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**HIGH ROYAL DECREE NO. 3663
THROUGH WHICH "ROMÂNIA MILITARĂ"
BECOMES THE OFFICIAL JOURNAL
OF THE GREAT GENERAL STAFF**



"Art. I – The official journal named "România Militară" is founded at the Great General Staff, starting 1 January 1898, in which all officers within the Armed Forces will find military studies, which interest their training.

Through the agency of this journal, all officers, belonging to all branches, who are in active duty, will be able to publish their personal papers and the ones

Carol – King of Romania

Issued in Bucureşti on 8 December 1897



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A LEGACY SINCE 1864

The Romanian Armed Forces road to modernity started in 1859, once the United Principalities General Staff Corps, currently the Defence Staff, was established.

Soon after it, in 1864, a group of nine captains, graduates of the first series of the Officer Cadet School in Bucharest, took the initiative to develop a "military science, art and history journal" named "România Militară/Military Romania".

The initiators of the publication – **G. Slăniceanu** (Captain, Chief of the Engineer Battalion), **A. Gramont** (Staff Captain), **G. Borănescu** (Engineer Captain), **G. Anghelescu** (Staff Captain), **A. Anghelescu** (Artillery Captain), **E. Arion** (Artillery Captain), **E. Boteanu** (Staff Captain), **E. Pencovici** (Staff Captain) and **C. Barozzi** (Engineer Captain) –, educated not only in Romania but also abroad, were inspired by the necessity to develop a substantial theoretical activity in the Romanian Army too.

The journal manifesto¹, included in the first issue, which appeared on 15 February 1864, contained innovative ideas and approaches that were meant to:

"- contribute to the organisation of our military system the Legislative Chamber is about to decide upon soon;

- assemble and examine the Country old military institutions that had made for the glory of Romania for several centuries and ensured our existence;

- explore, in the absence of any military study, all the aspects related to the Army training, the most solid basis of the armed forces;

- get the Romanian Troops well-informed about the military events in the world;

*- join efforts to work concertedly and whole-heartedly to develop and strengthen the edifice that is meant to ensure the future of our country"*².

"România Militară" was an independent publication, under the aegis of the War Ministry, and it ceased to appear in 1866 as there were no sufficient funds and subscribers. The publication was resumed in 1891, about a quarter of a century later, also as the result of the initiative of a group of officers in the Great General Staff who intended to "reproduce the serious studies on the organisation, strategy and art of commanding troops under any circumstances"³. Shortly after it, by the Royal Decree no. 3663 issued on 8 December 1897, "România Militară" became the "Great General Staff official publication".



¹ *Din trecutul României Militare cu prilejul aniversării a 75 de ani de la apariția ei în viața armatei. 1864-1939*, București, 1939, p. 31.

² *Ibidem*, p. 32.

³ *România Militară*, no. 1, 1981, p. 6.

English version by **Diana Cristiana LUPU**.



C. Barozzi
(Engineer Captain)



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(Staff Captain)



E. Boteanu
(Staff Captain)



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(Engineer Captain)



G. Anghelescu
(Staff Captain)



G. Slăniceanu
(Captain, Chief
of the Engineer
Battalion)



E. Arion
(Artillery Captain)



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(Artillery Captain)



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by the Romanian Armed Forces Defence Staff,
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The Romanian Military Thinking editorial staff

Between 31 May and 2 June 2019, “Henri Coandă” Air Force Academy organises, under the patronage of the Romanian Presidency of the Council of the European Union, the 21st edition of the International Conference “AFASES 2019” – *Scientific Research and Education in the Air Force*.

The papers submitted will be *peer-reviewed* by the members of an international scientific committee. Based on the result of the review, the team of evaluators will decide which papers will be published in a special issue of the Romanian Military Thinking journal, issue that will be submitted for ISI indexing.

For more details on the conference registration and attendance, please visit the webpage of the event:

<http://www.afahc.ro/ro/afases.html>

will coordinate the *Military Sciences Section* within AFASES 2019



The poster features a blue background with a white grid and colorful geometric shapes. At the top, it displays the dates '28 MAY 02 JUNE'. The main title is 'THE EUROPEAN AIR FORCE ACADEMIES COMMANDERS' CONFERENCE, (EUAFA-CC) 27th edition'. Below this, it says 'FOLLOWED BY' and '21st edition THE INTERNATIONAL CONFERENCE Scientific Research and Education in the Air Force (AFASES 2019)'. The location is 'held in Braşov, "Henri Coanda" Air Force Academy under the patronage of Romanian Presidency of the Council of the European Union'. At the bottom, there are logos for 'romania2019.eu' and the Romanian coat of arms.

28^{MAY} 02^{JUNE}

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ACADEMIES
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ROMANIA IN NATO: 15/70

Brigadier General Corneliu POSTU

Director of the Defence Staff



On the eve of NATO's 70th anniversary, security-specific literature abounds in articles about the past, present and even the future of the Alliance. Most authors try to argue and justify their own ideas about the direction in which the Alliance should be heading, starting from the geopolitical reality of the historical moment to which they refer in their approach. However, the unfolding of events has often surprised the strategic community over the past three decades – the fall of the Berlin Wall, the collapse of the Soviet Union, the identification of terrorism as the main global security challenge, the return of Russia as a revisionist actor in the geopolitical landscape –, therefore, it has become obvious that the approach based on a momentary status quo is not enough to develop a long-term security strategy.

Even under these circumstances, over seven decades, NATO has managed to identify the necessary resources and to review its policies in order to permanently evolve, tailor to meet realities and try to anticipate future challenges. Thus, in the first 40 years of existence, the Alliance worked based on the principle of collective defence in the context of a bipolar world, in which the main poles of power were represented by the Warsaw Treaty signatory countries, and the bloc of Western European and North American states respectively. After 1990, the international security environment underwent profound, substantial changes, as the global power system shifted from bipolarity to unipolarity, a context in which NATO expanded its area of action principles from collective defence to cooperative security and crisis management.

In Europe, after the fall of the Iron Curtain, the open-door policy of the North Atlantic Alliance was an important encouragement for Central and Eastern European countries to renounce historical disputes between them, as former enemies gathered in front of a common opportunity, namely joining NATO. It was thus possible for agreements to be reached in order to secure border stability and mutual cooperation: the 1994 Polish-Lithuanian Treaty, the 1996 Slovak-Hungarian Treaty, a series of agreements between Poland and Ukraine, the improvement of relations between Italy and Slovenia, the 1996 Romanian-Hungarian agreement, the 1996 German-Czech agreement etc.

There had been precedents in this regard, even during the Cold War, the most relevant example being the successful management of the “frozen conflict” between Turkey and Greece.

This ability of the organisation has served as a guarantee for a long and enduring peace in Europe, to which the democratic values and stability promoted by the allies, as well as the economic benefits that resulted in the prosperity of the citizens have contributed. As a result, Central and Eastern European countries membership of NATO has also given out a signal to investors regarding trust, which has often led to economic development with real results in dealing with potential conflicts in those exact societies.

As far as Romania is concerned, it became NATO member in 2004, after a long wait, during which the country was a member of the Partnership for Peace/PfP programme. Becoming a fully-fledged Alliance member has radically changed the vision of national security. After 1989, the national security policy was predominantly reactive and defensive in nature, remaining tributary to the Cold War logic, in which the main risks were the conventional threats. It all changed with the accession to NATO, and the first National Security Strategy started from the premise of pre-empting and preventing security threats and risks.

Among the main elements of security identified by the 2006 National Security Strategy of Romania, there are: “full membership of the European Union and responsibilities arising from membership of the North-Atlantic Alliance; developing a competitive, dynamic, and highly-performing market economy”. At the same time, the main threats to national security were no longer just conventional in their nature. International terrorism, proliferation of weapons of mass destruction, regional conflicts, organised cross-border crime, obstacles to good governance, natural disasters or environmental threats were put on the agenda of the security culture promoted by Romania as a NATO member.

It was basically the first time after 1878 when Romania could look beyond the logic of ensuring the survival as a national and independent state. The phenomenon of globalisation became the main element that could harm the international system Romania was becoming part of, gradually getting rid of the perception that a neighbouring state could threaten its territorial integrity. In fact, for countries such as Romania, which, according to the most common definitions in international relations, are identified as minor powers,

there are certain benefits, which are less visible, but extremely relevant from the point of view of NATO membership, such as:

- participation in the decision-making process – a collective action in which there is no vote, but in which all members consult each other, reaching a solution that can be accepted by all of them. In this way, the minor powers within the Alliance have the opportunity to contribute to the decision-making process on equal terms with the great powers;*
- international visibility – the role played in the decision-making process, equal to the one of any other partner, provides positive perception at the international system of relations and increased opportunities for achieving both political and economic strategic goals.*

From a strategic point of view, the main pillars of national security have been identified as: NATO membership, accession to the European Union and strategic partnership with the USA. Strictly military, it was required that the Romanian armed forces were reformed in order to meet the interoperability standards with the new partners. And this really happened, even though this process was many times more complicated and painful than anticipated, especially because of the lack of identification of the necessary resources at the desired level.

However, in a world of asymmetrical, constantly evolving threats, the national security strategy had to go beyond the logic of using the military system to counteract conventional threats exclusively. Thus, after the accession to NATO, Romania had to adapt its security policy to the common values of the Alliance: collective defence, cooperative security and crisis management. This change of vision and approach meant abandoning the logic of a policy focused exclusively on national interests, taking into account the principle of security indivisibility, specific to an international security community.

Under the NATO umbrella, the security of powers such as Romania depends to a large extent on the allies’ solidarity. Thus, instead of small armed forces, with insufficient technical equipment, sovereignty is guaranteed by a multinational force, equipped with state-of-the-art technology. Even if the level of contribution as an Alliance member can be perceived as prohibitive, the benefits are at least proportionate, and collective defence proves to be far less costly than individual defence. An example in this respect is the decision made at the 2012 NATO Summit in Chicago, when the allies established



the Smart Defense initiative (based on the concept of Pooling and Sharing) and the Connected Forces Initiative (with NRF as main instrument) to pull and share capabilities for a more efficient mission organisation.

In order to remain up-to-date and adapt the concepts that make the Alliance work and establish the use of available forces, NATO has a structure at its disposal, meant for the research and development of the Alliance, called Allied Command for Transformation, which is aimed to reform the command structures of the North Atlantic Alliance and prepare all of NATO military capabilities available in order to face future missions and challenges. Through ACT, each member has access to the knowledge provided by the other partners, the main beneficiaries being precisely those with limited resources in the field of research and development.

In the same vein, NATO Centre of Excellence provides access to a high level of education and training for all allies so that an increased degree of interoperability could be reached. This is a profitable way to provide the training of own staff through attending courses, in an international environment, at common standards for certain specialisations or decision levels.

I would also like to mention another gain in the military field, namely the one related to the assistance provided by the great powers of the coalition to partners with limited resources, in order to transform their own armed forces so that they could reach a certain level that would enable them to make their own contribution to the collective effort of the Alliance and, at the same time, to meet the new security challenges in the international environment.

These are just a few examples, less obvious for the perception of the society as a whole, that have benefited Romania and the Romanian armed forces in these 15 years of NATO membership.

In turn, Romania provides equipment and troops to most NATO operations currently, represents a pole of stability on the Alliance's southeastern flank and is one of the partners that respect their assumed commitments regarding the armed forces transformation and the allocated budgetary resources, thus becoming a security provider, not just a beneficiary.

Beyond the more or less visible advantages, the fundamental benefit of the Alliance lies in the fact that it remains a preventive mechanism. As we already know, NATO was created in order to block a possible Soviet aggression in Europe, a need that remains topical, unfortunately.

Thus, the Russian Federation invaded two European countries in the last ten years, and the efforts made at world level to avoid a global conflict are extremely high. It remains to be seen whether the current trends of change at international level will confirm the reappearance of a power bipolar system or the emergence of a multipolar one which, if unbalanced, could lead to reconfigurations of the alliance systems and affect the relations of forces in Europe and in the sphere of Romania's international relations system.

The inevitable change in the power structure at world level could redirect our country's security priorities either by joining a European armed forces project, which has been more and more debated in the past two years, or by resorting to the realistic paradigm and strengthening the strategic partnership with the US at a different level, or as a NATO member adapted to new geopolitical realities, or by choosing a combination of available options.



THE PRAGMATISM OF WAR ACCORDING TO SUN TZU AND KAUTILYA

Lieutenant Colonel Florin STAFI

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*The phenomenon of war, as a social action, finds its theoretical basis in many of the writings of the time. In a natural logic of societal pragmatism, determined by access to vital sources, the leader’s vision is expressed through strategic relationships, shaped by resources, pathways and objectives. The actions assimilated to war are not an end in themselves, they reflect the national strategy for a well-orchestrated desideratum. Sun Tzu and Kautilya, through their works, *The Art of War* and *Arthashastra* respectively, illustrate, in an ingenious way, a strategic pattern, centred on a constructive thinking, using the critical resources of a nation for its general good. Solving the existential dilemma: good vs. evil or peace vs. war is carefully justified by choosing viable options: King’s choice, diplomacy, armed conflict, good governance or alliance system.*

Keywords: strategy, state, policy, objectives, resources, war.

Introduction

Nearly 2,500 years after the writing of the *Art of War*, after the fall of six empires, two world wars and maybe thousands more other more or less bloody armed conflicts, to present Sun Tzu again seems to be a *historical pleonasm*. I do not think there are military or civilian strategies that are not based on the philosophy of the Chinese general. Beyond the sometimes mystical character attributed to the singularity and authenticity of the author, *The Art of War* is a classic work about tactics and strategy, a true quintessence of polemology. Even though, obviously, today’s war has radically changed its means, its paths and goals have remained almost untouched, the differences appearing in form and not in content. Military theorist Liddell Hart, the author of *Strategy: Indirect Actions*, described Sun Tzu’s work as “*the most concentrated essence of wisdom on the leadership of war*”¹. Examining the stages through which the various new ideas have passed, until they were accepted, the presentation of strategic concepts is not absolutely new, but only a revival in a modernised form of time-established but forgotten principles, because ... “*there is nothing new under the sun!*”².

The main purpose of Sun Tzu’s work was not, apparently, the creation of a set of elaborate and complex rules for conducting a war. He wanted to develop a *good practice* in the field of army leadership, to support military and political leaders in intelligent planning and leading a victorious war. The theoretical ideas of Sun Tzu are still alive today, and not only within the military system. Their applicability is very popular among major international corporations, which develop business strategies in a very uncertain and versatile environment, and for which the philosophy of *The Art of War* is the way to a fair solution to the Darwinian question: Who survives?

The main purpose of Sun Tzu’s work was not, apparently, the creation of a set of elaborate and complex rules for conducting a war. He wanted to develop a good practice in the field of army leadership, to support military and political leaders in intelligent planning and leading a victorious war.

¹ Samuel Griffith, *Sun Tzu: The Art of War*, Oxford University Press Inc., Oxford, NY, 1963.

² B.H. Liddel-Hart, *Strategia: Acțiunile indirecte*, translated from English by Colonel L. Cojoc, Editura Militară, București, 1973, foreword.



The Art of War and Arthashastra do not glorify the war nor do they support the aggressive use of military force. Even if they belong to different cultures, Sun Tzu and Kautilya summarise the entire existential philosophy of the state as a form of power by dominion, to the right of the sovereign to dispose of the best ways to increase the welfare of the subjects so that peace replaces the war in all its forms.

Unlike Sun Tzu, Kautilya is less known to European military culture, perhaps because of the recent discovery of his work (20th century), translation difficulties or even the apparent organisational rigours it imposes. The historiographical sources present Kautilya as a teacher, philosopher, economist, jurist and royal counsellor who lived during the Emperor Chandragupta (4th century BC) and played a very important role in the establishment of the Maurya Empire³.

Kautilya's philosophy is described in his book *Arthashastra*⁴, a compendium on the efficient functioning of a state, written in a pragmatic style, sometimes giving the impression of immorality, but which has a primary pyramidal need as a reference element: the welfare of the people, in which diplomacy and war play a central role. *"In the happiness of the subjects lies the happiness of the king; in their welfare, his own welfare. His own pleasure is not good, but the pleasure of his subjects is his good"*⁵. In the preface to his book *World Order*, H. Kissinger stated that *"this work sets out, with dispassionate clarity, a vision of how to establish and guard a state (...). The Arthashastra encompasses a world of practical statecraft, not a philosophical disputation"*⁶. Like the *Art of War*, *Arthashastra* does not describe events that took place, specific actions or historical battles. Kautilya expresses the general aspects of the situation, in a useful and relevant writing for each period, in a variety of situations, making it a transcendental masterpiece of a universal pattern of great national strategy.

The Art of War and *Arthashastra* do not glorify the war nor do they support the aggressive use of military force. Even if they belong to different cultures, Sun Tzu and Kautilya summarise the entire existential philosophy of the state as a form of power by dominion, to the right of the sovereign to dispose of the best ways to increase the welfare of the subjects so that peace replaces the war in all its forms. *"The art of war is of vital importance to the state, it is a matter of life*

³ Thomas Trautmann, *Kautilya and the Arthasāstra: A Statistical Investigation of the Authorship and Evolution of the Text*, Michigan University, 1971, p. 10.

⁴ In Sanskrit, its translation means *the science of material gain*.

⁵ Kautilya, *Arthashastra*, translated into English by Shamasastri R., vol. I, book I, chapter I.

⁶ Henry Kissinger, *Ordinea mondială. Reflecții asupra specificului națiunilor și a cursului istorie*, Editura RAO, București, 2015.

*and death, a road either to safety or to ruin. Hence it is a subject of inquiry which can on no account be neglected"*⁷. *"Peace is preferred to war"*⁸. In-depth knowledge of the war phenomenon is part of the national strategy, adapted to its own organisational culture, which must be integrated into a systemic vision, dependent on endogenous and exogenous factors, but which must bear the print of the uniqueness and originality of its own interpretation.

War Strategy according Sun Tzu...

"Strategy without tactics is the slowest route to victory; tactics without strategy is the noise before defeat".

