes changing the concepts of operations management

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[19] Zabine Kolmer, „*Informacija kao ključni resurs: uticaj revolucije u vojnim poslovima i mrežno-centričnih operacija na transformaciju nemačkih oružanih snaga*", Vojno delo br. 4, Beograd, 2008, pp. 50-51.

[20] Dejvid Alberts, *Mrežnocentrično ratovanje*, Ministarstvo odbrane SAD, 1999, p. 2.

[21] Mladen Kostić, „*Mrežnocentrično ratovanje u teoriji i praksi OS SAD,* „Vojno delo br. 2, Beograd, 2008, p. 177.

[22] Adam Grissom, , *The Future of Military Innovation Studies*, The Journal of Strategic Studies 29(5), 2006, p. 907. http://web.singnet.com.sg/~shuhuang/grissom.pdf, accessed on December 11, 2019.

(ideas that manage the way forces are used to win a campaign), changing the relationship between types of military operations, and abandoning or diminishing the meaning of older concepts of operational actions. Theorist Michael J. Meese states that military innovation is the process of replacing a part of organizational routine procedures with new procedures, tactics or strategy. However, if changes can fit into the existing strategy, it is not innovation.[23]

Military innovation takes place within the broader framework of political, economic, social and cultural relations within a society. The concept of the military revolution theory by the British historian Michael Roberts is taken today as a broader framework of military innovation (Roberts, Michael, *The Military Revolution 1560-1660*, London, 1956). This theory argues that the innovation of military organization does not result from the introduction of new weapons or the adoption of new tactics or doctrine, but is a direct result of broader political, economic and social changes within a society. These changes lead to a change in the military organization of such a community accompanied by changes in warfare. Following the changes in the society to which it belongs, military organization is changing at all levels - from the technology and culture of its members to strategy, tactics, training, doctrine and logistics.[24]

According to the US historians, there were six periods of military innovation since the 14th until the 20th century. The period from the 1980s to the present can be described as new (seventh) military innovation, which is called *the Revolution in military affairs*. Although changes in waging war during this period often include the use of high technology and its results (the concepts of network-centric warfare and effect-based operations, the use of high-precision guided weapons, etc.), they are, in fact, the result of global political and economic changes that began in the 1970s (miniaturization in electronics and information revolution, the world economic development culminating in the process of globalization, neoliberal development paradigm, the end of the Cold War and the dissolution of the USSR, etc.). At the same time, the spread of asymmetric warfare methods is the consequence of these processes. This military revolution also represents the framework in which the ongoing processes of military innovation are carried out.[25]

The dilemma of whether modern armed forces have stepped into the Information Age no longer exists. It has only been a matter of time before military theorists recognize what is coming and give it an appropriate name, and military organizations have begun to exploit to the full extent. All modern world armies make maximal use of the development of information technology, and the Western world called the new

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[23] Slavko Barić: *Vojne strategije i asimetrično ratovanje*, National security and the future 4 (11) 2010, St. George Association / Udruga sv. Jurja, Zagreb, 2010, p. 57.

[24] Slavko Barić: *Vojne strategije i asimetrično ratovanje*, National security and the future 4 (11) 2010, St. George Association / Udruga sv. Jurja, Zagreb, 2010, p. 59.

[25] Ibid, p. 62.

form of warfare network-centric. The value of new ideas, at least when it comes to the armed forces, is proven on the battlefield. So far, we have not seen a real conflict between the most powerful armies, so the true value of this concept is still unknown.

## *The experiences from network-centric warfare*

The US military studies have shown that networked units have increased operational capabilities compared to non-networked ones, as well as the ability to perform improved and more effective military operations. With the introduction of network-centric warfare: 1) "self-synchronization" and the initiative to do something without order has been achieved; 2) the understanding of the idea of the superior command has been improved; 3) the understanding of the operational situation at all levels of command has been enhanced; 4) the ability to use joint databases of the US Armed Forces and allies has increased.[26]

