

MILITARY COMMAND IN MULTI-DOMAIN ENVIRONMENT

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ABSTRACT

The practice of military command roots in the past. There were always trends to follow the footsteps of the great captains of earlier eras such as Alexander the Great, Caius Julius Caesar or Napoleon Bonaparte. With the birth of the modern scientific method historians and theorists tried to identify the essence of good leadership and the personal requirements of being a good leader. In the 18th century the notion of coup d'oeil and of the military genius were considered the key to success on the battlefield. The military education traditionally focused on the development of leadership skills, but the skills and practices being taught were drawn from experiences of previous military engagements and exercises. In periods of peace command experience stagnates or even deteriorates due to lack of combat experience, meaning that the command practices lose their touch with the realities of the present. This article argues that the growing complexity of the operational environment requires the alteration of the existing command practices and military education agenda to create leaders capable of achieving the desired successes in future wars. In our view a highly digitalized multi-domain command post requires a certain kind of leaders that beside tactical and operational proficiency must have a skill to efficiently apply the available high-tech assets, the digital coup d'oeil.

KEYWORDS: multi-domain, MDO, coup d'oeil, OODA, leadership

1. Introduction

The engagement of the military is goal-driven, the specified strategic objectives are translated into operational objectives that require actions from the force. The strategic objectives give the purpose of the application of military force. They are determined by the political leadership, thus war is driven by the politics, which is a standing axiom of the military sciences (Von Clausewitz, 2008). The application of military forces, the 'how' of their engagement is always a function of the technological level, the operational concept, and the application philosophy of the given actor. In the 20th century the notion of manoeuvre warfare became dominant as the base of operational concepts. The application philosophy of NATO is also guided by the

comprehensive approach and the manoeuvrist approach (NATO, 2017).

Military operations of the 20th century were significantly different than they were in the 19th century. This was mainly caused by the technological innovations that also influenced and altered the operational concepts and philosophies. The change that led from the bayonet charge concepts of the early 20th century (Sanders, 1987) to the deterrence with nuclear weapons was indisputably rapid, arching over only two generations. In present days the technological innovations speed up our lives in an ever-increasing pace: some innovations do not have time to spread out before they become already obsolete.

Such rapid shifts in technology cannot be reflected in doctrines: the time needed to evaluate the applicability of novel equipment is simply too long, not to mention the attached follow-on processes of integration and training. Nevertheless, one cannot simply use high-tech equipment over decades-old operational concepts, it would simply be a waste of resources. This is true for the command and control of the military forces: militaries must find an acceptable way to capitalize on this ongoing technological surge.

The purpose of this article is to scrutinize the roots of our current leadership philosophy and the impact of multi-domain operations on the established military command and control processes, thus validating these processes in the context of the present operational environment. The research seeks to answer the question whether this new technologically enhanced era requires new attributes for successful leaders. The research uses qualitative method as several different areas must be taken into consideration to make relevant deductions.

2. Traditional Leader Attributes

Military leaders always had the tendency to compare themselves and their accomplishments to the great captains of earlier ages. In the antiquity Alexander the Great was the role model for an aspiring general, later Hannibal and Caius Julius Caesar joined him in this position. In that era extraordinary performances were usually ascribed to the interference of gods or even to descendance from gods. Few contemporary historians thought it otherwise and tried to discard these “causes” of success. Greek military leader and historian Xenophon in one of his works describes a dialogue with the great philosopher Socrates about the abilities of a good general. Tactical knowledge is one part of them, but Socrates put more emphasis on other practical qualities.

According to his view, a good general should be inventive, laborious, diligent, patient, quick of apprehension, wary but enterprising (Xenophon, 1888).

Greek historian and military officer Polybius in one of his books wrote about the attributes, that Roman general Publius Cornelius Scipio Africanus possessed, such as the sagacity and quick-mindedness. Polybius also elaborates on the qualities of Scipio’s enemy, Carthaginian general Hannibal. According to him, Hannibal was prudent, had a daring spirit and possessed “the ability in the conduct of affairs” (Polybius, 1889).