Sun Tzu

Sun Tzu's *Art of War* has influenced the thinking of many generations of military leaders, with more or less known battlefield results, resulting in universal war principles as a phenomenon. These true polemical axioms were also applied during the 1990 Gulf War, when the American General Norman Schwartzkopf Jr., planning the *Desert Storm* operation, formed the doctrinal basis of factors underlying the speed, deception, and exploitation of enemy vulnerabilities. A few years later, *Shock and Awe* resumed the theme, in a little changed direction, but with the same fundamental ingredients.

Chinese philosophy has consistently pronounced against the glorification of the war. Confucius said: *"A really great general does not love the war; he is neither revengeful nor passionate"*⁹. For this reason, at the core of Sun Tzu's war analysis does not lie the raw, quantitative force, but the quality, expressed and multiplied by various forms: intelligence, deception, misleading, apparent demotivation etc.

The effectiveness of a strategy can also be measured by the degree of linearity between goals, paths and means. Sun Tzu understood

⁷ Sun Tzu, *Arta războiului*, p. 5.

⁸ Kautilya, *op. cit.*, p. 26.

⁹ Gaston Bouthoul, *Războiul*, Editura Militară, București, 1978, p. 32.

At the core of Sun Tzu's war analysis does not lie the raw, quantitative force, but the quality, expressed and multiplied by various forms: intelligence, deception, misleading, apparent demotivation etc.



Leaders need to carefully examine the reasons for a military conflict, use all soft solutions, especially diplomatic ones, not to deplete resources, and apply all coercive measures for the enemy to give up without a fight.

“What is of supreme importance in war is to attack the enemy’s strategy”!

this idea very well and, through an assessment of the operational environment, he developed his concepts to the extent that the decision-maker has imposed this. Pragmatism is expressed in the final state; once a nation goes to war, *“victory remains the main objective”*¹⁰. Consequently, leaders need to carefully examine the reasons for a military conflict, use all *soft* solutions, especially diplomatic ones, not to deplete resources, and apply all coercive measures for the enemy to give up without a fight. Ultimately, when alternatives to violence have been consumed, war needs to be quick, flexible in planning, not to engage resources in prolonged campaigns, focused on victory, with viable, misleading and intelligent alternatives.

The factors that determine the character of the war, though not very clearly delimited by Sun Tzu, are shock, friction, inconsistency, complexity and unpredictability. *“Just as water retains no constant shape, so in warfare there are no constant conditions. (...) In battle, there are not more than two methods of attack – the direct and the indirect; yet these two in combination give rise to an endless series of manoeuvres”*¹¹. For Sun Tzu, the inherent complexity of the war comes from interacting with the enemy, and therefore depends on the circumstances in which it exposes its own strategy. *“That which depends on me, I can do; that which depends on the enemy cannot be certain. Therefore, it is said that one may know how to win, but cannot necessarily do so”*¹².

*“What is of supreme importance in war is to attack the enemy’s strategy”*¹³! It is a real syllogism that there can be no own strategy without a strategy of the enemy, on whose interpretation future victories (or defeats) depend. The foundation stone in translating vision into facts is the double gnoseological process, own and enemy’s, augmented with essential information about land, weather, previous facts, etc. We must understand that we are dealing permanently with a quartet of variables, diametrically opposed as interpretation and effects: strong → weak; opportunities → vulnerabilities. The winning

¹⁰ Sun Tzu, *op. cit.*, p. 17.

¹¹ *Ibid.*

¹² *Ibid.*

¹³ *Ibid.*

strategy is to find action plans that equip the doctrinal schemes (resulting from past battles) with the means to accomplish the goals. Even if they can look outdated, I will list five generally valid situations that can be, I think, in the premise of victory:

1. He who knows how to manage their resources will win;
2. He who knows how to make alliances will win;
3. He who anticipates the change, two steps, and not one, surprising the enemy in counter-reaction will win;
4. He who is motivated and maintains the spirit of winning of the entire organisation Will win;
5. He who innovates, respecting the laws but violating the principles, will win.

... and Kautilya

Since ancient times, the means assimilated to war and diplomacy, as the power tools of a state organisation, have been the subject of systematic exposures, in an theoretical attempt to turn them into reference models. From Sun Tzu to Jomini or from Kautilya to Clausewitz, military philosophers discussed and analysed this subject in different ways and exposures, mainly due to the natural evolution of society. It is known that alliances are formed through diplomacy, which guides and develops military and political *leadership*, forms power poles, crystallises peace, manages the crisis, or triggers war. In some measure, Kautilya captures this cycle by discussing the success of a nation in the 15 books of his treaty, *Arthashastra*, in a surrealistic manner for the 4th century BC.

As a whole, Kautilya describes the great strategy in *Arthashastra*. That is, that form of national conduct that looks beyond the war, to the subsequent peace. The one that not only combines power tools, but regulates their use, with a common purpose: the welfare of their own people. Beyond that, in a natural and logical argumentation, *Arthashastra* goes beyond the realm of an *incognito terra*, and presents the strategy for each constituent element of his state. And these are: the ruler (king), the ministers, the urban and rural population, the fortifications, the economy, the army and the allies. Each is described and placed in a hierarchy, in an interactive relationship system

It is known that alliances are formed through diplomacy, which guides and develops military and political leadership, forms power poles, crystallises peace, manages the crisis, or triggers war. In some measure, Kautilya captures this cycle by discussing the success of a nation in the 15 books of his treaty, *Arthashastra*, in a surrealistic manner for the 4th century BC.



Regarding the war, Kautilya states, “When the advantages derivable from peace and war are of equal character, one should prefer peace; for disadvantages such as the loss of power and wealth, sojourning and sin, are ever attending upon war”¹⁴.

The ultimate goal of the Kautilyan war is the welfare of the king and his subjects, equally. This social balance is one that gives value and rationality to strategies, even if they seem immoral.

and then subjected to a systematic examination. Kautilya’s theoretical analysis of the functioning of a state includes a breakdown of aspects of internal administration in constituent terms, as well as the analysis of relations between states in terms of the theory of **concentric circles**.

Regarding the war, Kautilya states, “When the advantages derivable from peace and war are of equal character, one should prefer peace; for disadvantages such as the loss of power and wealth, sojourning and sin, are ever attending upon war”¹⁴. The Hindu text classifies the war as follows: **the war by counsel** (*Mantrayuddha*), describing the pursuit of diplomacy by a weak king who does not consider an open war opportunistic; **the open war** (*Prakasayuddha*) specifying the time and the place, **the secret war** (*Kutayuddha*), which refers to the irregular war, **the clandestine/silent war** (*Gudayuddha*), using hidden methods to achieve the goal without a real military campaign¹⁵. To each of these types of wars corresponds a type of strategy: **the strategy in sight**, specific to *Mantrayuddha*, whereby all actions to be taken are discussed and publicly presented; **the strategy of direct actions**, specific to *Prakasayuddha*, may be similar to the frontal tactic; **the strategy of indirect actions** for *Kutayuddha*, assumes engaging resources without fully respecting principles of the war and recognising the importance of manoeuvres; **the strategy of guerrilla**, using almost anything for the purpose.

The ultimate goal of the Kautilyan war is the welfare of the king and his subjects, equally. This social balance is one that gives value and rationality to strategies, even if they seem immoral. Supporting the leader does not appear as a partisan *leitmotif* of war, but justifies all actions by accepting them *ab initio*. Success proves morality! Even if it sounds slightly Machiavellian, the king must act according to what will benefit the nation through “*security and welfare*”¹⁶. Similarly, Machiavelli states that “*a prince ought to live amongst his people in such a way that no unexpected circumstances, whether of good or evil, shall make him change; because if the necessity for this comes in troubled times, you are too late for harsh measures; and mild*

¹⁴ Kautilya, *op. cit.*, pp. 370-371.

¹⁵ *Ibid*, p. 305.

¹⁶ *Ibid*, p. 266.

ones will not help you, for they will be considered as forced from you, and no one will be under any obligation to you for them”¹⁷.

Kautilya’s war does not create precedents. It does not become an end in itself, an *instrument of evil*; war does not create addiction to power, like the later monarchs. It prevents and agrees. Defeat and success. Opposes, *pre factum*, to the concept of continuation of politics. It is a policy, an extension of the state, adapted to the temporal limits of success, but unlimited by the welfare of the people.

For Kautilya, the social and economic power surpassed military power. However, supporting the war could not be done without military superiority. Hence the reason for strong armed forces, whose use supports the King’s demands. The threat adds a military dimension to the national strategy, beyond purely political aspects, imposing, *ab hinc*, the implicit use of force. And here comes the power, the most important factor, after Kautilya, in conducting a military campaign. For the Indian philosopher, the power becomes an inherent side of the state when all forces converge to the same goal. The two components, tangible (personnel, weapons, mobility, firepower and logistics) and intangible (leadership, morals, discipline, training, doctrine and motivation) complete each other, crystallising a common body that is impossible to defeat. “*Whenever the king is superior, he will not waste any time against the enemy, weakening or crushing him*”¹⁸.

Strategic Thinking

“*The strategy is the art of accomplishing what we have set up*”¹⁹. Strategic thinking was born and evolved as a result of great ideological confrontations, transposed into power conflicts. Based on a set of cultural values, guided by noble intentions, it has often surpassed the limits of cold rationality and of normative limits imposed by archaic models. The future is uncertain, no matter one would dissect it in probabilistic approaches. Anticipation can come from a pragmatic approach, which does not always mean opportunism, by combining

¹⁷ Medieval Sourcebook: Nicolo Machiavelli (1469-1527), *The Prince*, 1513, in <https://sourcebooks.fordham.edu/basis/machiavelli-prince.asp>, retrieved on 1 October 2018.

¹⁸ *Ibid*, p. 374.

¹⁹ Constantin Brătianu, *Gândirea strategică*, Editura Pro Universitaria, București, 2015, p. 263.



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ROMANIAN
MILITARY
THINKING

Strategic thinking must provide positive force for practical application of the leader's vision, for the creation of the link between the probable events, in the sense of correlating and transforming them into emerging elements of the proposed goal.

Strategic thinking deposits the mental capacity of recognition by associating with past or present states, making the transition from apparent assumptions to essence correlations between the variables that act in a system.

rational and emotional faculties, all integrated into strategic thinking. "Pragmatic strategy grows out of profound intellectual traditions and subtle life experiences"²⁰. Strategic thinking must provide positive force for practical application of the leader's vision, for the creation of the link between the probable events, in the sense of correlating and transforming them into emerging elements of the proposed goal.

Nowadays, globally, any confrontational environment, either real, designed or simulated, is characterised by volatility, uncertainty, complexity and ambiguity. Sometimes even through infinity, in contingency variants. With the same laws and principles as 2,500 years ago, the 21st century war uses all available instruments – political, economic, social, diplomatic, and military – to persuade the enemy to quit before it begins. Coercive, visible or invisible, expensive or inexpensive methods are preferable to violent confrontation. Sun Tzu and Kautilya's pragmatic war theory addresses this type of environment.

The Art of War and *Arthashastra* analyse everything that lies beyond uncertainty. Risk does not appear as a source of fear, stopping action. It is eliminated through creativity and finding viable alternatives. The concreteness cannot be disclosed in prediction details when we talk about strategy. Strategic thinking deposits the mental capacity of recognition by associating with past or present states, making the transition from apparent assumptions to essence correlations between the variables that act in a system. "In terms of planning, no unnecessary movement; in terms of strategy, no forbidden step"²¹.

Sun Tzu was fully aware of the importance of a clearly oriented, easy-to-understand and to-apply direction of strategy. *The Art of War* offers a collection of methods needed to design the resources, calculating the chances of success *in black and white*. In the hypothetical situations presented by Sun Tzu there are no *grey areas*, hazards or unseen risks. It all depends on the calculations and estimates of the leaders, within the reasonable limits of manoeuvring concepts and combat devices at that time (not very different from today!).

²⁰ I. Nonaka, Z. Zhu, *Pragmatic strategy. Eastern Wisdom, Global Success*, Cambridge University Press, p. 15, apud Constantin Brătianu, *Gândirea strategică, op. cit.*, p. 260.

²¹ Sun Tzu, *op. cit.*, p. 25.



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Problems had to be solved correctly, otherwise the nation was destroyed. The strategy's logic might seem simplistic, but when the goal was for the nation to thrive, the gains were supposed to be maximum!

We can say that Sun Tzu viewed the leadership of the state in a holistic vision, understanding the importance of maintaining the state balance by a rational approach to government. The limits of the strategy do not stop at the immediate conquests, but they must go beyond the end of the conflict, creating, from the planning stage, the necessary conditions for the functioning of the system of interstate relations. The defeated population does not disappear, it is not assimilated, it does not fail. It must be seen with respect for the nation, ensuring its natural conditions of cultural, ideological, social, manifestation, without unjustified restrictions. An eloquent example is the transition phase of the *Iraqi Freedom* operation, where the US administration failed to implement a clear resettlement strategy by not integrating *soft-power* tools into coercive means, thus giving the insurgency the premises of a continuing conflict.

"An army leader is anyone who by virtue of assumed role or assigned responsibility inspires and influences people to accomplish organisational goals. Army leaders motivate people both from inside and outside the chain of command to pursue the actions, focus thinking and shape decisions for the greater good of the organisation"²².

"The goal of science is power. Power is strength and strength changes the mind"²³. The strategic thinking of the Kautilyan king is oriented towards gaining power. But not by deliberative and deterministic thinking, but by using collective judgment, negotiation and manoeuvre at the right moment and time, understanding the strategic context, anticipating the changes, firm decisions in a complex, ambiguous, uncertain and unsafe environment. In other words, not mathematical models (as Clausewitz later tried), but solutions applicable to a well-specified dynamic context.

In *Arthashastra*, nothing in the administration of the state, whether internal or external, was left to chance: the activity of the king,

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²² US Department of the Army, *Army Leadership*, Field Manual 6-22, Washington, DC, US Department of the Army, 12 October 2006

²³ Kautilya, *op. cit.*, p. 388.



ministries, or senior officials; the state of the army, its provenance and preparation; identifying and eradicating corruption; the economic system; trade; social relations, class hierarchy, the obligations and rights of each individual; the legal system; international relations; fraud prevention; preparing and conducting the war; integrating the population of the conquered states; the opportunity to build up the alliance system and its connections. All the actions taken are converging towards a *status quo*, which is primarily focused on the benefit, micro and macroeconomic one, which is the premise for obtaining/maintaining regional power.

*Those who forget the lessons of history are doomed to repeat it*²⁴. This phrase almost became a truism, applicable to all fields of human activity, especially the military one. Kautilya sees the period before the war as critical to the final result. It was vital that the king and his counsellors were able to make a rational assessment of their own resources in relation to those of the enemy, also with taking into account the allies' contribution. Thus, weather conditions, seasonal variations, military training programmes, equipment, moral analysis, consequences assessment, loss estimates in relation to strategic gains, risk analysis were carefully weighed. (It strikingly sounds like the stages of today's planning process!). There was no situation in which an enemy could be attacked without prior consultation with the allies. Everything for the safety of victory, nothing more for hazard. Kautilya encouraged the superior intelligence (specific to the visionaries), considering it more important than the military power in this war strategy.

In ancient India, the central role in the state's gear was owned by the king. Therefore, strategic thinking was an exclusively emanation of noble origin, the attribute of whom, depending on its strategic decisions, depended on the fate of the whole country. The states in which the *vijigishu* (conqueror) maintained the state were: 1. **peace** (sandhi); 2. **war** (vigraha); 3. **neutrality** (asana); 4. **preparation for war** (yana); 5. **membership of an alliance system** (samshrayi); 6. **dual policy** (idhībhāva).

²⁴ Jorge Santayana, American philosopher, essayist, poet, fiction writer and critic, 1863-1952.

In the king's strategic approach, the goal was always to defeat the opponent. To each of the six states corresponds a strategy, and the combination of these – the great strategy. War is just one of the means to achieve the goal of hegemony. The other means are **giving gifts** or **bribing** to weak emperors. Against the powerful, the **division of power** (only the impression of power, the control was the conqueror's) or **coercion**. Through a broad strategy, Arthashastra recommends that the future conqueror acts primarily against the hostile neighbour and, with the newly acquired power, to develop the force to the neutral king/state. If he succeeds, he should also subdue the most powerful or "indifferent" king. This would complete his hegemony on the *mandala* as a whole, the rest being in line. If there are only two other states, one hostile and the other friendly, *vijigisu* should crush the neighbouring state, whether hostile or friendly, and then oppose the other.

Sun Tzu becomes even more pragmatic when it comes to the king's profile. He must be intelligent, credible, human, brave, and very disciplined. These features defined (and still define) organizational culture, playing a key role in shaping the strategy. The first step towards knowledge and, implicitly, to the success of action is self-consciousness. Sun Tzu called for the leader to have that *high knowledge* that would allow the understanding of weak and strong points, validated by vulnerabilities and opportunities, of his own forces and the enemy's. "Know your enemy and know yourself; find naught in fear for 100 battles. Know yourself but not your enemy, find levels of loss and victory. Know your enemy but not yourself, wallow in defeat every time"²⁵.

Completing it in a timeless and ideological attempt, Lao Tse in *Tao Te Ching (The Book of the Path to the Supreme Truth)* adds to the virtues of a leader the modesty, the altruism and, above all, the trust in people. "The leader is manifesting with modesty. (...) The best leaders pass unnoticed... When the trust in people lacks/ People cannot trust the rulers neither. / Words are always inferior to the facts"²⁶.

²⁵ Sun Tzu, *op. cit.*, p. 21.

²⁶ Lao Tse, *Tao Te Ching*, translated in <https://scorilos.files.wordpress.com/2012/01/lao-tze-tao-te-king-cartea-caii-si-a-virtutii.pdf>, retrieved on 10 October 2018.