The advantages of network-centric warfare have been proven in practice. During the operations in Afghanistan from 2001 until 2002 special forces units were lightly armed and well-connected through network. Thus, they easily knew where neighbouring units were, as well as the enemy positions. At the same time, their soldiers were sensors in the field that were connected to combat systems and weapons platforms that displayed great firepower in short time.[27] In the operation in Afghanistan in 2001, the network-centric capacities of the US central command proved to be vital for the success of the operation. Special forces teams were directly connected to aircraft armed with precision-guided missiles, and rapid exchange of information enabled them to fire at targets that quickly changed their locations. Unmanned aerial vehicles and satellite communication elements played a special role in the success of the operation. Two years later, in the operation against Iraqi forces, the network-centric capacities of the US Armed Forces were even more impressive. The ability to quickly exchange information between all levels of command and the flow of information from sensor to weapons platform was unprecedented until then, giving coalition forces an advantage that Iraqi forces could not deal with.[28]

During the fighting in Iraq in 2003, network-centric warfare elements were widely used for the first time. Information technology and a new way of thinking have made the numerically inferior, but modernly developed armed forces, as the attacker,

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[26] Mladen Kostić, „*Mrežnocentrično ratovanje u teoriji i praksi OS SAD,* „Vojno delo br. 2, Beograd, 2008, pp. 177-178.

[27] David Schmidtchen, *Network-centric Warfare - An Idea in Good Currency,* Australian Army Journal, Volume II, Number 2, 2005, p. 113.

[28] The Implementation of Network-Centric Warfare, US Department of Defense, Office of Force Transformation, available at
http://www.au.af.mil/au/awc/awcgate/transformation/oft_implementation_ncw.pdf, p.19, accessed on April 31, 2020.

convincingly defeat the numerically superior, but traditionally developed armed forces on the battlefield. It was the conventional high-tech war whose characteristics were: good intelligence support coordinated with precise and appropriate weapons; defining focus and attacking it; focus on the will to fight and connection; intrusion into the enemy decision-making processes; covering flanks with fire support; without "conventional" rear; "bypassing" cities - the focus of attention is on focus and avoiding prisoners of war.[29]

## *The advantages and disadvantages of network-centric warfare*

The experiences from the Second War in Iraq (2003) have shown the capabilities of forces composed of smaller and networked units. Units with smaller logistic support could move more easily, faster and execute a task more efficiently. Networking has enabled new tactics. During the Operation Iraqi Freedom, the US Army units moved by "swarming tactics", advancing towards Baghdad in smaller independent battle groups, with no optical contact in formation. Using "swarming tactics" formations performed fast movement, without securing rear. This practice has shown that it is possible to wage cheaper war by deploying smaller forces with necessary equipment. A widely stretched formation is more difficult to attack effectively, and battle groups can cover more space, without having to maintain formation or slow down due to vehicles left behind. Knowing the position of one's own forces reduced the possibility of "friendly" fire. The "swarming" tactics enabled the attack directly in the centre of the enemy command structure, disrupting it inside. The unit with a technical problem had professional assistance in real time, via a link with technicians in the situation centre. The time required for detection and strike on the object of action was shortened. Using network-centric system, the soldiers in the field had the opportunity to monitor general situation owing to data from several sensors.[30]

However, the experiences from Iraq have also shown weaknesses of network-centric warfare. The network users at tactical level quickly faced congestion. Besides too much data, live video conferencing led to system congestion.[31] Commanders sometimes thought that it was not enough to have 80% of information, but that one should wait for the last piece of information before taking an action. Senior headquarters interfered in management at lower levels. Due to their ability to see situation on the battlefield, superior commands often interfered in the decisions of

[29] Džejms Haukroft, „*Mrežnocentrično ratovanje u Iraku 2003. godine – iskustva i pouke"*, Vojno delo 4/2008, pp. 80-81.
[30] Kostić, Mladen: *Mrežnocentrično ratovanje u teoriji i praksi OS SAD*, Vojno delo br. 2, Beograd, 2008, pp. 191-192.
[31] Haukroft, Džejms: *Mrežnocentrično ratovanje u Iraku 2003. godine – iskustva i pouke*, Vojno delo 4/2008, p. 88.

subordinates that were not within their responsibility. Colonel James Hawcroft, an officer of the US Marine Corps and a participant in the Operation Iraqi Freedom, assessed network-centric system as good, but only from the level of division and above. It is somewhat effective for brigade level, but not for battalion. "When you are on the battlefield for days and weeks, commanders are tired and do not sleep. People are exhausted. People make bad decisions and if you are overwhelmed with a lot of information, it only increases the stressful situation".[32]

Satellites played a key role in transmitting messages and images during the operation, providing the connection with the continental part of the United States. Commercial satellites were used to supplement the military ones, which did not have sufficient capacity. The growing dependence on satellite connections may become a critical point of this concept.