A great number of historians in the antiquity and the medieval period used these mentioned qualities to distinguish the famous and successful generals from others. At the dawn of the Age of Enlightenment military writers tried to use the scientific method to make a generalization of such individual abilities and find the essential element of successful generalship. In the first half of the 18th century French officer Jean-Charles Folard used the term “coup d’oeil” to describe the ability of a commander to make good use of the terrain and make swift decisions regarding the application of his troops at first glance. The coup d’oeil literally means “stroke of the eyes”, its most common meaning is “glance” or “glimpse”. The military-related usage of coup d’oeil from then on gradually started to represent the special cognitive abilities required to grasp something that an average person cannot have. The notion of Folard’s coup d’oeil was important, as it was not a divine gift. It was an attribute, and as such everybody became able to refine their coup d’oeil by training and practicing. Nevertheless, this refinement only improves the practical side of the coup d’oeil, while the mental part, i.e. the ability to reach quick decisions using the practical knowledge has person-dependent limits (Rapin, 2023).

The notion of coup d'oeil quickly gained ground in the 18th century military literature. Prussian King Frederick II ordered a translation of a part of Folard's works, and that helped to boost the spreading of the term. Prussian military education and military writers embraced the coup d'oeil and its German translations, and even the first theorist of war, Carl von Clausewitz mentions them in his works. There are many interpretations of Clausewitz's thoughts, but it seems clear that he considered several mental qualities as a must for a general to be successful. According to Clausewitz, the good military leaders should have a genius of mind, which means that they can make accurate judgements with a reasonably good speed (Rapin, 2024).

This notion of coup d'oeil as special talent was the ruling idea for decades, until professional military education became a wide-spread standard. The curricula then were usually designed to improve the very practical skills that used to contribute to the coup d'oeil, such as the ability to use the terrain and make sound decisions about the troops available. In the 20th century the notion of coup d'oeil faded, it simply lost its relevance. The military science stated that waging wars is more of an art than science: there aren't any exact calculations or methods that guarantee the success on the battlefield. As NATO doctrine states it the military operations are conducted in the framework of operational art, which provides the fundamentals of the planning and the conduct of operations. The doctrine states, that operational art is a blend of science and art that requires the commander's intuition, experience, and leadership (NATO, 2019). In my opinion by admitting that intuition and experience is a necessary part of the commander's conduct, NATO simply justifies and reinforces the validity of the notion of coup d'oeil.

3. The Decision Cycle

The NATO military operations are planned and conducted using the principles of operational art. Most activities during planning and conduct operations require decisions of different scale. Most military decision situations can be modelled by a broad framework called the decision cycle. American military thinker and theoretic John Boyd in his representation of this cycle had distinguished four distinct steps that he named Observe, Orient, Decide, and Act. This is the so-called OODA loop, where the four verbs the abbreviation represents are the simplification of the more complex mechanisms underlying Boyd's theoretical work. Boyd did not make it easy to for the wider audience to understand his concepts, since he left no written explaining documents. For a superficial bystander the loop just seems like a method for making tactical decisions in aerial combat, but it is significantly more than that: it is an intellectual framework for understanding the situation and the problem (Rule, 2013).

Though the OODA loop represents a decision-making framework, it did not become part of the doctrines as it is. The reason for this is intricate: Boyd was not an easy person and he had confrontations with the senior staff of the U.S. Department of Defense. Consequently, he became a kind of persona non grata and his findings were pretty much officially ignored. But his work eventually found its way to the doctrines in a clandestine way. In 2003, the U.S. Army's FM 6-0 field manual introduced the so called "operations process" to the Army doctrine. Its representation of the decision-making is somewhat similar to the simplified OODA loop, and the manual's Appendix A clearly refers to the OODA loop during the explanation of the operations process (U.S. Army, 2003).