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Adding the *reflection* to the above features, Sun Tzu's leader model allows him to think of a higher level in analyzing a complex issue. Today we call it critical thinking, creative thinking, systemic thinking, or ethical thinking. Practically, *The Art of War* teaches us to think strategically, to get out of the paradigm, to reason effectively, translating us outside of our own box. Paraphrasing Descartes, *we are strategizing, so we exist!*

Conclusions

Unquestionably, *The Art of War* and *Arthashastra* are the proof of the two geniuses of the strategy. If the Chinese general's teachings were taken over, adapted, and applied in almost everything that depends upon a strategy, Kautilya is a little *disadvantaged*. His work, basically a model of strategic thinking, is less applied, in a completely rational pattern. Indirectly, every great power, from antiquity to this day, can find its own strategy in the Indian books.

The foundation of the establishment of an influential nation state was its power, manifested in all forms and fields of administration. Kautilya realized the importance of the economy in the leadership of the state, transposed into the welfare of the population and later in the development of a broad policy of influencing neighbours. Ability consisted in overcoming constraints of any kind, in all environments. And Sun Tzu and Kautilya look at the economy as a precursor of military power, in different exposures, of course (one indirectly and the other directly). According to the two, the ultimate goal was the multiplication of internal and external power factors.

The military power is only one of the instruments of national power, certified by the resources available (human and material), education and training levels, moral quality of the population and state leadership. In the general equation of gaining power, the war must be the last solution, after exhausting other instruments: political, diplomatic or economic. It must be generated when it should, when it helps, when it brings benefits, when it creates perspectives! Applied or not knowingly, the pragmatism of this art of war found itself in the birth and development of empires. And not only the great

historical empires, but also the media, financial, economic, real estate empires, etc.

The meaning of the war in these two masterpieces was also included in the United Nations Charter. Article I states: *"To maintain international peace and security and, to that end: to take effective collective measures for the prevention and removal of threats to the peace and for the suppression of acts of aggression or other breaches of the peace and to bring about by peaceful means, and in conformity with the principles of justice and international law, adjustment or settlement of international disputes or situations which might lead to a breach of the peace"*.

Today's war, more than ever, shakes swords and generates conflicts, simultaneously, on several levels: **physically**, through the test of fire power, weapon technology, troop power, and logistics; **psychologically**, by influencing morale, leadership and courage; **virtually**, by creating a **distortion of reality**. The role, or rather the ability of the commanders, consists in assessing all complex battlefield situations, making effective decisions, and formulating superior tactical plans to overcome the critical points of a campaign plan.

Transformed into strategy, the pragmatism of the war could look like that, today:

- based on economic power – e.g.: the European Union;
- based on military power – e.g.: Russia, Iran;
- joint (economic and military) – e.g. US and partly Russia;
- based on the power of military alliances, but with important economic and military influences – Israel.

At the margin of these are the emerging democratic states, which seek (yet) promoter positions in a strategy for defining the role in the region. Unfortunately, many of the national strategies lack the living essence of their development, people and their well-being, emphasizing *deadly areas*: transport strategy, sports strategy, and examples could continue.

Western determinism was possible as a result of easy access to power (through resources, intrigues, conquests, etc.). Defining and calculating war variables can be replaced by strategic thinking, not in the sense

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of abandoning the analysis, but in imposing visionary solutions. A small nation, in a geopolitical and geostrategic context, may have the same chances of asserting itself with the misfortune of *being swallowed* by the great powers. Not the force itself makes you a winner in the war, but the pragmatism in applying the strategy. Not defining some rules leads to well-being, but applying them. Maybe it would not be worthless if we would study the past wars through Kautilya's visionary eyes also, not just Sun Tzu's, trying to find the mistakes of the forerunners, in order not to repeat them. It is not like that, *"only a fool learns from his own mistakes. The wise man learns from the mistakes of others"* (von Bismarck).

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FROM SEAD TO JOINT-SEAD

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The new approach to suppression of enemy air defences missions surpasses its traditional limits and opens new horizons, formalising new and innovative ways to intelligently combine military capabilities, be they land, sea, air or space based, kinetic or non-kinetic, lethal or non-lethal, manned or unmanned, providing as much freedom of manoeuvre as possible for own forces in the entire spectrum of operational domains (land, air, sea, space, electromagnetic and information).

The present study is intended to explain how or, more importantly, why the suppression of enemy air defences mission has evolved throughout time, permanently reassessing its effectiveness and seeking to strike the perfect balance between implicit expenses and military results. Since the direct effects of this mission are very difficult to observe and quantify, one of the most challenging tasks has been to assess it before deciding improvement strategies. Once this task has been acknowledged, theoreticians, practitioners and technicians involved in the planning and execution of enemy air defence suppression missions have come to the same conclusion: advanced technology has to be combined with intelligent innovation and ideas to engage future enemies while ensuring the survival of own forces and contributing directly to meeting the military objectives.

Keywords: suppression of enemy air defences, non-kinetic, lethal, electromagnetic environment, electronic warfare.

INTRODUCTION

The article is a presentation of the concepts that have influenced the execution of *Suppression of Enemy Air Defences – SEAD* missions throughout time, a radiography of the changes they have undertaken during the past half of the century. The study is not intended to chronologically list the changes but to reveal the main ideas that mark the evolution of *SEAD*, as well as the factors generating, justifying and enabling these trends.

The concept of *suppression of defences* is not new. It has been acknowledged since the first moment the armed forces started to search for solutions to undermine the enemy capacity to defend. *Suppression of Enemy Air Defences* is only one of the most recent forms of manifestation of the old concept, and its application, preponderantly through the air power, as a fundamental element for the destruction of the enemy air defence capability and, at the same time, for the protection of own air assets, is the result of a long and natural evolutionary process.

Moreover, the evolution of the way of conducting warfare has stimulated the technological process and accelerated the *SEAD* subsequent development, reaching parameters that are difficult to quantify. The influences of technology, environment and available resources, generated by military strategies and historical moments, have significantly marked what *SEAD* is today and, more importantly what it should be.

LESSONS LEARNED

To better understand the context of the conceptual and technological developments that have marked the mode of *SEAD* missions execution, the lessons learned from the conflicts in the past fifty years should be analysed, in terms of the binomial *SEAD – air defence*.

The concept of suppression of defences is not new. It has been acknowledged since the first moment the armed forces started to search for solutions to undermine the enemy capacity to defend.



The Vietnam War is considered the first military conflict in history in which air defence, through the emergence and proliferation of the surface-to-air missile systems, really marked the way of conducting military confrontations.

The Vietnam War (1965-1975)

The Vietnam War is considered the first military conflict in history in which air defence, through the emergence and proliferation of the surface-to-air missile systems, really marked the way of conducting military confrontations. The North Vietnam, supported by the USSR, benefitted from a dense network of surface-to-air missile systems. To survive, the North Vietnamese anti-aircraft defence used three main methods: planned manoeuvre of forces and means, camouflage and false positioning, as well as emission control by repeatedly coupling/decoupling the radar stations. The main tactic employed was the anti-aircraft ambush. In turn, the US forces took measures to adapt the employed techniques, tactics and procedures, the suppression of air defences being, in general, conceived having as main element the specialised means, namely the use in the fight of a type of aircraft specially equipped and armed to detect, localise and engage the radar complexes associated with the surface-to-air missile systems (such as the F-100 Super Sabre aircraft), that type of mission having the code name “Iron Hand”¹ and, subsequently, “Wild Weasel”².

The Yom Kippur War (1973)

The Yom Kippur War was the conflict in which type 2K12 “Kub” (NATO code name SA-6 “Gainful”) surface-to-air missile systems made in the USSR were firstly used. The air defence strategy stipulated defence in depth, following several alignments of surface-to-air missiles and anti-aircraft artillery, surface-to-air missile mobile systems being especially used to gain local air superiority. Moreover, it was opted for barrage

¹ The Operation “Iron Hand” was a joint operation of the USAF and USN, conducted between 1965 and 1973 during the Vietnam War. The operation was a type of SEAD mission, having as main goal to suppress the surface-to-air missile systems provided to the North Vietnam by the USSR, as well as to neutralise the anti-aircraft artillery systems directed by radar. The term “Iron Hand” refers not only to the development of tactics and specific equipment but also to the numerous “Iron Hand” individual missions that accompanied the USAF and USN attack packages. Source: https://en.wikipedia.org/wiki/Operation_Iron_Hand, retrieved on 12.10.2018.

² “Wild Weasel” is a code name given by the US Air Force to any type of aircraft equipped with anti-radiation missiles that had the mission to destroy the radars and the surface-to-air missiles belonging to the enemy anti-aircraft defence. The concept of “Wild Weasel” was enhanced by the US Air Force following entering into service of the Soviet surface-to-air missiles and shooting down the US airplanes that executed attack missions in the North Vietnam. The programme was led by General Kenneth Dempster. Source: https://en.wikipedia.org/wiki/Suppression_of_Enemy_Air_Defenses, retrieved on 11.10.2018.

fire employing all the fire means capable of engaging aerial targets, a tactic proved effective in the first phase of the conflict (in the first six days, the Israeli air force lost about 70% of the combat aircraft). Meanwhile, the air space control was defective, 84 Egyptian aircraft being lost by fratricide (shot down by own SA-6 systems).

The Bekaa Valley Conflict (1982)

The Syrian air defence consisted mainly of surface-to-air missile fixed systems and it was executed without obeying a strict discipline in terms of engaging air targets, without applying strict procedures in terms of Emissions Control – EMCON³, without taking sufficient measures in terms of masking and without benefitting from technical maintenance capabilities in the tactical field. Moreover, the radar systems were not reprogrammed following the outbreak of the conflict, using the working frequencies specific to peacetime.

Operation “Desert Storm” (1991)

The Iraqi air defence was organised in an integrated manner, having a centralised command and control system. The urban centres were protected using medium and long range surface-to-air missile systems, while the own forces were protected using medium and small range (tactical) systems. The measures to protect the elements composing the air defence integrated system were not appropriate, especially in terms of electronic protection (jamming protection equipment and strict emission control measures), which resulted in their extreme vulnerability to the electronic attack actions executed by the coalition forces. As far as SEAD missions were concerned, the coalition forces (especially the US ones) were capable of adapting to the situation under the circumstances of an insufficiently mature doctrinal framework to allow for an integrated, multidisciplinary and proactive approach to the actions meant to suppress the air defence, approach that was focused on autonomous air operations.

³ EMCON (Emissions Control) represents the electromagnetic and acoustic emission management. It is employed to prevent an enemy from detecting, identifying and localising own forces, as well as to minimise the electromagnetic interferences between friend systems. Source: https://www.globalsecurity.org/military/library/policy/navy/nrtc/14226_ch3.pdf, retrieved on 12.10.2018.

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During the entire NATO air campaign, about 61% of the 743 anti-radiation missiles (AGM-88 HARM) were launched in a pre-emptive manner (in the absence of the target radar station electromagnetic signal), so that only 12% of the Serbian surface-to-air missile systems were destroyed (3 out of 26 systems SA-6 "Gainful")

Operation "Allied Force" (1999)

The operation was the first military conflict in which all the previously acknowledged shortcomings were overcome by the Serbian air defence through protection measures and judiciously employed tactics. The air defence strategy was firstly aimed at preserving the combat capacity for as long as possible period of time, the Serbs limiting to engaging facile air targets thus achieving economy of forces and means. The protection measures were complex (deception, false positioning, using electronic simulators and radars associated with missile systems etc.) and strictly implemented, especially by obeying emission control procedures and by employing tactics that stipulated short and sequential emissions, from different positions. In general, the Serbs implemented, in a coordinated and cumulative manner, an ensemble of innovative tactics to engage air targets ("Hide, Shoot and Scoot"⁴ type): use of passive sensors, strict EMCON procedures, position masking, high capacity of technical repairs in the tactical field, dispersed and sequential use of radar systems, strict discipline in engaging air targets, use of air ambush, frequent manoeuvres of forces and means. The results confirmed the effectiveness of the strategy: during the entire NATO air campaign, about 61% of the 743 anti-radiation missiles (AGM-88 HARM) were launched in a pre-emptive manner (in the absence of the target radar station electromagnetic signal), so that only 12% of the Serbian surface-to-air missile systems were destroyed (3 out of 26 systems SA-6 "Gainful")⁵.

Post-Cold War Period

The way in which the air defence of potential adversaries is achieved has undergone a process of adaptation to the challenges induced by SEAD capabilities in at least three dimensions: conceptual, tactical and technological.

Technologically, the majority of the air defence systems developed in the previous period and kept operational have undergone at least four modernisation stages: replacement of mechanic and electronic

⁴ "Hide, Shoot and Scoot" is an artillery tactic through which fire is executed against a target and then it is immediately manoeuvred in another position to avoid the counter-battery fire executed by enemy artillery. Source: https://en.wikipedia.org/wiki/Hide_and_scoot, retrieved on 12.10.2018.

⁵ Dr Carlo Kopp, "Surface to Air Missiles Effectiveness in Past Conflicts", available online at: <http://www.ausairpower.net/APA-SAM-Effectiveness.html>, retrieved on 12.09.2018.

components, modernisation through digitisation of the components meant to process and analyse electromagnetic signals and to transmit data (e.g. Pechora 2A, S-200 Grudzindz, Tetraedr OSA-1T systems), increase in mobility (e.g. Tetraedr Pechora 2TM, Pechora 2/2M systems) and hybridisation⁶, by replacing some vital components (radar, missiles) with new generation equipment (e.g. HQ-2B, H-200, Polish SA-6 "Gainful" systems with Sparrow missiles). More important than the modernisation of old systems is the fact that new surface-to-air missile systems have become operational, belonging to the so-called "Two digits SAM" category (SA-10 "Grumble", SA-12 "Giant", SA-20 "Gargoyle"), characterised by high mobility, long range action, high protection against jamming, and advanced capability to detect air targets (use of LPI⁷ radar systems: complex wave forms, dispersion).

Tactically, the use of unconventional/innovative tactics in the "Hide, Shoot and Scoot" category has become the "modus operandi" in this period (Operation "Allied Force").

Conceptually, given the advance in the field of information technology and computers (data processing/storage/transmission capacity), air defence is conceived in an integrated, flexible and modular manner, the multiple internal processes being facilitated by a multitude of options for secured communications, capable of putting into practice coherent and complex measures for passive air defence (inflatable equipment, engineer works, electronic simulators⁸ etc.).

SEAD EFFECTIVENESS: ASSESSMENT METHODS AND ENHANCEMENT POSSIBILITIES

Based on own experience and the analysis of the lessons learned from the military conflicts that the US armed forces have participated in during the past 50 years, Lieutenant Colonel James R. Brungess identifies in his book – "Setting the Context: Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World" – four central

⁶ Dr Carlo Kopp, "Hybridisation of Surface to Air Missile Systems", available online at: <http://www.ausairpower.net/APA-NOTAM-180109-1.html>, retrieved on 13.09.2018.

⁷ A Low-probability-of-intercept radar – LPIR is a type of radar that uses a series of measures to avoid detection by the detection equipment of the passive radars while searching for a target or being engaged in following it. This characteristic is desirable for radar stations as it allows for detecting and following targets without alerting them about their presence, protecting, at the same time, the radar station against anti-radiation missiles.

⁸ For example, KRTZ-125 2M ARM and Almaz Antey OU-1, which simulate SA-8 "Gecko" type systems (OSA AKM).

Conceptually, given the advance in the field of information technology and computers (data processing/storage/transmission capacity), air defence is conceived in an integrated, flexible and modular manner, the multiple internal processes being facilitated by a multitude of options for secured communications, capable of putting into practice coherent and complex measures for passive air defence (inflatable equipment, engineer works, electronic simulators etc.).



SEAD is at the leading edge of the technological revolution the air power is undergoing, being highly dependent on technological progress.

SEAD is expanding its traditional boundaries and it is gradually "infusing" itself into the basic day-to-day strategies and tactics of the air power.

Given the SEAD character and the environment in such missions are executed, effects are often difficult to notice, many times not being proportional to the rate of the physical destruction caused by kinetic actions, namely not influenced by quantifiable factors.

themes that dictate the conceptual and doctrinal framework for the execution of SEAD missions:

- SEAD is at the leading edge of the technological revolution the air power is undergoing, being highly dependent on technological progress;
- SEAD is expanding its traditional boundaries and it is gradually "infusing" itself into the basic day-to-day strategies and tactics of the air power;
- the traditional way of decision-making process and of measuring the effectiveness of SEAD missions should change;
- the planning of SEAD missions should be focused on objectives, joint cooperation among the services being necessary for the effective SEAD application in the future combat environment⁹.

Moreover, the author makes a complex and pertinent analysis of the way in which SEAD missions effectiveness can be measured, as well as of the factors that contribute to achieving the planned effects. The goal of the analysis is, in fact, to identify the evolution trends of the binomial SEAD – adversary air defence. For this purpose there have been considered four models of assessment (used throughout time): *historical model* (based on experience and lessons learned), *engineering model* (based on technical parameters), *"common-sense" model* (based on a personal specialised analysis) and *objective-based model* (that represents the sum of the previous models, showing new perspectives, based on the analysis of the way in which actions contribute to meeting the objective).

Given the SEAD character and the environment in such missions are executed, effects are often difficult to notice, many times not being proportional to the rate of the physical destruction caused by kinetic actions, namely not influenced by quantifiable factors¹⁰. Under such circumstances, the first three models of assessment have demonstrated their limitations in time: the historical model appeals to only quantifiable data (loss rate, destruction rate etc.), not considering situational elements, the engineering model focuses

⁹ Lieutenant Colonel (USAF) James R. Brungess, "Setting the Context: Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World", Air University Press, Maxwell Air Force Base, Alabama, USA, June 1994, p. XV, available at: <http://www.dtic.mil/dtic/tr/fulltext/u2/a421980.pdf>, retrieved on 11.10.2018.

¹⁰ *Ibidem*, p. 53.

on parameters analysis rather than on that having an operational impact, and the "common-sense" model is highly subjective. Thus, it has become obvious that it is necessary to focus on the fourth model, which is cumulative, the objective-based one. The simple process of effectiveness assessment convinces the author that the remarked trend actually represents the evolution model SEAD should focus on in order to be able to permanently adapt to the new challenges in the combat environment (Figure no. 1¹¹).