## *Conclusion*

Taking into account the mentioned considerations on military strategy, it can be noticed that it exists in theory and that doctrine has the greatest influence in the preparation and execution of operations. From a traditionalist understanding as the science of waging war, strategy has become the knowledge and skill of the highest level in some social activity. It can be said that military strategy has largely "inherited" the subject and object of the strategy in its original form.

The theory of military strategy does not contain norms on preparation for the future reality of war because no war has been repeated in the same way as the previous one. On the other hand, the experiences of past wars have generated certain rules in warfare that can be implemented to new war practice. Some of them are of a general and more permanent character, and some of them are usable and valid only for an epoch. Accordingly, military theory considers the principles of waging war. Moreover, one should keep in mind the views of military theorists that the relationship between these terms is not fully defined and that in practice they are often used as synonyms. The first rules of waging war have been known since Sun Tzu (c. 544–496 BC), which this Chinese philosopher and general noted in his documents two and a half millennia ago (*The Art of War*).

Network-centric warfare is a new doctrinal concept developed as a result of the revolution in the field of information technology. It is based on information superiority in relation to enemy, through the use of the advantages of fast data exchange in the fields of intelligence support and command and control. At the same time, the full effect of this concept is achieved by degrading the enemy command and information systems. In this context, we can talk about the principle of *information superiority*. Modern armies today strive to reach the standards set through the network-centric warfare of the US Armed Forces.

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[32] Ibid, p. 89.

This concept, in essence, represents a qualitative step forward of the air-land battle doctrine. The existing combat, reconnaissance, intelligence and command systems are integrated through computer network, thus achieving high synergy of material and human capacities. This was shown by the results of the Operation Iraqi Freedom, which lasted only 21 days, as long as it was necessary to break the resistance of the Iraqi Armed Forces and capture Baghdad in 2003. The demonstrated speed of progress and efficiency of military operations in the recent past can be compared only with the German doctrine of lightning war "*Blitzkrieg*" implemented in the Second World War. It can be concluded that the doctrine of network-centric warfare is primarily based on maneuver warfare and high mobility supported by a unified command and information system. It fully manifests the principles of air-land battle - initiative, agility and synchronization. The initiative was reflected in the decentralized execution of tasks using "swarming tactics", agility in high mobility of units without too many logistic elements, and synchronization through coordinated maneuvers with movement and fire due to real-time information connectivity.

When it comes to military strategy and network-centric warfare, it can be concluded that these fields are in the relationship of general and special, i.e. military strategy and doctrine. Moreover, principles dominate military strategy and doctrines. The underdevelopment of military theory leaves space for the fields of military strategy and doctrine to partially overlap, so that such a relationship is transferred to the principles of waging war.

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# Примена војне стратегије у мрежноцентричном рату

Период након завршетка Хладног рата и реорганизације светског поретка донео је нове изазове савременим војним организацијама. Укупан технолошки напредак и потпуно нове претње и противници у форми нелинеарности утицали су да модерно ратовање промени свој облик и форму у толикој мери да већина теоретичара сматра да сведочимо револуционарним променама у карактеру рата. Развој информационих технологија посебно утиче на развој нових концепата употребе оружаних снага, при чему, наравно, предњаче технолошки најнапредније земље.

Развој информационих технологија има огроман утицај на модернизацију и трансформацију оружаних снага, претежно на Западу. Ради достизања квалитативно новог, вишег нивоа прецизности и веће брзине у извођењу војних операција, на почетку деведесетих година прошлог века многи сегменти оружаних снага САД су посебно опремљени модерном технологијом, која је базирана на информационим мрежама. Револуција у војној делатности и њена имплементација у концепту мрежноцентричног ратовања постали су нови војностратешки модели за оружане снаге САД, уз процес редефинисања безбедносне политике, у складу са новонасталом ситуацијом.

Мрежноцентрично ратовање поставило је нове стандарде у вођењу рата, ослањајући се на информациону супериорност. У овом раду сагледан је однос војне стратегије и њених начела према мрежноцентричном ратовању.

Кључне речи: *безбедност, војна стратегија, информација, информациона мрежа, САД*

33