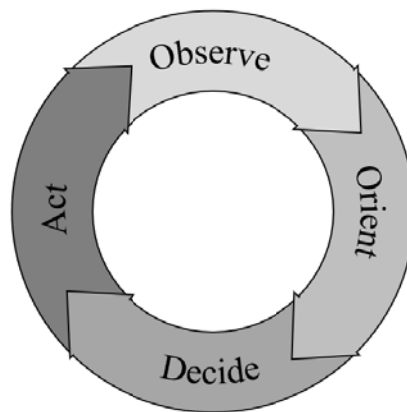


Figure no. 1: *The simplified depiction of the OODA loop*

The operations process was a useful tool to visualize the component subprocesses of decision-making. In 2008 the Canadian Army adopted it with a slightly altered visualization, renaming it as the Battle Procedure Model (Canadian Army, 2008). This name suggests a merely tactical usage. Although the planned NATO doctrine AJP-3.2.2 in 2007 included the OODA loop as framework, it was not accepted officially (NATO, 2007). The NATO AJP 3-2 Land Operations doctrine in 2009 included the Canadian offspring of the OODA loop renaming it to Decision-Action Cycle. This doctrine states that while the visual representation suggests sequential approach, in real-life situations the orientation, observation, decision and action are usually happening concurrently (NATO, 2009). The ATP-3.2.2. Command and Control of Land Forces publication introduced the operations process in almost the same form as it looked like in the FM 6-0 13 years before (NATO, 2016).

While the originator of the operations cycle is arguably the OODA loop, it stresses different aspects of the decision-making. While the OODA focused decisively on the understanding of the problem and the environment, thus has a universal applicability, its offspring, the operations cycle is a tool designed for orchestrating military operations. It is a cycle that iterates continually during an

operation, with the phases of plan, prepare and execute varying in length and proportionality in each iteration. The continuous assessment aims to ensure the identification of relevant lessons learned that may be used to improve the processes.

The notions of OODA loop and operations cycle becomes significant when time is precious. The faster the decision-making is, the more opportunities may arise, and the more harm can be done to the enemy. Executing own decision-making faster than the enemy is an important method in retaining or gaining the initiative. The shorter the operations cycle or OODA loop is, the more challenge can be presented to the enemy command. “Getting inside of the enemy’s OODA loop”, meaning making decisions faster and hold the initiative, became a fancy buzzword as well as an important field of research. To improve the speed of decision-making novel processes, advanced technology, or preferably their combination can be used.

4. Multi-Domain Operations

The multi-domain operations (MDO) are the emerging operational concept of NATO. MDO require the orchestration of military activities across all domains and environments, specifically the land, sea, air, space and cyberspace domains. MDO can be applied in all levels of war (at the strategic, the operational/joint, and – to a lesser extent –

the tactical levels) and aims to integrate optimal combinations of projections and capabilities to create feasible and rapid solutions to threats. MDO have wider scope than a Joint Operation, so there are increased requirements of moving force structures over long distances in different directions, coupled with the need for rapid manoeuvres (Minculete, 2023). In multi-domain operations military activities are synchronised with non-military activities in order to deliver converging effects at the speed of relevance. From this definition of the term three important factors can be identified: the synchronization, the converging effects and the speed (NATO, 2022).

MDO are originated from the United States. Its development was triggered by the start of the Russian-Ukrainian conflicts in 2014 and marked the starting point of a paradigm shift from the conduct of counter-insurgency operations to conventional military operations. The official development process started in 2015. The codename of the project changed gradually from the initial “AirLand Battle 2.0” to “Multi-Domain Battle”. The reference to the cold war winning doctrine of “AirLand Battle” was intentional: a new doctrine was needed that was able to achieve similar feats as the doctrine of the 1980s could, that is to be successful against numerically superior forces with near-peer level of technology. The eventually accepted name of “Multi-Domain Operations” was the product of an interservice agreement, the word “operations” was to signify the broader scope of the concept, than just a physical battlespace. The initial development was started by the U.S. Army but later other armed forces services – the Marines, the Air Force and the Navy – were included.

The basic tenets and ideas behind the MDO concept were quickly adopted by several NATO members, so consequently it became part of the NATO joint doctrine in 2022. It builds upon NATO’s existing key tenets and philosophies (NATO, 2022).