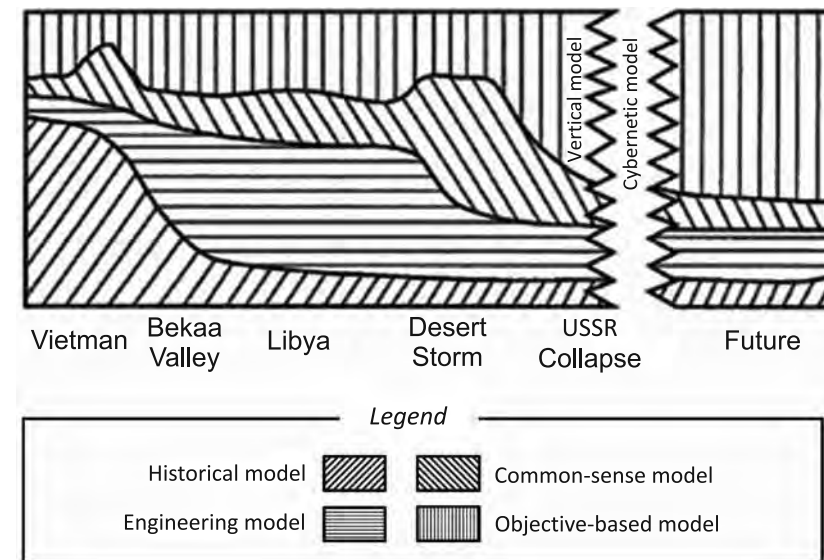


Figure no. 1: Evolution of SEAD missions models of assessment

The objective-based assessment criteria, inspired by the cybernetic model presented by Karl Deutsch¹² (focus on projecting some self-adjustable mechanisms that concomitantly respond to a sum of factors to strike a certain balance), establish a direct relationship between SEAD mission and the degree of mission accomplishment thus introducing new possibilities to strike a balance between the two. In fact, they assess and provide self-adjustment solutions so that the relationship *action (SEAD) – result (military objective)* can strike the planned/expected balance.

¹¹ *Ibidem*, p. 71.

¹² Karl W. Deutsch, "The Nerves of Government: Models of Political Communication and Control", The Free Press, New York, 1963, p. 56.

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ROMANIAN
MILITARY
THINKING

The use of this model of assessment and of its associated criteria, concomitantly focused on process and objective, allows for the realistic analysis of future threats/targets for SEAD missions (increasingly technologically sophisticated, more powerful and more complex), in a self-adjustable manner, depending on the context in which they are executed and the characteristics of the threat, being capable of providing solutions for the aggregation of a complex of tactics and armament systems (beyond the traditional model) in order to meet the planned objective. The changes in approach have radical effects on the paradigm of using SEAD, thus marking the transition from the reactive (protection) approach to the proactive/preventive one, meant to meet the general objective.

Moreover, to demonstrate and substantiate the general characteristics and the trends in employing SEAD, they were approached considering four evolutionary parallel levels (continuums):

- piecemeal/integrated;
- need-based/resource-based;
- threat-based/capability-based;
- defensive/offensive.

The piecemeal/integrated level emphasises the way SEAD means have been used throughout time. The piecemeal model, focused on means, reactive, was specific to the situation in which there were a lot of resources and each air formation could be defended at the expected level by an adequate SEAD package. When the resources were insufficient, to avoid the situation in which SEAD protection was provided in different proportions, only to certain air missions and depending on priorities, commanders had the option of an integrated, offensive, approach, namely the intelligent exploitation of means in SEAD missions with extended effects. The two situations also exemplify the defensive/offensive level, the former being characterised by reactivity, SEAD providing protection for other air missions meant to meet the military objective, the latter being characterised by proactivity, SEAD mission as such contributing to meeting the objective.

The need-based/resource-based level presents two different approaches, namely, given the military objective, what means are needed to meet it, or, given the available resources, how they could be used to meet the objective. The approaches answer the questions "What ?" and "How ?", the former being specific to the period in which there were a lot of resources, and the latter characterising

The changes in approach have radical effects on the paradigm of using SEAD, thus marking the transition from the reactive (protection) approach to the proactive/preventive one, meant to meet the general objective.

the situation in which the resources are not fully correlated/adapted to threats, especially in an environment marked by uncertainty. The latter approach is based on intelligent combinations of traditional and non-traditional means, whose cumulative effects meet the goal of the mission.

The threat-based/capability-based level is also directly influenced by the resources and the threat characteristics. If, in the past, the operational particularities of SEAD specialised means were directly dictated by the characteristics of potential threats, the two developing in parallel, in a continuum *action – reaction*, the modern battlefield and the access to technology have substantially changed the equation, triggering the necessity to develop some multirole SEAD means, a fact that represents a challenge for those who design operational and technical capabilities (Figure no. 2¹³).

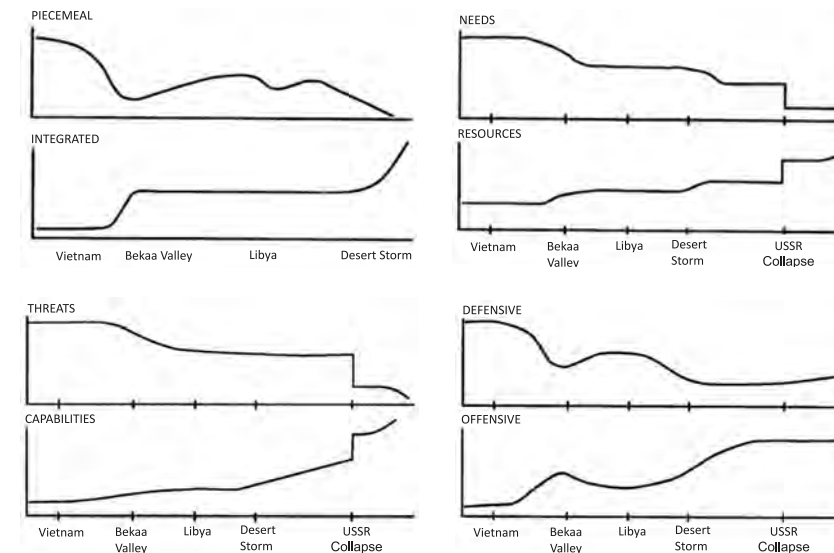


Figure no. 2: Trends in the use of SEAD in combat

In a general framework, these trends demonstrate the fact that, in the early '90s, SEAD had already undergone a transition process, from its traditionally defensive characteristic, having a role in protecting own forces, to a complex status, being simultaneously an air power

¹³ Lieutenant Colonel (USAF) James R. Brungess, "Setting the Context: Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World", op. cit., pp. 82-88.

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The transition process not only establishes the parameters for the development of the air component but also emphasises the necessity to find some integrated methods of using SEAD, thus being the starting point for the joint approach of such missions, namely introducing the concept of "Joint SEAD" (J-SEAD).

Operation "Desert Storm" set the ground for the objective-based approach, the coalition forces succeeding in applying innovative tactics aimed at the enemy information denial strategy.

defender, in general, and an offensive means per se¹⁴. The same transition process entailed renouncing the exclusively traditional approach, using highly specialised and technologized means, in favour of the "intelligent" approach, finding innovative solutions to meet the operational requirements of such a capability and, simultaneously, being used in an integrated approach, generating operational effects.

The transition process not only establishes the parameters for the development of the air component but also emphasises the necessity to find some integrated methods of using SEAD, thus being the starting point for the joint approach of such missions, namely introducing the concept of "Joint SEAD" (J-SEAD)¹⁵.

DOCTRINAL CONSIDERATIONS

Apparently, the development process of the US SEAD strategy has been intuitive, at least in its first stage, having as a milestone the Operation "Desert Storm" that, as it has been previously mentioned, met all the criteria and set the ground for the objective-based approach, the coalition forces succeeding in applying innovative tactics aimed at the enemy information denial strategy. The idea is suggested by Lieutenant Colonel James R. Brungess, who analysed the answer given by General John Corder, Chief of Operations for Central Command Air Forces and Commander of the USAF Tactical Air Warfare Center during "Desert Storm", to the question: "Iraqi radar-directed air defenses proved singularly ineffective. How much of that was attributable to electronic warfare (EW)?" "Well, if you think electronic combat, not EW, I would say that it all was ... because we went out and we did everything. We did SEAD ... we did C³CM¹⁶ and we had our own on-board self-protection EW. We set about in a very deliberate manner to take that thing apart as the first order of business, the price of admission. That's what you do. So we bombed all the operations centers, we jammed everything we could on the first day. We knew the jamming would be very effective early, but we knew that you couldn't rely on that for the whole war. So we went into a very aggressive campaign to beat up on all [the] EW GCI¹⁷ sites we could find (I'm talking about direct attack).

¹⁴ *Ibidem*, p. 86.

¹⁵ *Ibidem*, p. 88.

¹⁶ C³CM – Command, control, communications countermeasures – set of actions in NATO Counter Command & Control Warfare, more recently included in INFOOPS.

¹⁷ Early Warning (EW) Radar; Ground Control Intercept (GCI) Radar for fighters.

... We sent A-10s out the first day and the A-10s just had a field day on a lot of EW GCI plants, which were essentially undefended, and just really blew them apart. So we took away much of the EW GCI that way. Of course, Compass Call¹⁸ (EC-130H) was doing its thing in the command and control business to keep [those Iraqi assets] under control until we could bomb the communications facilities and the other stuff that they needed to communicate with. To me, it was a classic campaign, not really a lot different from those we practice in a microcosm out at Nellis during Green Flag¹⁹.

Somehow contrary to General Corder's comments, Lieutenant Colonel Brungess argues that the statement itself is a testimony to the evolutionary process. Even presented distinctly, as separate tactics, without emphasising the change in strategy or doctrine, the statement actually cements the progress towards the objective-oriented, integrated approach to the enemy air defence capabilities. According to Lieutenant Colonel Brungess analysis, the statement includes five clear ideas that demonstrate the mentioned progress as follows:

1. *Even mentioned and treated separately, C³CM, SEAD and EW were considered in relation to achieving the military objective.*
2. *It was proved that, as long as the air defence system was organised as a set of interconnected entities, an attack against any of them had effects over the others.*
3. *SEAD plan was a deliberate effort to take apart the integrated air defence system in a sequenced, iterative manner.*
4. *The choice between disruptive means (jamming, harassment, deception) and destructive ones (anti-radiation missiles, cruise missiles and ground/bombardment attacks) was based on a logical criterion: what was most effective at that time and place considering what was available to perform the task.*
5. *SEAD missions were effective since the early stages as the forces were specially prepared through "Green Flag"²⁰ exercises (integrated approach was already exercised).*

¹⁸ Compass Call – indicative of one of the US airborne electronic warfare means, using C-130 Hercules as platform.

¹⁹ Lieutenant Colonel (USAF) James R. Brungess, "Setting the Context: Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World", *op. cit.*, p. 181.

²⁰ "Green Flag" exercises, conducted at Nellis Air Base (Nevada, USA), contributed to training the US forces (air crews, intelligence officers, members of Air Operations Centres) for combat in a highly technologized electronic environment.

With the exception of nuclear and spatial component, the use of the electromagnetic spectrum for military purposes represents the most important technological progress in the past period and, therefore, SEAD should be compliant with the principles and forms of manifestation of the actions in this spectrum.

To continue his argumentative logic, the author concretely focuses on the electronic combat²¹ aspect of SEAD, arguing that, with the exception of nuclear and spatial component, the use of the electromagnetic spectrum for military purposes represents the most important technological progress in the past period and, therefore, SEAD should be compliant with the principles and forms of manifestation of the actions in this spectrum. In the future, the main objective of SEAD missions will be to degrade the internal information network of an integrated air defence system before it could react, and to keep it inoperative until the objectives of the air power can be met²². To achieve this desideratum, it is absolutely necessary to closely cooperate, by synergistically integrating into the operation of at least three distinct domains of offensive actions in the electromagnetic environment: SEAD, EW and C³CM (Figure no. 3²³).

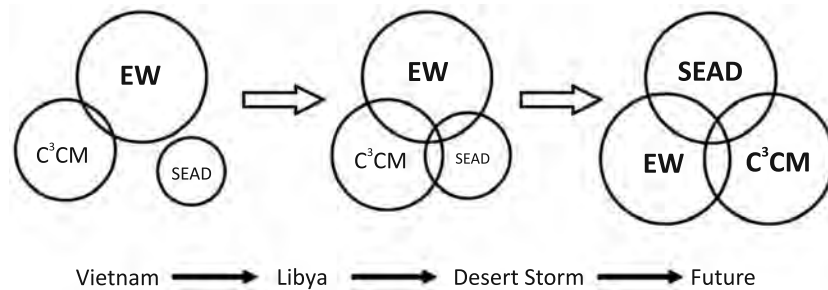


Figure no. 3: Evolution of SEAD, EW and C³CM integration

Moreover, in our opinion, even if the suppression of enemy air defences within the framework of “Desert Storm” was achieved by jointly engaging the means belonging to several services, it did not succeed in acquiring those characteristics that provided the viability and the added value specific to a really joint approach to SEAD (Joint SEAD – J-SEAD). In fact, there were put into practice paradigms of conducting warfare specific to any service to meet joint objectives.

That is why we consider that Joint SEAD will be different in the future, under the circumstances in which the strategic paradigms,

²¹ Doctrinally, SEAD was considered a type of “electronic combat”, distinct from the broader concept of “electronic warfare”.

²² Lieutenant Colonel (USAF) James R. Brungess, “Setting the Context: Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World”, op. cit., p. xvii.

²³ Ibidem, p. 103.

doctrines and tactics specific to each service have already become convergent. J-SEAD should overcome the limits of the classical strategy “destroy and jam” that was successful in the period when there were plenty of resources, when US SEAD technology, personal training and fire power surpassed, without doubt, the possibilities of any USA potential adversary. In the process of transition from the approach focused on kinetic strikes to the one focused on information J-SEAD should increasingly consider the idea of setting as main objective to deny information to the enemy. The rapid transition from the kinetic strike-based approach to the information denial-based one opens the path to new possibilities to make the modern structure of the integrated air defence system of the enemy more vulnerable, namely to paralyse the enemy by denying its possibility to access, process or transmit data²⁴.

In general, in an extremely comprised manner, Lieutenant Colonel Brungess recommends that J-SEAD missions should be planned and executed considering two main lines of effort:

- disruption of the vital components of the enemy integrated air defence system by non-lethal actions (degradation, neutralisation and deception) against the processes that ensure their function, namely: air target detection, localisation and identification, tracking, armament allocation and engagement, the objective being information denial²⁵;
- adaptation of the way SEAD is executed, concomitantly aimed at three main characteristics: variation (flexibility in choosing tactics, focusing on SWEEP-type autonomous operations), different combination of the means that may generate SEAD effects and innovation (out of traditionalism, especially by considering emergent domains: cyber and directed electromagnetic energy)²⁶.

NATO PERSPECTIVE ON SEAD MISSION

During the past years, NATO policy regarding SEAD has been rethought from an innovative perspective, in the attempt to make the transition from the resource-based approach, specific to the Cold War period, to the objective-based orientation, integrated and joint, innovative, capable of meeting the new NATO strategic concept.

²⁴ Ibidem, p. 167.

²⁵ Ibidem, pp. 170-190.

²⁶ Ibidem, pp. 190-200.

We consider that Joint SEAD will be different in the future, under the circumstances in which the strategic paradigms, doctrines and tactics specific to each service have already become convergent. J-SEAD should overcome the limits of the classical strategy “destroy and jam” that was successful in the period when there were plenty of resources, when US SEAD technology, personal training and fire power surpassed, without doubt, the possibilities of any USA potential adversary.



The declared goal in NATO Policy regarding the suppression of enemy air defences was to facilitate “the effective, coordinated and interoperable use of the Alliance SEAD capabilities to create the conditions for the successful conduct of operations and missions, including the proper protection of own forces”²⁷.

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In this context, the document substantiates the complex role SEAD missions play in ensuring the freedom of movement in five operational domains: air, land, sea, information and electromagnetic. SEAD missions will not thus limit to the direct protection of an air attack formation or the creation of some air favourable conditions (satisfactory control over the air space) but they will substantially contribute to blocking the enemy actions (land, air and sea) by denying its access to information (information domain), its possibility to effectively use its electronic means (electromagnetic domain/environment) and by disrupting its capability to efficiently achieve the command and control of own forces.

SEAD, in an objective/effect-based perspective and in the general framework of operations in the electromagnetic environment, is illustrated in Figure no. 4²⁸.

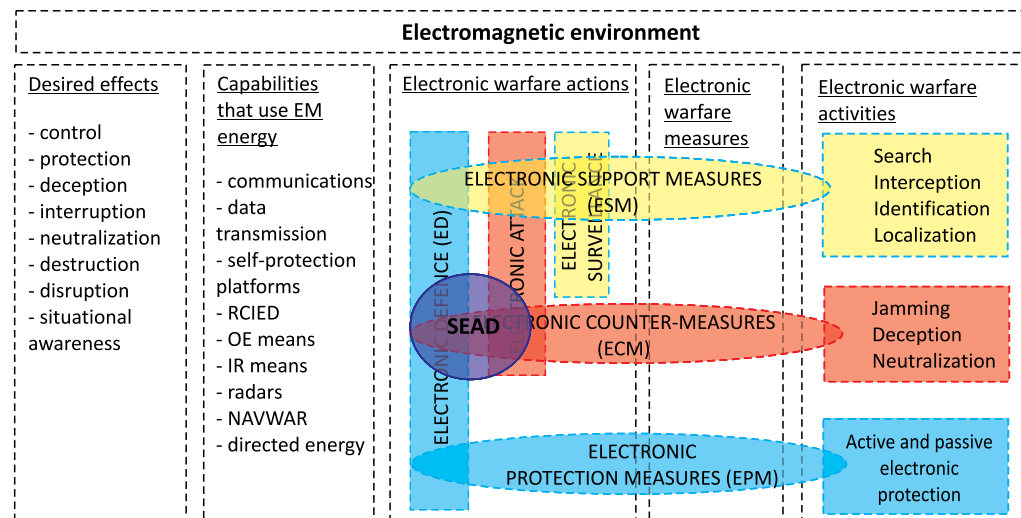


Figure no. 4: SEAD in the context of EMO

²⁷ ***, NATO Suppression of Enemy Air Defences (SEAD) Policy, 2014, p. 114.

²⁸ Ibidem, p. 178.

Concomitantly, it is formally introduced the term *Joint SEAD*, supported by three fundamental principles that guide the planning and execution of this type of missions as well as the process of future capabilities development:

- SEAD is an integrated element of operations in all operational domains, the current situation requiring the synchronisation up to integration of combat actions in all domains. SEAD missions transcend all these domains considering the fact that all forces can contribute to the accomplishment of SEAD missions in order to ensure the freedom of manoeuvre for own air force, surface forces benefitting, in turn, from the full direct support provided by air means, in a coordinated and synchronised manner;
- SEAD has the incontestable attribute of potentiator for the other elements of the joint force;
- SEAD missions are *de facto* joint and multinational. As long as all the armed forces services have available suppression of air defence capabilities, their coordinated execution entails concomitantly using capabilities belonging to many services and many countries.

Given all the operational requirements imposed by the current combat environment taken into account when SEAD missions are conceptually reconsidered, we appreciate that the combat means participating in this type of missions should be capable of also generating types of effects other than those traditionally associated with their role (an example being the execution of electronic attack missions using AESA technology²⁹). Moreover, SEAD traditional effects can be also achieved by using means other than traditional ones (namely specialised air means), thus becoming necessary to take into consideration other military functions for the effective and synchronised planning of *Joint SEAD* missions.

The following figure presents the way in which traditional combat means can be complementarily used in order to obtain effects that concur to the temporary inhibition of a complex air defence system, in an approach that is mainly aimed at obtaining/maintaining the freedom of action in the electromagnetic spectrum (Figure no. 5³⁰).

²⁹ Active Electronically Scanned Array – an advanced generation of radars, see details at http://www.alab.ee.nctu.edu.tw/wpmu/ywang/files/2017/11/AESA-System-20170922_hardcopy.pdf

³⁰ Electronic Spectrum Denial. Source: NATO SEAD Policy, loc. cit., p. 74.

SEAD traditional effects can be also achieved by using means other than traditional ones (namely specialised air means), thus becoming necessary to take into consideration other military functions for the effective and synchronised planning of Joint SEAD missions.



SEAD represents "the ensemble of activities intended to neutralise, temporarily disrupt or destroy the enemy surface air defence systems by using certain destructive or having disintegrator effect means that contribute to ensuring the own forces freedom of manoeuvre in the combat environment".

We emphasise that SEAD missions do not cover the range of offensive missions against the enemy fighters, as an air defence integrated armament system, being limited to the complementary actions of electronic attack (against the surface-air and air-air communication links they use or against the enemy airborne interception radar).

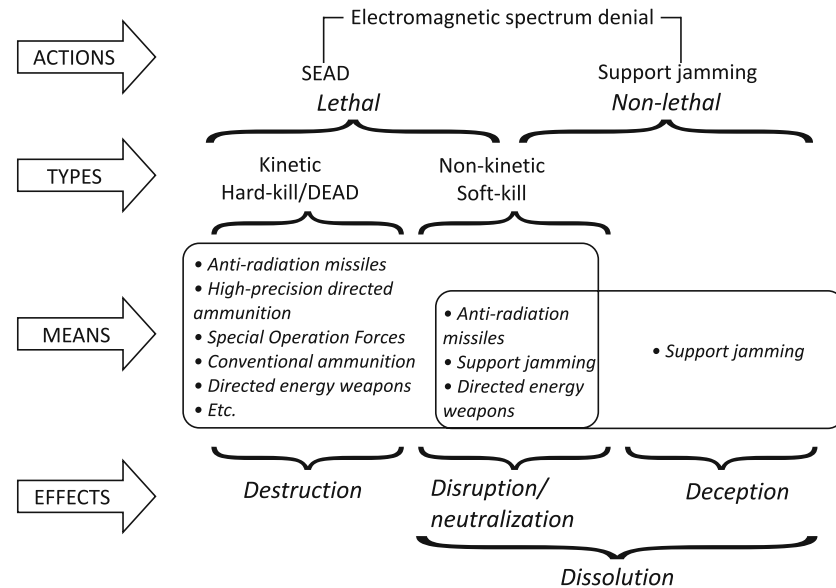


Figure no. 5: SEAD in the context of ESD

In essence, the conceptual revisions in recent years have resulted in the reformulation of SEAD definition, which, in compliance with the new NATO policy in this field, establishes that it represents "the ensemble of activities intended to neutralise, temporarily disrupt or destroy the enemy surface air defence systems by using certain destructive or having disintegrator effect means that contribute to ensuring the own forces freedom of manoeuvre in the combat environment"³¹.

The new definition deliberately uses terms that allow for the participation in SEAD mission execution of a complex of land, air, sea and even space means, kinetic or non-kinetic ones, manned or unmanned, to suppress the enemy air defence systems by direct/indirect actions against its ground- or sea-based elements, in order to ensure the own forces freedom of manoeuvre in all the five operational domains (land, air/space, sea, electromagnetic and information). However, we emphasise that SEAD missions do not cover the range of offensive missions against the enemy fighters, as an air defence integrated armament system, being limited to the complementary actions of electronic attack (against the surface-air and air-air communication links they use or against the enemy airborne interception radar).

³¹ ***, NATO Suppression of Enemy Air Defences (SEAD) Policy, loc. cit., p. 114.



More explicitly, to obtain the effects subsumed under SEAD general objective, namely the suppression of enemy air defences, own forces have the possibility and flexibility to use, in a proactive manner, and more rarely under the current circumstances, a reactive one, any combination of the following capabilities (the following list is not exhaustive):

- anti-radiation armament, used in a passive manner (detection and/or deterrence means) and active/kinetic one, to destroy radar stations, jamming sources and, potentially, directed-energy weapons;
- high precision ammunition (guided by GPS, laser or, in the terminal phase, electronic-optic/in infrared/by radio frequencies), used to execute kinetic strikes (hard-kill); it can strike systems that do not radiate electromagnetic energy but necessitates precise data related to the position of the target made available by other support elements;
- directed-energy armament that can be used against the entire set of subsystems of the enemy integrated air defence system (including against the operating personnel), in a lethal or non-lethal manner;
- electronic attack used to disrupt, neutralise and deceive the enemy integrated air defence system, in a non-lethal manner, having as effect denying information access, directly, through offensive actions, and, indirectly, through deterring the adversary to use electronic means. The main methods employed are jamming, radar and communications, deception, through imitation/simulation (induction of false targets, physically, by dipoles, and electronically, by DRFM³² technology, spoofing);
- conventional armament systems in the inventory of land forces (land artillery, ground-to-ground missiles) to execute kinetic strikes against SEAD targets in their range of action. Their advantage is that they can work for longer periods of time, not being limited by the aircraft flight time/tactical range as well as that they, in principle, have an unchanged degree of vulnerability;

³² Digital Radio Frequency Memory is an electronic method employed to digitally capture and retransmit the frequency modulation (FM) signal. DRFMs are usually used to block the radar; however, their application in cellular communications are increasingly frequent, see <http://electronica-azi.ro/2001/03/08/transmisia-radio-a-informatiei/>



- specialised means or conventional armament on board of military ships (on-board guns, cruise missiles) that can execute kinetic/hard-kill strikes against SEAD targets on board or deployed in the coastal area, by specific naval fire support actions;
- Special Operations Forces (SOF) capable of executing a wide range of missions having SEAD effects, in a lethal or non-lethal manner, including direct support to direct PGM³³;
- information technology means that could be theoretically used to disrupt, neutralise and disorganise the command, control and communication system of the enemy integrated air defence system;
- information support capabilities of NNEC (NATO Network Enabled Capability³⁴) type, necessary to rapidly, dynamically and precisely obtain data regarding air defence threats such as³⁵:
 - multi-platform geo-positioning by MSR (Multi-Ship Ranging) solutions;
 - presence warning and positioning data using CESMO (Collaborative Electronic Support Measures Operations) solutions and data regarding the Electronic Order of Battle (EOB), by the Common Operational Picture (COP)³⁶.

CONCLUSIONS

The directions of evolution are not essentially elements of novelty for any of us, each of us becoming aware of them in line with the evolution of the environment in time and the transformations in the political, social, military and especially technological fields. The intelligent exploitation of resources in a multidimensional framework in order to maximise results is no longer an exclusive attribute of visionaries but a daily requirement for each of us.

³³ PGM – Precision Guided Missile.

³⁴ NATO Network Enabled Capability (NNEC) Programme represents the Alliance ability to join capabilities at different levels (military – from the strategic to the tactical level – and civilian) in a single information infrastructure. Source: https://www.nato.int/cps/en/natohq/topics_54644.htm, retrieved on 12.10.2018.

³⁵ www.theavionist.com/tag/multi-ship-ranging.pdf, retrieved on 12.10.2018.

³⁶ Marius Șerbeszki, Florin Ignat, "SEAD or Joint SEAD – A NATO Perspective", volume PROCEEDINGS of the International Scientific Conference "STRATEGII XXI", XIIIth edition, 27-28 April 2017, Editura Universității Naționale de Apărare "Carol I", București, 2017, pp. 430-436.

Such an approach provides the Romanian Armed Forces with the opportunity to establish a viable SEAD capability by including these new principles related to the execution of suppression of enemy air defences in doctrines and tactical manuals. The establishment of such a capability is necessary for any air force worldwide as it is the only one capable of ensuring the conditions for the air power to meet its goal, namely to provide the necessary control of air space at a satisfactory level at least.

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7. ***, *NATO Suppression of Enemy Air Defences (SEAD) Policy*, 2014.



The establishment of such a capability is necessary for any air force worldwide as it is the only one capable of ensuring the conditions for the air power to meet its goal, namely to provide the necessary control of air space at a satisfactory level at least.

OPERATIONALISING CYBERSPACE – FROM CYBER SECURITY TO OPERATIONAL SUCCESS –

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The states responses to cyber security challenges have become more visible in recent years. Integrated and comprehensive approaches are being pursued through the adoption of new cyber security strategies, consistent cyber investment pledges and ambitious organisational adaptations. In recent years several states have acknowledged cyberspace as a place of confrontation and an operational domain, along with land, air and sea. NATO took the decision to operationalise cyberspace in 2016. It is now adapting to new security challenges by setting up specialised structures for the planning and execution of cyberspace operations. Doctrinal transformations are taking place in an attempt to facilitate the understanding of the relevance cyberspace has for military operations.

Integrating, coordinating and synchronising cyberspace operations, missions and activities with activities in the traditional domains represent significant challenges. The priority of military operations is the accomplishment of the mission, and in order for cyberspace to contribute to this goal, a paradigm shift in military thinking is very much needed.

Keywords: cyberspace, mission accomplishment, resilience, information and data, cyber defence.

Motto:

“There are two types of organisations – those that know they are under attack from cyberspace and those that don’t know they’re under attack from cyberspace”.

Shawn Henry, former Chief
of the FBI’s Cyber Crimes Unit

Introduction

The digital revolution brings undeniable benefits to society, but the accelerated pace of these developments creates serious problems of understanding and adaptation to new technologies. The development of the Internet and associated infrastructures, as well as the recent development of disruptive technologies such as 5G networks, Internet of Things (IoT), Quantum and Cognitive Computing, Mixed Reality, Artificial Intelligence, Big Data Analysis are transforming cyberspace into a challenging environment for human activities. The mass adoption of new technologies opens new horizons for the human civilisation but it also extends exponentially the attack surface in front of malicious activities in cyberspace.

Cyber security has received increased attention over the past few years, as the global spending in the field is estimated for 2019 at 124 billion dollars¹. Nevertheless, the deployment of new technologies into current activities has not been performed by putting cyber security first. Data privacy and cyberspace protection seem to be still lagging behind technical evolution. Multiple major security breaches in the banking system, social networks or other Internet platforms, which resulted in compromising of confidential information, as well as the personal data breaches of millions of users are strong arguments in this regard.

Cyber threats have ceased to be emerging security challenges. What seemed like an apocalyptic future in the years of Norbert Wiener, when he was setting the foundations of cybernetics, is now the reality

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¹ <https://www.gartner.com/en/newsroom/press-releases/2018-08-15-gartner-forecasts-worldwide-information-security-spending-to-exceed-124-billion-in-2019>, retrieved on 17 September 2018.



Cyberspace is being used more and more frequently by state-actors, as an environment that contributes to the systematic achievement of strategic objectives. Hijacking democratic elections, disrupting electricity supply networks, the digital blockage of an entire nation, all these are not fiction anymore, but the yesterday's story.

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of each day. International conflicts have become increasingly subtle, from hybrid to economic war and to new boundaries crossed on the secret fronts. Cyberspace is being used more and more frequently by state-actors, as an environment that contributes to the systematic achievement of strategic objectives. Hijacking democratic elections, disrupting electricity supply networks, the digital blockage of an entire nation, all these are not fiction anymore, but the yesterday's story.

Technological evolution did not carry on unnoticed by the military. The economic and operational advantages of new technologies could not be ignored, they have been progressively integrated into military capabilities, missions and operations. Weapon systems are already using advanced digital technologies, military organisations are already operating in the *cloud*². The increasing need for the interconnection of military systems, the increasing use of civil communications infrastructures for military purposes, driven by efficiency, the need for network federalization in coalition-type missions and operations generate new vulnerabilities in cyberspace.

Governmental responses to cyber security challenges have become more visible in recent years. Integrated, comprehensive, whole-of-government approaches are being pursued through the adoption of new cyber security strategies, consistent cyber investment pledges and ambitious organisational adaptations. In recent years several states have recognised cyberspace as a place of confrontation and an operational domain, along with land, air and sea. NATO took the decision to operationalise cyberspace at the Warsaw summit in 2016. It is now adapting to new security challenges by setting up specialised structures for the planning and execution of cyberspace operations. Doctrinal transformations are taking place in an attempt to facilitate the understanding of the relevance cyberspace has for military operations.

Integrating, coordinating and synchronising cyberspace operations, missions and activities with activities in the traditional domains represent significant challenges. The priority of military operations is the accomplishment of the mission, and in order for cyberspace to contribute to this goal, a paradigm shift in military thinking is very much needed.

² <https://aws.amazon.com/blogs/publicsector/announcing-the-new-aws-secret-region/> Announcing the new Amazon Web Services Secret Region, retrieved on 3 August 2018.

Cyberspace – Conceptual Delimitations

“Cyber is a chameleon. For politicians in Washington, the word stands for power outages that could plunge entire cities into chaos at any moment. For spies in Maryland, it stands for conflict and war, and for data being stolen by Russian criminals and Chinese spies. For executives in the City of London, it stands for major security breaches, for bankruptcy money, and for ruined corporate reputations. [...] Its meaning is equally evasive, hazy and uncertain”³.

Terminologies are indispensable, all the more so in a field that generates so many different interpretations and reactions as the cyberspace. Interpretations on cyberspace, cyber security or cyber operations are quite disparate, with frequent situations where institutions in the same field or the same government are using different definitions. A clear understanding of cyberspace from a national security and military perspective will clearly allow a better focus of the military interest in the cyber domain.

The British Security Strategy, published in 2016, defines cyberspace as being the *“interdependent network of information technology infrastructures that includes the Internet, telecommunication networks, computerised systems, devices connected to the Internet, as well as processors and controllers integrated into them. It can also refer to a world, to a virtual domain or an abstract concept”⁴*. Another definition, from the Cyber Primer⁵ of UK's Ministry of Defence, introduces an additional aspect, that cyberspace *extends into the physical, virtual and cognitive domains*.

The United States Department of Defense suggests a very similar approach, but it states that *cyberspace is a global domain*⁶.

Romania's Cyber Security Strategy defines cyberspace as a virtual domain *“Cyberspace – virtual environment generated by cyber infrastructures, including the information that is being processed, stored or transmitted, as well as user activities in cyberspace”⁷*.

³ Thomas Rid, *Rise of the Machines - the Lost History of Cybernetics*, Scribe publications, London, UK, 2016.

⁴ UK National Cyber Security Strategy 2016-2021, p. 75.

⁵ *Cyber Primer (2nd edition)*, The Development, Concepts and Doctrine Centre, UK Ministry of Defence, 2016, p. 1.

⁶ *US DoD Dictionary of Military and Associated Terms*, 2018, <http://www.jcs.mil/Doctrine/DOD-Terminology/>, retrieved on 25 September 2018.

⁷ <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/ntnl-cbr-scrtr-strtg/index-en.aspx> Canada National Cybersecurity Strategy, retrieved on 21 October 2018.

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Canada, in its recently approved Cyber Security Strategy defines cyberspace as follows: “The electronic world created by interconnected networks of information technology and the information on those networks. It is a global common where more than 3 billion people are linked together to exchange ideas, services, and friendship”⁸.

Japan’s Cyber Security Strategy does not provide a precise definition, but offers, in the same context, a statement supporting the fact that technological developments tend to gradually unify cyberspace with real space: “Knowledge, technologies, and services in cyberspace, such as AI, IoT, Fintech, robotics, 3D printers, and Augmented Reality/Virtual Reality, are becoming established in society and leading innovations that are transforming the existing structures in socio-economic activities and the daily lives of Japanese people, and these transformations are bringing about progress in the unification of cyberspace and real space”⁹.

The definitions presented seem to provide some answers, but also raise some questions. Is there a unique, global cyberspace, with clear boundaries or are there many cyberspaces? Is cyberspace a virtual domain or a physical domain? Can we define a national cyberspace? What about an exclusively military one? How should we plan and conduct cyberspace operations in the Internet, the environment of friendship and social networking?

A military cyberspace could be defined, but not without some difficulties and additional clarifications. The delineation of military cyberspace and cyberspace infrastructures critical to the conduct of military activities represents an essential step towards bringing the debate on cyberspace and cyberspace operations in a more familiar area for military leaders and planners. As an example, the US Department of Defense provides the following definition of DoD cyberspace: “The DODIN¹⁰ is the set of information capabilities and associated processes for collecting, processing, storing, disseminating, and managing information on-demand to war fighters, policy makers, and support personnel, whether interconnected or stand-alone, including owned and leased communications and computing systems and services, software (including applications), data, security services,

⁸ <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/ntnl-cbr-scrtr-strtg/index-en.aspx> Canada National Cybersecurity Strategy, retrieved on 21 October 2018.