One of the doctrinal tenets is a comprehensive approach that clearly aligns with the requirement of synchronization of military and non-military activities stated in the definition of MDO. The requirement of cross-domain effect convergence is an extension and upgrade of the effects-based approach to operations (EBAO) that forms the underlying military planning layer of the NATO’s comprehensive operations planning. The third requirement, the decision-making and execution at the speed of relevance is the one that is currently the target of several joint research and development programs. The ultimate aim of NATO’s review and upgrade program is to make the entire operational cycle of the Alliance Multi-Domain enabled, so that plan, execute and assess activities could be done across all-domains (NATO, 2023).

The requirement of wider coordination within the military that effects in cross-domain cooperation demands changes in the existing command and control system. The current Joint Operations approach is commander-centric, the military staff work is increasingly bureaucratic, and it is not likely to be effective in a future technology-enabled and accelerated operational environment. Doctrinal innovations are crucial and paramount in keeping up with the everchanging technology in order to achieve and maintain decision superiority. In the NATO’s official view, the current philosophy of mission command can form the basis of a novel collaboration of various cross-domain functional teams (NATO, 2023).

To gain advantage over the enemy the MDO’s command and control methods and structures must be at state-of-the-art level, based on the updates of current C4ISR systems augmented with resilient communications. Novel structures, formations and capabilities are also needed to maintain decision advantage over the adversaries. One novel formation that contributes to the conduct of MDO is the Multi-Domain Task Force (MDTF). It is a

brigade-level unit that incorporates capabilities that were previously unavailable at joint (corps or field army) level, such as long range precision fires, cyber and space capabilities. Integrating such a diverse and complex set of capabilities to existing command and staff mechanisms is a challenge that cannot be overcome without changing existing methods. Developments and experiments are ongoing in the United States and in the NATO to make a suitable and effective command and control system that meets the requirements of MDO and can provide a reliable and secure joint all-domain command and control system (Minculete, 2023).

Due to the specifics of the MDO and the emergence of the MDTF the traditional operations cycle expands and lengthens in a multi-domain environment. The time required for the execution of the different steps of the cycle will increase due to the requirement of dealing with the information, assets and activities of several domains. To achieve the required converging effects, the existing planning methods and the command and control system may seem to be inadequately slow and bureaucratic. The operations cycle must be accelerated by applying technological advancements and improvements in the methods (NATO 2023).

Since the birth of the multi-domain operations concept, researchers tried to come up with possible solutions to improve the efficiency of the command and control, and to take advantage of the technology. The concept of Mosaic Warfare is one of these research projects, and it envisions a hybrid implementation of command and control, that consists of human command, machine-assisted control, with human and machine subordinates as executors.

This approach figures on the further development of Artificial Intelligence (AI) that can be harnessed by putting military command and control to a new level (Clark et al, 2020).

5. Human Decisions in a Multi-Domain Future

As shown, in the core of the Multi-Domain Operations lies the need for a change in the existing command and control system. The methods, processes and tools can be changed with relative ease, and the AI used to enhance them is increasingly getting better and better. The more sophisticated the AI gets, the more limited human performance seems. Algorithmizable problems, that can be solved by converting them into processes, are faster done by a computer, and with the constant refinement of the technology this gap will widen more. Limitations of the human biology constraint us to increase our performance over a certain point. The limits of an electronic machine are considerably greater than that.

The human activities during the decision-making process can be modelled with the OODA loop, the different activities can be rated into the main groups of Observe, Orient, Decide and Act. Own activities should focus on degrading the adversary's orientation thus slowing down and eventually collapse its decision cycle. This concept is building on achieving decision superiority, which means that own decision-making and execution must be always several steps in front the adversaries thus maintaining the initiative constantly. When the adversary moves on to improve its decision-making, the resulting race for maintaining decision superiority will result in a kind of decision-centric warfare (Clark et al, 2020).