⁹ <https://www.nisc.go.jp/eng/pdf/cs-senryaku2018-en.pdf> Japan Cyber Security Strategy, July 2018, retrieved on 4 October 2018.

¹⁰ DODIN – Department of Defense Information Network.

other associated services, and national security systems. The DODIN comprises all of DOD cyberspace, including the classified and unclassified global networks (e.g. NIPRNET, SIPRNET, Joint Worldwide Intelligence Communications System) and many other components, including DOD-owned smart phones, radio frequency identification tags, industrial control systems, isolated laboratory networks, and platform information technology (PIT)”¹¹. The definition does not limit US DoD cyberspace to networks and systems owned by the DoD but also includes industrial control systems and other networks that process military-related information, such as defence contractors networks. This definition extends its scope to relevant aspects of cyber security such as supply chain security. Such an approach contributes to a clearer understanding of the portion of cyberspace that might be of interest to military activities.

Characteristics of Cyberspace – Is Cyberspace Unique?

Cyberspace has been described as consisting of three inter-related layers¹²:

- The *physical layer*, which includes physical space, geography, real environment, fighting platforms, electronic components, equipment and network infrastructures, including the transmission medium, whether wired or wireless;
- The *syntactic(or logical) layer*, that of coding, hardware programming, network protocols and instructions that help control the physical layer and facilitate the execution of information systems specific functions;
- The *semantic layer* incorporates information processed, stored or transmitted in systems and networks, that have a significance to people, user interfaces etc. At this level, further distinctions can be made¹³ between the social layer, human layer and cyber persona layer (access accounts, user profiles and the links between them).

Thus, we could accept that cyberspace has both a physical and a virtual dimension, complemented by a semantic component that

¹¹ Joint Publication 3-12, *Cyberspace Operations*, Joint Chiefs of Staff, 2018, p. 1-5.

¹² Martin C. Libicki, *Cyberspace in Peace and War*, Naval Institute Press, Annapolis, Maryland, 2016, p. 21.

¹³ *Cyber Primer*, op. cit., p. 5 suggests six layers of cyberspace: social, human, cyber persona, informational, network and real layer.



It is important to understand that electronic systems, whether digital or analogous, in particular tactical radios and satellite communications systems used in military operations, are more vulnerable to electronic warfare activities and can hardly be affected by classical cyber threats, such as malicious software.

conveys human meaning to information provided by digital systems and fulfils different functions of utility to human activity in the physical domain. Cyberspace cannot be isolated from the physical world and treated as a purely virtual space. Offensive activities in the physical domains can have an impact on cyberspace through the destruction of infrastructure or network equipment, in the same way that actions in cyberspace can produce effects in the physical domain, disrupting or diverting the functioning of weapon systems, electrical grids or navigation systems.

Cyberspace is not a continuum, but divided, dispersed, geographically and physically, separated at the logical layer, from a property perspective and from the legal perspective. Especially in the military field, there are many networks and systems that are isolated from the outside networks. Weapon systems will never navigate the Internet and military equipment on the battlefield will rather be connected via antennas rather than cables¹⁴. It is important to understand that electronic systems, whether digital or analogous, in particular tactical radios and satellite communications systems used in military operations, are more vulnerable to electronic warfare activities and can hardly be affected by classical cyber threats, such as malicious software.

The need to synchronise and coordinate the activities and effects achieved in and through cyberspace with those corresponding to other operational domains, in particular through the continuous integration of all these activities into operational planning processes, is one of the basic requirements in the context of cyberspace operationalisation. A more recent doctrinal concern is the need for integrating and coordinating cyberspace activities with electromagnetic activities under the concept of Cyber and Electromagnetic Activities (CEMA), which deserves consideration given to the similarities of specific activities in both areas¹⁵: offensive activities (electronic attacks and cyber-attacks), information collection (SIGINT, electronic surveillance, cyber ISR), defensive activities (electronic defence, cyber defence), enabling activities (spectrum management, electronic warfare

¹⁴ Martin C. Libicki, *Cyberspace in Peace and War*, Naval Institute Press, Annapolis, Maryland, 2016, p. 139.

¹⁵ Joint Doctrine Note 1/18, *Cyber and Electromagnetic Activities*, Development Concepts and Doctrine Centre, 2018.

operational support, cyber preparation of the battle space, spectrum management).

Cyberspace threats have distinct characteristics other than conventional threats. Cyber-attacks can have both visible effects, with impact in the physical domain or “*under the radar*” effects, impacting only the virtual space. Effects can be instant or delayed, activated in times of opportunity and identifiable only by using specialised cyber defence capabilities. Cyber-attacks can be extremely difficult to attribute, they often make use of civilian communications infrastructures, making it difficult to determine whether a threshold has been breached so that a cyber-attack will require a military response and what the limitations and constraints of such a response beyond the military cyberspace would be. Yet another challenge will be the designation of a Joint Area of Operations, Areas of Operations and Areas of Interest in cyberspace¹⁶, taking into consideration the limited control commanders have outside their own forces networks.

Cyber threats are asymmetrical in nature. An individual or group of individuals, with relatively limited resources, affiliated or not to governmental organisations, can generate significant effects in or through cyberspace, with the potential of having a destabilising impact on a state. Such actions can be easily kept in the area of “*plausible deniability*” through careful planning and execution, use of proxies, making it very difficult to attribute attacks or making decisions on possible countermeasures. The more difficult it will be to decide for a military response, be it a cyberspace response, even in the context of cyber-attacks with devastating impact. It is one of the reasons why cyber space is so efficiently and frequently used as part of hybrid campaigns.

For military commanders, the complexity of the cyber domain, in addition to an already congested and contested operational environment in the land, air and sea, brings on new challenges. Over the years, military organisations answer to operational complexities has been the development of doctrines – to support the understanding of the domain; development of combat manuals – describing the specifics of the missions, actions and effects on the battlefield; development of tactics, techniques, procedures that provide quick, adapted response

¹⁶ Brad Bigelow, *Mission Assurance: Shifting the Focus of Cyber Defence*, 9th International Conference on Cyber Conflict, NATO CCD COE Publication, Tallinn, 2017, p. 4.

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The principles of mission command, the operational functions, the principles of operational planning still remain valid in cyberspace and those principles can help military commanders keep their focus on objectives and mission accomplishment, rather than on the efforts to understand the “uniqueness” of a technical, complex domain.

Cyberspace is becoming increasingly relevant to military operations, in terms of not only defensive activities, aimed towards protecting systems and capabilities and maintaining freedom of action, but also offensive activities, through the use of cyber capabilities to produce effects in or through cyberspace to support the achievement of objectives set by commanders.

options, complemented by realistic training to help maintain the forces' capacity to respond to new operational challenges.

The principles of mission command, the operational functions, the principles of operational planning still remain valid in cyberspace and those principles can help military commanders keep their focus on objectives and mission accomplishment, rather than on the efforts to understand the “uniqueness” of a technical, complex domain. Integrating cyberspace into doctrines, military planning principles and processes is essential, along with other activities needed to be implemented across the spectrum DOTMLPFI¹⁷, in order to help eliminate ambiguity in understanding and to support the development of credible cyber capabilities in the military organisation.

Military Operations in Cyberspace. Missions, Activities and Effects in Cyberspace

The UK Doctrine defines cyber operations as *the planning and synchronisation of activities in and through cyberspace to enable freedom of manoeuvre and to achieve military objectives*¹⁸. The US Doctrine¹⁹ has a similar interpretation of cyberspace operations, as *the employment of cyberspace capabilities where the primary purpose is to achieve objectives in or through cyberspace*.

Cyberspace is becoming increasingly relevant to military operations, in terms of not only defensive activities, aimed towards protecting systems and capabilities and maintaining freedom of action, but also offensive activities, through the use of cyber capabilities to produce effects in or through cyberspace to support the achievement of objectives set by commanders. Military activities in cyberspace can be carried out independently or simultaneously with other conventional, kinetic or non- kinetic activities.

Understanding the interdependencies between operational domains is paramount in the context of cyberspace as a domain of operations, both from a defensive and an offensive posture. Military capabilities, connected or independent from other systems and networks, might be vulnerable to cyberspace threats. The exploitation of these vulnerabilities have the potential to create effects in land, air

¹⁷ Doctrine, Organisation, Training, Materiel, Leadership, Personnel, Facilities, Infrastructure.

¹⁸ *Cyber Primer, op. cit.*, 2016, p.51.

¹⁹ Joint Publication 3-12, *Cyberspace Operations*, p. I-1, 8 June 2018.



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Defensive cyberspace operations – activities aimed at countering specific threats, imminent or on-going malicious activities or to limit the effects of malicious activities and cyber-attacks. Defensive activities may be directed exclusively towards owned systems and networks – internal defensive measures/passive defence, but may include activities conducted in neutral or adversary systems used to trigger an attack – external defensive measures/actions response/active defence (e.g. temporary or permanent disabling of an external server or computer used as a proxy for DDoS attacks).

or maritime domains (changing the trajectory of a missile, disabling a command and control system or sensors, disrupting an early warning system sensors etc.). The periphery of cyberspace has a significant importance. It is here where equipment, combat platforms, weapon systems, people and processes are placed, being susceptible to become targets or collateral damage of attacks in cyberspace.

In an adapted version of the classifications made by more mature cyber doctrines such as the US²⁰ or the United Kingdom²¹ ones, we can use as a reference model the following description of missions in cyberspace:

- **Networks and systems operation** – current activities comprising the installation, configuration, operation and maintenance of communication and information systems, digital weapon systems, as well as service management and control activities. This mission includes specific activities contributing to *cyber security*, predominantly passive measures oriented towards preserving the confidentiality, integrity and availability of information (encryption, key management, configuration management and control, use of security credentials, antivirus protection, access control, software patching etc). These activities and measures produce effects like the *protection, control and security* of systems and networks against known threats;
- **Defensive cyberspace operations** – activities aimed at countering specific threats, imminent or on-going malicious activities or to limit the effects of malicious activities and cyber-attacks. Defensive activities may be directed exclusively towards owned systems and networks – *internal defensive measures/passive defence*, but may include activities conducted in neutral or adversary systems used to trigger an attack – *external defensive measures/actions response/active defence* (e.g. temporary or permanent disabling of an external server or computer used as a proxy for DDoS²² attacks). These are *cyber defence* activities and their effects can be *resilience*

²⁰ Joint Publication 3-12, *Cyberspace Operations*, 2018, p. II-1-7.

²¹ *Cyber Primer, op. cit.*, pp. 51-57.

²² Distributed Denial of Service.



in cyberspace²³, *blocking* attacks, *recovering* information or *resuming the operation* of affected systems;

- **Intelligence, Surveillance and Reconnaissance/ISR in cyberspace** – data and information collection activities in cyberspace with the use of *non-intrusive methods* (e.g. Open Source Intelligence) or *intrusive methods* (e.g. malicious software) in order to better understand threats, the cyberspace situation, as well as the cyber capabilities of the adversary. Those are *exploitation* activities in cyberspace, which can contribute to the intelligence preparation of the battlefield. Effects associated with these activities could be: *monitoring* of adversary’s systems and networks, *locating* systems, capabilities or forces, *information collection* or *seizing* information relevant to cyberspace or other domains;
- **Offensive cyberspace operations** – activities conducted in or through cyberspace which are aimed at producing effects relevant to the achievement of military objectives. These activities can take the shape of *cyber-attacks*, with temporary or permanent effects such as: *disabling* or *disrupting* adversary systems and networks, *degrading* or *blocking* services and functionalities or *denying* access to information and systems.

The figure below illustrates the relationships between the different types of missions in cyberspace, their corresponding activities and potential effects of these activities in cyberspace or beyond.

Figure no. 1 illustrates the relations between different types of missions in cyberspace, their specific actions and potential effects within the cyberspace or beyond it.

Not all of the missions and activities described above are carried out by specialised cyber forces. Cyber security measures are specific to all devices that store, process or transmit military information and are implemented by weapon systems administrators, network security and system administrators, security and CIS specialists of all military branches. Nonetheless, the implementation of more active cyber defence measures requires specialised competencies and forces such as cyber incidents rapid response teams, while ISR activities and cyber-attacks are highly specialised activities, requiring judicious planning, highly skilled cyber personnel and a careful evaluation of potential implications of unauthorised access to networks outside one’s own cyberspace. This kind of activities might require a strong legal

²³ Cyber Resiliency – capacity of an organisation or a platform to withstand a cyber-attack and recover its functionality, without affecting objectives or mission achievement.

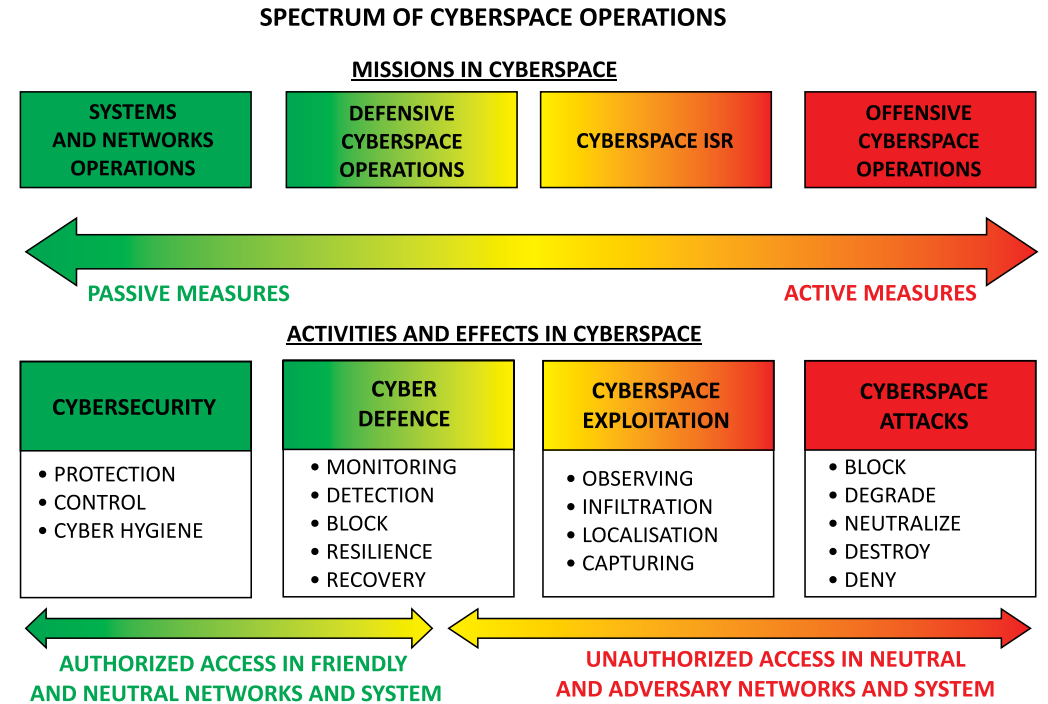


Figure 1: Spectrum of operations and missions in cyberspace

mandate, solid intelligence support and cooperation between several departments or institutions.

Warfare and operational planning principles remain relevant for missions and activities in cyberspace. The efforts to operationalise cyberspace pull military leaders outside their comfort zone since cyberspace has other features than traditional operational domains. However, military fundamentals remain fully valid in cyberspace. A manoeuvrist approach, as an example, can also be applied in cyberspace by:

- cyberspace forces and capabilities contributing to undermining adversary’s will and resilience, with minimal efforts and risks;
- manipulating adversary understanding of the battlefield or limiting its situational awareness by integrating and utilising cyberspace as part of information operations;
- attacking critical capabilities, C2 nodes, lines of supply and communication systems through offensive actions in cyberspace, in order to disrupt decision-making and limit adversary’s freedom of action.

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Military Operations in Cyberspace – Constraints and Limitations –

The possibilities of exploiting fully the military potential of the whole spectrum of cyberspace activities face a number of challenges. As cyberspace activities progress towards more active measures and require access to “neutral” or adversary cyberspace, the limitations and constraints for military operations are increasing.

One of the main constraints for cyberspace operations is of a legal nature, whether we are considering national or international legal frameworks. Accessing other networks can have collateral consequences difficult to control. Who, under what conditions, will authorise active cyber defence measures in the national cyber space? What authority and responsibility will the military organisations have and what rules of engagement will they use? In the international environment the issue is even more complicated, as it is still difficult to obtain a consensus on the applicability of international law in cyberspace. When does a cyber-attack become an armed attack? What criteria must be met to clearly attribute a cyber-attack? When is it lawful to apply countermeasures in cyberspace? The subject is complex, more thoroughly debated and analysed in the context of the development of the *Talinn Manual*.

Another limitation for cyberspace operations is the difficulty of timing and evaluating the effects of a cyber-attack, as the impact assessment is not that straightforward as in the case of kinetic attacks. Cyber weapons features make collateral damage very difficult to control or estimate, another risk being the probability that cyber weapons could be reused by the adversary, after they have been detected or have manifested their effects, a new kind of issue which is unlikely to happen in traditional operational domains. The detection of offensive activities in adversary’s networks and the attribution of these activities can lead to political tensions, similar to those specific to information gathering activities, sabotage, espionage. However, cyberspace offers much more opportunities for performing covert, low-risk and low-cost activities, by using third-parties to make attribution and use of countermeasures more difficult. The cyber-attacks of various actors in cyberspace continue to be effective, with major impacts, despite all these constraints and limitations.

Assuming a certain level of ambition for national cyber forces, with the inclusion or exclusion of cyber offensive capabilities, should take into account some considerations:

- To what extent offensive cyber operations and the ownership of such capabilities will contribute to deterrence and will justify the resources used for developing them?
- What are the costs of implementing such a capability and is the required organisational agility in place to allow an effective use of offensive capabilities or active counter-measures?
- Are there processes in place for the effective integration of intelligence support, indispensable to such activities, in the operational planning process and mission conduct?
- Are targeting processes mature enough to include offensive effects in cyberspace?
- How could the military be as effective in cyberspace as in land, air and sea domains without the offensive components and effects in cyberspace?

Organisation and Leadership in Cyberspace

Contemporary conflicts require a new set of skills from military organisations and military leaders. Emerging technologies will underpin new challenges to national and international security. There is an increased need for organisational transformations and for a new kind of leadership in order to provide agility to the military domain, the ability to identify and understand technological developments and new threats, along with the capacity to operationalise emerging technologies and turn them into operational advantages.

Operationalising cyberspace requires the integration of cyber forces and capabilities into planning processes, operations and missions, the development of relevant capabilities adapted to the whole spectrum of peace, crisis and conflict, including hybrid scenarios. Intelligence support will be vital in this context for the understanding of the cyber threat landscape, for the identification of risks to critical infrastructures, as well as for the understanding of vulnerabilities in adversary networks and systems.

Operationalising cyberspace requires the adoption of a mature regulatory and organisational framework, strategies and policies



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Operationalising cyberspace requires the adoption of a mature regulatory and organisational framework, strategies and policies at national and departmental levels, adaptation of military doctrines and concepts, agile decision-making processes and the development of cyber capabilities, supported by substantial investments.

CYBERCOM's vision is to achieve and maintain superiority in cyberspace at the tactical and operational level in order to influence the adversary behaviour and provide strategic and operational advantages for the Joint Force.

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In most NATO member states the recognition of cyberspace as a new operational environment coincided with establishing of cyber commands or with expanding the missions, responsibilities and authorities of existing commands in cyberspace. The alternatives chosen for setting up such structures may vary depending on national security frameworks, the role and mandate of defence ministries and cyber forces and the cyberspace level of ambition assumed by military leadership and endorsed at the political level. The following paragraphs illustrate some organisational models adopted by NATO member states:

❖ The USA recognised cyberspace as operational domain through the adoption by the Department of Defense of a new cyber strategy²⁴, in 2011, and by establishing the United States Cyber Command (USCYBERCOM) as a structure subordinated to the US Strategic Command (USSTRATCOM), with the mission to direct, synchronise and coordinate the planning and execution of cyberspace operations, in order to protect and promote the national interests of the USA, in collaboration with national and international partners²⁵. CYBERCOM's vision is to achieve and maintain superiority in cyberspace at the tactical and operational level in order to influence the adversary behaviour and provide strategic and operational advantages for the Joint Force²⁶;

❖ The UK has included in its cyber security strategy²⁷, published in November 2011, the establishment of Defence Cyber Operations Group, subsequently renamed the Joint Forces Cyber Group/JFCG, under the Joint Force Command, with the role to develop new techniques, tactics and plans to provide military effects, including increased protection, through cyberspace operations. Subsequently, in May 2013, the Joint Cyber Reserve Force (JCRF) has been established in order to meet the increased need for cyber personnel. In 2016, as part of the implementation of the new national cyber security

²⁴ Department of Defense Strategy for Operating in Cyberspace, July 2011.

²⁵ <https://www.cybercom.mil/About/Mission-and-Vision/>, retrieved on 3 July 2018.

²⁶ US CYBERCOM Vision, April 2018.

²⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/60961/uk-cyber-security-strategy-final.pdfThe UK Cyber Security Strategy, November 2011, retrieved on 3 July 2018.

strategy²⁸, it was established the National Cyber Security Centre as part of the Government Communications Headquarters (GCHQ), with a role to integrate the efforts to protect critical national services and infrastructures from threats in cyberspace, supported by the Cyber Security Operations Centre, whose establishment was announced in April 2016, with the mission to protect the UK Ministry of Defence Cyberspace;

❖ In Spain, the Joint Cyber Command (JCC) was established in February 2013, under the Joint Force Command of the Spanish Armed Forces with the mission²⁹ to plan and execute cyber defence activities in the telecommunication and information systems of the Ministry of Defence or those of interest for national defence, and also to contribute to an appropriate response, including offensive cyberspace operations, to the threats and aggressions in the cyberspace that could affect the national defence. The defence of the Ministry of Defence area of responsibility in cyberspace is a permanent mission of the command. JCC includes the Spanish military CERT³⁰;

❖ The French White Charter on Defence³¹, published by the French Ministry of Defence in 2013, recognises cyberspace as a place of confrontation and as an operational domain. The development of military cyber defence capabilities is considered a priority that is closely linked to the intelligence activity. France is committed to the development of a cyber defence military organisation integrated into the armed forces with offensive and defensive capabilities³² with the mission of preparing or supporting military operations. The Cyber Forces Command (COMCYBER) was set up in 2017 with the following missions³³: protecting information systems under the responsibility of the Defence Staff; defending the Ministry of Defence information systems, with the exception of those belonging to the ministries' intelligence departments; planning and conducting cyber defence operations under the authority of the Deputy Chief of Defence

²⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/567242/national_cyber_security_strategy_2016.pdfNational Cyber Security Strategy 2016-2021, November 2016.

²⁹ <http://www.emad.mde.es/CIBERDEFENSA/>, retrieved on 3 July 2018.

³⁰ Computer Emergency Response Team.

³¹ <https://www.defense.gouv.fr/portail/enjeux2/politique-de-defense/le-livre-blanc-sur-la-defense-et-la-securite-nationale-2013/livre-blanc-2013>Livre blanc défense et sécurité nationale, April 2013.

³² *Ibidem*, p. 89.

³³ <https://www.defense.gouv.fr/portail/enjeux2/la-cyberdefense/la-cyberdefense/presentation>, retrieved on 3 July 2018.



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Recognising cyberspace as an operational domain was justified by the impact of cyber-attacks on national security, prosperity and stability. It was endorsed at the political level through the adoption of national and departmental cyber strategies, accompanied by significant investment in cyber defence capabilities.

Although not all nations express publicly their intention of developing offensive cyber capabilities, offensive operations in cyberspace are generally not considered a taboo area, but just another tool available to military commanders, from a wider spectrum of missions and possible actions in cyberspace

for operations; contributing to human resources policy in the field of cyber defence, as well as in the development of national policies and the planning of inter-institutional cooperation; defining the technical requirements specific to the field; ensuring the consistency of the ministry's cyber defence model and its overall coordination; developing a cyber defence forces reserve.

Similar cyber organisations and commands were also established by other countries: Norway – 2012, Netherlands – 2014 with defensive and offensive responsibilities³⁴, Italy – September 2017; Estonia – July 2018, Romania – December 2018.

Almost without exception, recognising cyberspace as an operational domain was justified by the impact of cyber-attacks on national security, prosperity and stability. It was endorsed at the political level through the adoption of national and departmental cyber strategies, accompanied by significant investment in cyber defence capabilities.

In spite of customised organisational solutions, a number of common aspects emerge in national cyber security strategies and in the initiatives of establishing specialised military cyber defence/cyber operations structures and forces:

- The need for organisational and doctrinal transformations to adapt to the rapid pace of cyber threats evolution;
- The need to establish a clear chain of command and to clarify the roles, responsibilities and authorities of the ministries of defence and cyber commands in relation to other national security institutions;
- The need to clearly determine the area of military responsibility in cyberspace;
- The need to undertake significant investments in cyber defence capabilities;
- The need for close cooperation with the intelligence community;
- The difficulty of attracting highly specialised cyber personnel;
- The need for a whole-of-government approach, effective inter-institutional cooperation and close collaboration with industry and academia.

Another observation is that although not all nations express publicly their intention of developing offensive cyber capabilities, offensive operations in cyberspace are generally not considered a taboo area, but just another tool available to military commanders, from a wider

³⁴ <https://english.defensie.nl/topics/cyber-security/cyber-command>, retrieved on 3 July 2018.

spectrum of missions and possible actions in cyberspace (see *Figure no. 1*).

The use of military cyber capabilities and forces is subject to significant constraints and limitations in light of the attribution issues and the complexities of a potential decision to pursue countermeasures in cyberspace. Despite the fact that deterrence in cyberspace is much more difficult to quantify than deterrence of other strategic threats³⁵, from a purely military perspective, the full spectrum of operations, missions and actions in cyberspace can be of significant relevance to the role of the military organisation in times of peace, crisis and war.

The Implementation of Cyberspace as an Operational Domain in NATO

Amid intensifying cyber-attacks and increased threats from cyberspace, NATO also adopted progressively a number of decisions to improve the defence and deterrence posture of the Alliance.

In 2014, at the NATO Summit in Wales was announced³⁶ the adoption of NATO's Extended Cyber Defence Policy, which reaffirmed the indivisibility of Alliance security and the need for prevention, detection, resilience, recovery and defence in cyberspace. NATO's defensive mandate has been reaffirmed. Political leaders decided that cyber defence is part of the fundamental task of collective defence, cyber-attacks having the potential, of inflicting similar effects to conventional attacks.

The Warsaw Summit from 2016 marked a significant Alliance transformation by the recognition of cyberspace as a new operational domain³⁷, in which the Alliance will be able to defend itself as effectively as in land, air and sea domains. Cyber defence will be integrated into the planning processes of Alliance's operations and missions. Developing cyber defence capabilities and sharing information in this area have become increasingly important for NATO. The Warsaw summit also marked the adoption by the Heads of State and Government of the Cyber Defence Pledge to defend national networks and infrastructures

³⁵ Robert Mandel, *Optimizing Cyber Deterrence*, Georgetown University Press, Washington, 2017, p.228.

³⁶ https://www.nato.int/cps/ic/natohq/official_texts_112964.htm Wales Summit Declaration, retrieved on 23 August 2018.

³⁷ https://www.nato.int/cps/en/natohq/official_texts_133169.htm Warsaw Summit Communique, retrieved on 23 August 2018.



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NATO's mandate in cyberspace remains defensive but, similar to other operational domains, nations can contribute forces and capabilities to increasing the resilience of the Alliance and to countering the full spectrum of threats in cyberspace, including those used as part of hybrid campaigns.

Mission assurance is defined as a process to protect or ensure the continued function and resilience of capabilities and assets, including personnel, equipment, facilities, networks, information and information systems, infrastructure, and supply chains, critical to the execution of DoD mission-essential functions in any operating environment or condition.

and to develop their own cyber defence³⁸ also recognising the applicability of international law to cyberspace.

Announcing the establishment of a Cyberspace Operations Centre as part of the NATO Command Structure Adaptation was another significant step for the operationalisation of cyberspace in NATO, followed in 2018, at the Brussels summit, by the decision³⁹ to integrate sovereign cyber effects provided voluntarily by Allies to Alliance Missions and Operations.

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The Paradigm Shift – from Cyber Security to Mission Assurance –

One of the main arguments of NATO for operationalising cyberspace was the need to improve *mission assurance* to contribute to the fulfilment of NATO's core tasks⁴⁰, in the context of a competitive and contested cyberspace.

The concept of mission assurance was developed in the USA in 2010 as part of the US DoD Directive 3020.40, *Defence Critical Infrastructure Program*. This policy was completed in 2012 by a *DoD Mission Assurance Strategy* and the adoption of the *DoD Mission Assurance Strategy Implementation Framework* in 2013.

Mission assurance is defined⁴¹ as *a process to protect or ensure the continued function and resilience of capabilities and assets, including personnel, equipment, facilities, networks, information and information systems, infrastructure, and supply chains, critical to the execution of DoD mission-essential functions in any operating environment or condition*. Mission essential functions are linked to the mission of the military organisation, and the institution's ability to provide vital services to exercise authority, control and coordination.

³⁸ https://www.nato.int/cps/en/natohq/official_texts_133177.htm Cyber Defence Pledge, retrieved on 23 August 2018.

³⁹ https://www.nato.int/cps/en/natohq/official_texts_156624.htm Brussels Summit Declaration, retrieved on 23 August 2018.

⁴⁰ Brad Bigelow, *Mission Assurance: Shifting the Focus of Cyber Defence*, 9th International Conference on Cyber Conflict, NATO CCD COE Publication, Tallinn, 2017, p. 6.

⁴¹ DoD Directive 3020.40, *Defense Critical Infrastructure Program (DCIP)*, 2016.

The mission assurance process is based on 4 pillars⁴²:

- Identification of missions, critical functions and capabilities essential for carrying out these missions and functions;
- An integrated and comprehensive evaluation of risks to the missions, including those arising from the dependencies between capabilities;
- Implementation of risk mitigation measures;
- Monitoring the performance of risk mitigation measures.

Mission assurance can help identify specific risks, including those coming from cyberspace, by providing military leaders with increased awareness over mission critical capabilities, the level of protection of these capabilities, and the current or potential risks. In this way it becomes possible to identify priorities for risk mitigation actions and an evidence-based decision-making process can be enabled for cyber security and cyber defence investments.

The risk identification process is often underestimated, although it is essential both from the organisational mission assurance and from the operational perspective of mission assurance in military operations. Identifying critical missions, mission critical capabilities and risks to missions and capabilities will allow the establishment of clear roles and responsibilities and will facilitate informed decisions. The cyber domain will contribute to risk assessment alongside the other operational domains. Requirements on cyber security, cyber operations and risk assessments would be integrated into mission assurance processes throughout the entire organisation and in operations, as appropriate.

It is necessary that military plans start from the premise of a highly contested and degraded cyberspace in which adversaries can be successful, by exploiting known or unknown vulnerabilities of friendly networks and systems in the physical, virtual, human or other relevant environments, such as the electromagnetic spectrum. As in other areas, the military organisation will need to prove its capacity and agility to survive against all types of attacks, including those coming from cyberspace. The best deterrent to opponents who are trying to break the symmetry of forces by using cyber attacks, would not be blocking with any costs all threats coming from and through cyberspace, but demonstrating the capacity to effectively manage the consequences of such attacks⁴³.

⁴² *DoD Mission Assurance Strategy*, 2013.

⁴³ Martin C. Libicki, *op.cit.*, p. 176.



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The development of cyber ISR or offensive cyberspace capabilities and the coordination of effects in cyberspace within joint targeting and joint effects processes, integrating cyberspace with land, air and sea open the military organisation to a new potential.

The Defence Staff has the responsibility, according to the law, for the planning and conduct of operations at strategic level, including operations in cyberspace. The force structure will include cyber defence forces and a Cyber Defence Command.

Planning for the most dangerous or most likely enemy course of action in cyberspace is as relevant as in land, air and sea. Alongside networks and systems redundancy, resilience in cyberspace will have to become part of the organisational culture and from this perspective inter-departmental and international cooperation is paramount. Resiliency cannot remain an island, confined to a specific domain such as the military or only to a specific mission.

In the context of *cyber defence* there is a need for more advanced capabilities, active network monitoring, vulnerabilities and anomalies detection, as well as the implementation of active measures to respond to imminent or on-going threats. The development of *cyber ISR* or *offensive cyberspace capabilities* and the coordination of effects in cyberspace within joint targeting and joint effects processes, integrating cyberspace with land, air and sea open the military organisation to a new potential. However, in the absence of a conceptual framework such as one aiming at mission assurance and operational success, the relevance of cyberspace as an operational domain will remain, from the military commander's perspective, in a predominantly abstract, technical area.

Conclusions and Proposals

In the context of the republication, at the end of 2017, of the updated version of *Law no. 346/2006 on the organisation and functioning of the Romanian Ministry of National Defence*, a paradigm shift is also expected at the national level in this domain. The Defence Staff has the responsibility, according to the law, for the planning and conduct of operations at strategic level, including operations in cyberspace. The force structure will include cyber defence forces and a Cyber Defence Command. The Law also mentions the role of the General Directorate for Defence Intelligence to carry on specific activities in cyberspace in order to understand, monitor and counteract cyber-attacks targeting critical cyberspace infrastructures of the Ministry of National Defence.

It will become increasingly necessary to define the MoD's cyberspace, to reshape MoD's responsibilities in cyberspace and the cooperation needed with other structures with responsibilities in the field of national security, such as the organisations mandated to deal with cybercrime, military and national intelligence organisations, national CERTs, industry and academia.



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Cyberspace, through the high level of interconnection and interdependence of networks and systems, is an environment where the weakest link principle has increased validity. Actors in cyberspace will seek the nations with the most precarious cyber security for launching cyber-attacks and covering its tracks.

A culture of cyber resilience, oriented towards mission assurance, will help military commanders to plan operations based on consistent estimates and they will be able to diminish operational risk.

Organisational and transformational efforts, as well as capability development will need to be supported by mature cyber strategies, whole-of-government approaches and a robust legislative package that effectively puts in place the tools and resources needed to develop and use capabilities in cyberspace, for defensive purposes and, under certain circumstances and conditions, the use of offensive cyberspace capabilities.

Cyberspace, through the high level of interconnection and interdependence of networks and systems, is an environment where the weakest link principle has increased validity. Actors in cyberspace will seek the nations with the most precarious cyber security for launching cyber-attacks and covering its tracks. If supply chains are compromised, with malicious hardware or software installed on systems and equipment in the production phase, performant cyber security tools are made irrelevant. It might also become irrelevant having solid military cyberspace capabilities, if the national electricity grid is easily disrupted as a result of a successful cyber-attack. This is why cyber defence and cyber resilience must always be a team sport.

A culture of cyber resilience, oriented towards mission assurance, will help military commanders to plan operations based on consistent estimates and they will be able to diminish operational risk. Generally, it is expected from high-tech military capabilities to be a competitive advantage rather than supplementary risks, but this cannot happen in a void. The operational risk owner will always be the military commander and commanders need the means that enable them to identify risks and manage them properly. Risk identification will allow commanders to identify mitigation measures, to increase operational resiliency, to strengthen operational planning processes by linking, in a mission assurance framework, capabilities vulnerabilities to key processes of command and control, and protect those processes in order to fulfil their missions.

Cyber security is not sufficient for operational success. Risk awareness cannot remain at the system administrator or weapon system operator level. The *cyber security* paradigm facilitates the implementation of rather passive measures, localised, mainly from a technical perspective: development of security architectures, implementing security mechanisms, proper installation of equipment, security accreditation, measures typical for most organisations, not just for the military.



The correlation of military capabilities and their vulnerabilities with mission objectives will put the situation into perspective for decision-makers, and military commanders would have enough arguments to assume an active role in cyberspace with the support of specialised forces.