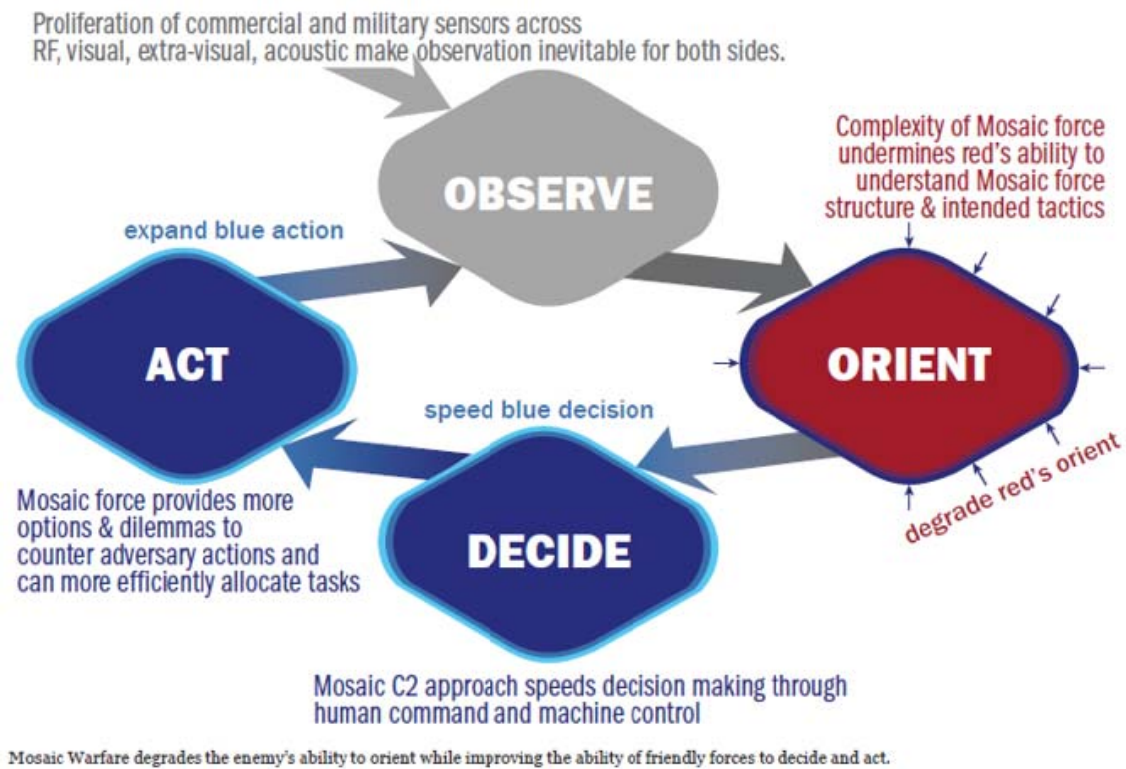


Figure no. 2: *Impact of Mosaic Warfare on the OODA loop*
(Source: Clark et al., 2020, 71)

This envisioned decision-centric warfare requires heavy Artificial Intelligence support in decision-making. Speeding up decision-making will result in an altered OODA loop, or even in its evanescence. The Artificial Intelligence-augmented decision-making cycle can be described by the Sense-Predict-Agree-Act cycle, in which the Artificial Intelligence senses the adversary and predicts possible actions, the human decisionmaker agrees to the course of action that will be executed by the assets, that can be either AI or human or a combination of them. This novel approach leaves as much human factor out of the decision-making process as possible, although requires robust and dependable AI. This kind of automation may also result in the blending of the different levels of war (Layton, 2021).

The top layer in decision-making always belongs to the politics. It is essential that the political goals must be defined in a

way that ensures that they are comprehensible for the military instrument and relevant military objectives can be drawn from them. AI decision support in the higher levels has limited feasibility unless the political side engage it also. But if there are changes in the desired political end-state, then an AI-augmented decision system may respond more swiftly than an old-fashioned human-driven one.

Speed alone cannot be the decisive factor in decision-making when humans are involved. One key tenet of the mission command philosophy is trust. Subordinates must trust in their commanders' competence and commanders must trust in their subordinates' ability to execute the assigned tasks. Trust between competent humans can be built by long and laborious common work. If AI is included in the process at some point, the degree of trust may vary. Although trust in machines depends on the person's heuristics that

draw upon their knowledge and previous experiences. Research suggests that indecision situations people tend to trust the machines even when they do not know what the underlying mechanisms of the machine are (Molina & Sundar, 2022). Trust in the multi-domain operational environment will become even more important than ever before. Soldiers in different domains will have to trust in decisions of unknown, unseen and unheard-of decision-makers, who will not have personal expertise in all domains. Understanding someone's decision who has no domain-specific knowledge may be difficult, and this can also degrade trust. In the case when machine is involved, the result may be similar.

Making decisions in an environment that is becoming increasingly digitalized most likely requires different skills than the traditional decision-making toolbox. Historians and military theorists of the past found that the difference between a commander and a good commander is having the coup d'oeil. Researchers argue that the new highly digital AI-supported era of decision-making requires the modern version of coup d'oeil, the digital coup d'oeil (Bollmann & Heltberg, 2023). This allows the commanders to choose correctly between the available decision-support assets and means when making decisions, allowing them to avoid micromanagement situations. The notion of digital coup d'oeil can also be a factor in rethinking officer training and professional military education, focusing more on available digital technologies and information management.

There are a lot of blind spots regarding the actual impact of emerging technologies and concepts, but there are already clear risks identified. One major risk is the possibility of emerging "tactical generals" who will be using the never-before-seen possibilities to influence the operational environment from a command post at great distances (Singer, 2009).

This kind of micromanagement is counterproductive in the military environment at any levels since it restricts the possibilities of the subordinates. Remote-controlled subordinates will never obtain the required experience and skills that make them capable of holding higher command positions, so micromanagement in the long run is simply killing the chance of raising a new generation of capable leaders. Another extremity of the command-and-control system is the hyper-decentralization. This roots in the concept of mission command, as one of its tenets is decentralized execution. While it seems clearly stated, during execution confusion may rise about the lines and rules of coordination, especially when there are so significant changes in the circumstances that the prescribed task cannot be accomplished in the pre-arranged way. Hyper-decentralization is to be avoided by the deliberate and correct use of mission command: operations and activities must be planned carefully, and improvisation and low-level initiative must be kept at a reasonable level (Lythgoe, 2020).

6. Conclusions

In this article I tried to raise attention to the challenges of command and control that root in the inevitably changing realities of the operational environment in our present and near future. I made a short overview of the traditional leader attributes, how they were interpreted in the Ancient Greek and Roman times, in Europe of the Middle Ages, how the Age of Enlightenment shaped them, and how current doctrine describes them. I found that some of the early Greek writers noticed an attribute that was later reinforced by Clausewitz and Jomini: the leader must have a certain coup d'oeil to be effective and successful on the battlefield. I scrutinized the decisions of the modern warfare through the notion of decision cycle and found that the speed of a good decision can be the game-changer in contemporary military encounters. In multi-domain environment with the

emergence of new capabilities (such as MDTF) and requirements the decision cycle may not be managed only by human resource, the assistance of artificial intelligence is needed. This assistance may result in a completely new approach to operations like the one envisioned in the concept of mosaic warfare, with extensive use of artificial intelligence at all levels of warfare. Whatever will be the proportion of AI in a military unit, human commanders and staff members must be able to use them properly. I suggest that those officers will be successful who have the modern, digital version of the coup d'oeil, and in the same time have the ability to properly apply mission command.

The growing complexity of the operational environment changed those principles that older doctrine was built on. The new doctrines and concepts required to be successful in the future must be researched and elaborated now. The changing operational environment requires an altered command-and-control system with new equipment, new methods, and new mindset. The best way to shape this new mindset is the adept application of professional military

education. This means that the role of data sciences and digitalization technologies has to be increased. As I envision, in the near-future's heavily digitalized multi-domain command post those leaders will be more successful who will have the special digital coup d'oeil, and are also capable of a degree of self-restrain to avoid micromanagement while having the determination to get hold of the hyper-decentralization. The experience and skills to do so can only be obtained during a longer period, so the leaders' training curriculum at all levels must be appended with special training and exercise sessions to improve the required digital skills. This task is extremely important on the national level, but to achieve and maintain a certain degree of interoperability NATO-level regulation may be required.

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REFERENCES

- Bollmann, A.T., & Heltberg, T. (2023). The Strategic Corporal, the Tactical General, and the Digital Coup d'oeil – Military Decision-Making and Organizational Competences in Future Military Operations. *Scandinavian Military Studies*, Vol. 6, Issue 1, 151-168.
- Clark, B., Patt, D., & Schramm, H. (2020). *Mosaic Warfare. Exploiting Artificial Intelligence and Autonomous Systems to Implement Decision-Centric Operations*. Washington: Center for Strategic and Budgetary Assessments.
- Clausewitz, C von. (2018). *On War*. (Translated by Howard, Michael and Paret, Peter). New York: Oxford University Press.
- Layton, P. (2021). *Fighting Artificial Intelligence Battles*. Canberra: Australian Defence College. Available at: https://tasdcrc.com.au/wp-content/uploads/2021/02/JSPS_4.pdf.
- Lythgoe, T.J. (2020). Beyond Auftragstaktik: The Case Against Hyper-Decentralized Command. *Joint Force Quarterly*, Vol. 96, Issue 1, 29-36.
- Minculete, G. (2023). Conceptual, Organizational and Relational Approaches to Multi-Domain Operations. *Romanian Military Thinking*, Issue 1, 146-167. Available at: <https://engmr.mapn.ro/webroot/fileslib/upload/files/arhiva%20reviste/RMT/2023/1/MINCULETE.pdf>.

Molina, M.D., & Sundar, S.S. (2022). Does distrust in humans predict greater trust in AI? Role of individual differences in user responses to content moderation. *New Media & Society*. Available at: <https://doi.org/10.1177/14614448221103534>.

NATO (2009). *Allied Joint Doctrine AJP-3.2.Land Operations*. Brussels: NATO Standardization Agency.

NATO (2016). *Allied Tactical Publication ATP-3.2.2Command and Control of Land Forces Edition A Version 1*. Brussels: NATO Standardization Office.

NATO (2017). *Allied Joint Doctrine AJP-01 Edition E Version 1*. Brussels: NATO Standardization Office.

NATO (2019). *Allied Joint Doctrine AJP-5 Edition A Version 2*. Brussels: NATO Standardization Office.

NATO (2022). *Allied Joint Doctrine AJP-01 Edition F Version 1*. Brussels: NATO Standardization Office.

NATO (2023). *Next Generation Command and Control*. Available at: <https://www.act.nato.int/article/next-generation-c2/>.

Polybius (1889). *The Histories of Polybius*. (Translated by Evelyn S. Shuckburg, 1889). London: MacMillan and Co.

Rapin, A.-J. (2023). Shrewdness, coup d'œil, and genius: the cognitive attributes of the consummate general (Greek antiquity, Byzantine era, modern times). *Qeios*. Doi:10.32388/F0CNLD.

Rapin, A.-J. (2024). Clausewitzian Coup d'Oeil: The Extraordinary Intuition of the War Genius. *Qeios*. Doi:10.32388/U8KAMK.

Rule, J.N. (2013). *A Symbiotic Relationship: The OODA Loop, Intuition, and Strategic Thought*. Carlisle: U.S. Army War College.

Sanders Jr., C.W. (1987). *No Other Law: The French Army and the Doctrine of the Offense*. Santa Monica: RAND Corporation.

Singer, P.W. (2009). *Tactical Generals: Leaders, Technology, and the Perils*. Available at: <https://www.brookings.edu/articles/tactical-generals-leaders-technology-and-the-perils/>

U.S. Army (2003). *FM 6-0 Mission Command: Command and Control of Army Forces*. Washington: Department of the Army.

Xenophon (1888). *The Memorable Thoughts of Socrates*. (Translated by Edward Bysshe, 1712). London: Cassell and Company.