The adoption by the military organisation of a framework focused on mission assurance, on identifying and protecting mission-critical capabilities and on reducing operational risks, all complemented by a consistent doctrinal adaptation, integrating cyberspace aspects, has the potential to significantly transform the organisation, operational planning processes and mission execution in the context of cyberspace as a domain of operations. The correlation of military capabilities and their vulnerabilities with mission objectives will put the situation into perspective for decision-makers, and military commanders would have enough arguments to assume an active role in cyberspace with the support of specialised forces.

The relevance of developing offensive cyberspace capabilities in the military should not be neglected. Like conventional capabilities, cyber offensive capabilities can contribute significantly, through their effects, to the operational success by providing freedom of action in cyberspace and contributing to the freedom of action and decision-making in land, air and sea domains.

Mission assurance in cyberspace, along with cyber resilience and capability development across the entire spectrum of operations in cyberspace will be the prerequisites for operational success in future conflicts and for the fulfilment of military specific missions.

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THE TECHNOLOGICAL REVOLUTION AND THE IMPLICATIONS ON MILITARY STRATEGY CASE STUDY – MILITARY HELICOPTERS

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Nowadays, more than ever, the link between military strategies and the technological revolution has become a social need. If the war has its origins at the beginning of human civilisation, analysing the succession of historical events in time, it can be observed that, as far as the concept of military strategy is concerned, there have been constant and proportional evolutions which have been most of the times triggered by the appearance and development of new weapon systems. Under these circumstances, military doctrines adapt to the new realities, and even if the general areas that define military strategy, operational art and tactics remain mainly unchanged in principle, the impact of technology obviously influences and highlights the development of military art by changing the content of certain concepts. At the same time, developing and adapting the concept of military strategy can lead to a technological revolution with applicability in the military field.

Keywords: military strategy, technological revolution, family of systems, multi-domain, multi-combustion.

1. Introduction – conceptual delimitations

The historical evolution of the concept of military strategy has gone through a complex and long-lasting development path ever since the earliest attempts to theorise the military experience. It has been a difficult and winding process, with moments or periods of marked by momentum, stagnation or even regress. The constant of this process, however, is represented by the permanent tendency of evolution and improvement both horizontally and vertically, throughout history, according to the economic, social, political, military etc. particularities and characteristics of every era.

In ancient times, strategy meant the “*art of command*”, which is to lead all the forces and means necessary to achieve victory on the battlefield. This interpretation is recognisable nowadays when we talk about tactics. The plans of army leaders and the way they were implemented on the battlefield did not bear an independent name until the end of the 18th century. In 1766, French infantry Lieutenant Colonel Paul Gideon Joly de Maizeroy published a work called *Cours de tactique, theoretique, pratique et historique*¹, which, as the title reveals, introduced the concept of tactics in war theory. Ten years later, the same Joly de Mazeroy published *Theorie de la guerre*, a work that identified a second level of the art of war, which he called *strategy*: “*Making war is a matter of reflection, combination of ideas, foresight, reasoning in depth and use of available means... In order to formulate plans, strategy studies the relationship between time, positions, means and different interests, and takes every factor into account... which*

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¹ Paul Gideon Joly de Maizeroy, *Cours de tactique, theoretique, pratique et historique*, J. B. Hiacinthe Leclerc, Paris, 1766, https://archive.org/details/bub_gb_bASZ_w2VEpgC/page/n5, retrieved on 16.02.2019.



is the province of dialectics, that is to say, of reasoning, which is the highest faculty of the mind”².

Napoleonic wars confirmed the difference between tactics and strategy and even if Napoleon did not use the word strategy, the most important military theorists of the 19th century, Clausewitz and Jomini, did not hesitate to do so.

Jomini divided the art of war in six distinct parts (Diplomacy, Strategy, Grand Tactics, Logistics, Engineering and Tactics), strategy being defined as “the art of properly directing masses upon the theatre of war, and the art of making war upon the map, either for defence or invasion”³.

Jomini’s classification dominated the ideas about the art of war until the First World War. His ideas about planning, mapping and communication lines were the attribute of major states, institutionalised structures from the military point of view during the 19th century. It was a revolution in terms of military thinking, considering that, until 1900, all that meant commanding troops on the battlefield was understood as the exclusive decision of the commander of the army in a war.

Strategy thus became the link between politics and tactics, and the three concepts formed a whole that had to be maintained in harmony. Therefore, a struggle of ideas emerged on the subject of the extent to which politics still had to intervene from the moment the war was declared. Even though, in Clausewitz’s view, war was nothing more than a continuation of politics by other means, it was necessary to establish the role of politics in the process of leading the war.

Clausewitz’s thesis according to which the military point of view should be subordinated to the political one, found opposition in the thesis of Marshal Helmuth Graf von Moltke, a former Chief of the German General Staff, according to which “once war was declared, the statesman should fall silent until the general delivered the victory”⁴,

² Paul Gideon Joly de Maizeroy, *Theorie de la guerre*, quoted by Julian Lindley French and Yves Boyer in *The Oxford Handbook of War*, Oxford University Press, 2012 p. 31, https://books.google.ro/books?id=CWEODZexAJ4C&printsec=frontcover&dq=the+oxford+handbook+of+war&hl=ro&sa=X&ved=0ahUKewiTo7WdiL_gAhUS-yoKHV9eBjMQ6AEIKZAA#v=onepage&q=the%20oxford%20handbook%20of%20war&f=false, retrieved on 16.02.2019

³ Baron Antoine-Henri Jomini, *The Art of War* – restored edition, Published by Legacy Books Press, 2009, Ontario, Canada, p. 41.

⁴ Gerhard Ritter, *The Sword and the Sceptre: The Problem of Militarism in Germany*, 4 volumes Allen Lane, London, 1969-73, vol. I, pp. 187-260.

and this idea was taken over in one form or another by most strategists of that time.

On the other hand, during the First World War also, the armed forces of the belligerent countries reached unprecedented proportions, and that is why it emerged the possibility of creating powerful troop groups, able to carry out on their own great combat actions, which no longer belonged to the tactical level, nor did they reach the strategic level. As a result, a new level of organisation and command of combat actions between the strategic level and the tactical one was necessary – the operational level⁵.

It should be noted that, until the end of the First World War, the definitions of military strategy referred exclusively to ground military actions and neglected actions at sea. Under these circumstances, one of the most influential theorists of that time, Basil Liddell Hart, argued that the war was not won due to the ground actions on the western front, but the decisive factor was the naval power, making a distinction between the land forces strategy and the naval strategy. Under these circumstances, Julian Corbett, the first relevant British strategist, introduced the grand strategy and the minor strategy concepts, the latter summing up the strategy of land forces and naval forces: “Plans of operations, the selection of objectives and the direction of the forces assigned to the operation were now not strategy but minor strategy. Major strategy in its broadest sense has also to deal with the whole resources of the nation for war. It is a branch of statesmanship. It regards the Army and Navy as parts of the one force, to be handled together; they are instruments of war. But it also has to keep in view constantly the politico-diplomatic position of the country and its commercial and financial position”⁶.

The concept of the *Grand strategy* introduced by Corbett prefigured what the British would call *Grand Strategy* and the Americans *National Strategy*. Contemporaneous with Corbett, Alfred Thayer Mahan contributed to the development of the grand strategy concept, connecting it with economic policy: “Maritime trade was vital to national prosperity, and naval superiority was essential

⁵ Corneliu Soare, Romul Duma, Ioan Muntoi, *Teorie și doctrină militară*, Editura Militară, București, 1971, p. 433.

⁶ Julian Corbett, *Some Principles of Maritime Strategy*, ed. Eric Grove, Brassey’s Annapolis, MD, 1988, 1st edition London, 1911, p. 308.

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J.F.C. Fuller anticipated the third component of the military strategy – air power, and supported the principle of cooperation of the three weapons for maximum efficiency.

Liddell Hart introduced the term pure strategy, used in connection with grand strategy: “Pure strategy was still the art of the general. But the role of grand strategy was to coordinate and direct all the resources of the nation towards the attainment of the political object of the war – the goal defined by national policy”.

to the protection of the nation’s interests. That naval superiority in itself depended on the seafaring traditions of the population, the nation’s culture and the state’s political structure”⁷.

This connection between strategy and economy, with reference to war preparation policy during peacetime, was developed by J.F.C. Fuller. Moreover, he anticipated the third component of the military strategy – air power, and supported the principle of cooperation of the three weapons for maximum efficiency: *“In the past, in spite of the universal nature of the principles of war, there has been a land strategy, a sea strategy, and the future may possibly see added these two an air strategy. This process of separating strategy into three compartments I believe to be fundamentally uneconomical and a direct violation of the principle of economy of forces as applied to a united army, navy and air force, and hence a weakening of the principle of the objective. This separation is faulty, consequently I will now consider the strategy of all three forces as combined... During war, nothing is so uneconomical as improvisation; consequently, our peace strategy must formulate war strategy... - moral, physical and materials, when war breaks out. The first duty of grand strategist is, therefore, to appreciate the commercial and financial position of his country... secondly, he must understand the moral characteristics of his countrymen, their history, peculiarities, social customs and system of government, for all these quantities and qualities form the pillars of the military arch which it is his duty to construct”⁸.*

Fuller’s theory was assumed and developed by Liddell Hart, who argued that Great Britain’s strategy should not be limited to the specific features of a land war, but it was essential to relate to the British context and thus to the specific politics, geography and economy of the Kingdom. In this regard, Liddell Hart introduced the term *pure strategy*, used in connection with *grand strategy*: *“Pure strategy was still the art of the general. But the role of grand strategy was to coordinate and direct all the resources of the nation towards the attainment of the political object of the war – the goal defined by national policy”⁹.*

⁷ Jon Tetsuro Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered*, Woodrow Wilson Center Press, Washington DC, 1997, p. 27.

⁸ J.F.C. Fuller, *The Reformation of War*, Hutchinson, London, 1923, pp. 217-218.

⁹ Basil Liddell Hart, *When Britain Goes to War*, Faber, London, 1928, p. 83.

From the above-mentioned description, it can be concluded that the theory of strategy – grand strategy – studies the use of all military forces and means of the state in the war. This means that the military strategy – pure strategy, has the task of designing the general principles related to the use of various categories of armed forces and coordinating their efforts in order to achieve the political and military objective.

Thus, there is a close connection between strategy, on the one hand, and operational and tactical art, on the other hand. The military strategy has a leading role, because it defines the general purpose of the actions, forces, means and methods of performing the tasks that lie ahead of operational art and tactics. The mutual conditioning of all parts of the military art theory and the leading role of the strategy is explained by the fact that in a war each partial success is subordinated to the general purpose. That is why the principles of tactics must correspond to the goals of operational art, which in turn derive from the goals of the strategy.

Looking at things the opposite way, we find out that the military strategy is part of the national defence strategy, to a larger or smaller extent, according to the national interest of each state and the historical moment taken into account. Yet, regardless of the share it holds at any given moment, the military strategy is built taking into consideration a possible military conflict, and takes into account the following aspects: conception, organisation, leadership and execution.

On the other hand, the modern strategy cannot be developed without taking into account the economic, political and technical-scientific factors. In its forecasts, the strategy must be based on contemporary achievements in the fields of science (physics, chemistry, communications, cyberspace etc.), as issues related to the preparation and use of the armed forces in the war cannot be solved without taking these achievements into consideration. Therefore, as Collin S. Gray pointed out, *“strategy is neither policy nor armed combat; rather it is the bridge between them”¹⁰.*

Considering all these aspects and interpretations mentioned above, we can assume that the strategy is a concept developed on levels, and an up to date hierarchy might be the following: politics – sets

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¹⁰ Colin S. Gray, *Why Strategy Is Difficult*, in *Strategy and History, Essays on the Theory and Practice*, New York, 2006, p. 77.



The military strategy is a concept that adapts itself continuously, taking into account the evolutions of all the factors regarding the whole society.

Military strategy is "a field of military art that studies the ways of its creation and its use in an efficient and synchronised manner with the other state power vectors, to achieve the desired final state at strategic level and to fulfil the political purpose of the war".

the objectives pursued in a possible war; grand strategy – coordinates the use of resources of a state or of states of a coalition in order to achieve political goals; military strategy – coordinates military forces to achieve policy objectives; operational strategy – provides the conceptual and/or geographical link between tactical actions to achieve military strategy objectives; tactics – represented by actual actions on the battlefield, face to face with the declared enemy¹¹.

The technical-scientific revolution that began with the armaments mechanisation and continued until nowadays with the latest innovations in communications or in the field of airspace, having direct applicability in the military environment, created the premises to consider military science as a science itself. Therefore, the military strategy is a concept that adapts itself continuously, taking into account the evolutions of all the factors regarding the whole society, a definition of present-day being considered the following: military strategy is *"a field of military art that studies the ways of its creation and its use in an efficient and synchronised manner with the other state power vectors, to achieve the desired final state at strategic level and to fulfil the political purpose of the war"*¹².

2. The strategy – technological revolution connection

The perpetuation of the revolution that has occurred in science and technology since the end of the 19th century has influenced the entire field of military science so far, both theoretically and practically. Armaments, armed forces organization, action processes, or human-to-weapon systems relationship have been permanently adapted, being marked by new and important particularities according to technological evolution. Now it can be appreciated that the most important implications of the current technical-military revolution are manifested in the sphere of human-technical relations, and their understanding represents a condition for solving many of the problems caused by the modern war and the development of military science.

¹¹ David Jordan, James D. Kiras, David J. Lonsdale, Ian Speller, Christopher Tuck, C. Dale Walton, *Understanding Modern Warfare*, Cambridge University Press, United Kingdom, second edition, 2016, p. 42.

¹² Constantin Popescu, *Elemente de teorie a strategiei militare*, Editura Universității Naționale de Apărare "Carol I", București, 2015, p. 28.



The theory according to which the military strategy represents a level of military art that has within its scope *"the science and art of using the armed forces or the threat with their employment for the fulfilment of political objectives"*¹³ does not seem as effective today as it was one or two decades ago. There is no question that the Clausewitzian formula according to which war is the ultimate way to be used to achieve a strategic goal is no longer up to date, but it must be adapted to new realities. Thus, the military strategy must play a well-defined role in the application of other field strategies (information, economic, diplomatic, etc.) in order to avoid a military conflict or, at least, to ensure the principle of capturing the enemy and military neutralising it in the shorter time possible and with minimal human or materials losses. This continued transformation due to the evolution of technology leads to a new evidence: *"politics acquires more and more strategic/military valences, and the strategy becomes more and more political"*¹⁴.

Strategic military actions that seek to achieve political goals differ from epoch to epoch, depending on the nature of the means at the disposal of the strategy. The main means of the military strategy are represented by the human force, namely the fighters, and the technical equipment, respectively the armament. That is why the military strategy must take into consideration the human being, who continues to represent the main element in setting the strategy, as well as the armament and technique development.

The development of armaments and weapon systems has major influences on all aspects of the strategy, starting with its definition, strategic mobilisation organising and strategic entities creation, establishment of the types and forms of strategic action, future weapons systems and military equipment manufacture etc.

The destructive force of combat weapons systems tends to increase without limit. Under these circumstances, the following question arises: should the strategy be automatically shaped by the latest technical achievements or not? An increasing number of military authors believe that setting the destructive capabilities of the current and future weapons systems or armaments as a starting point in defining

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¹³ *Eseu despre strategia și tactica militară*, Editura A.Î.S.M., București, 1995, p. 15.

¹⁴ Colonel Constantin Onișor, *Corelația politică-strategie*, in *Curs de strategie*, Colegiul Național de Apărare, 1996.



In the 14th century, when gunpowder passed from the Arabs to the Western European peoples, and as a result, the firearms appeared, a period of radical qualitative changes began regarding the procedures of warfare.

military strategy, the strategy is likely to get out of political control, transforming into a strategy of destruction, unrelated to political goals. Such a strategy, as the nuclear strategy, for instance, that can lead to the destruction of mankind, would lie outside the very essence of the war, considered to be the continuation of politics with violent means: *“assured destruction, let alone mutual assured destruction, is a denial of strategy and, in action, could serve no conceivable political purpose”*¹⁵. As a result, it is believed that politics should guide not only the strategy of war itself, but also the strategy of producing weapon systems and military equipment.

The development of modern weapon systems produces important changes in the forms and procedures of organising and conducting military operations. For instance, the missiles with technical-operational characteristics allow a simultaneous action on the entire operational depth of the enemy, separating their troops into different parts, which makes it easier to destroy them¹⁶.

The specificity of the technical-military revolution consists in the fact that it is determined by the technological progresses, which have as result the emergence of a completely new weapon or armament, totally different from what was known until the moment of emergence. Therefore, the technical-military revolution means a radical change in the combat weapons, the emergence of a new type of armament, much more qualitative than all existing combat means, which leads at the same time to the emergence of new forms and methods of combat, to new forms of armed forces organization, to a new military art theory.

In history, there are several technical revolutions that determined radical changes in the military art.

In the 14th century, when gunpowder passed from the Arabs to the Western European peoples, and as a result, the firearms appeared, a period of radical qualitative changes began regarding the procedures of warfare. The emergence of firearms determined a revolution in the military art which took place quite slowly during that period, due to the low level of the existing technique. It lasted for hundreds of years, ending only at the beginning of the 18th century.

¹⁵ Colin S. Gray, *Războiul, pacea și relațiile internaționale – o introducere în istoria strategică*, Editura Polirom, București, 2010, p. 250.

¹⁶ Corneliu Soare, Romul Duma, Ioan Muntoi, *op. cit.*, p. 435.



The end of the 19th century and the beginning of the 20th century marked a new revolution in weapon systems, determined by the use of new scientific discoveries and technological progress for military purposes.

The third stage in the field of technical revolution is the emergence and development of nuclear weapons.

Until the Second World War, the means of combat had a tactical character because of their individual effects. During Second World War, however, strategic bombers, V-type missiles and, finally, the atomic bomb emerged, all of which surpassed the sphere of tactical action.

The end of the 19th century and the beginning of the 20th century marked a new revolution in weapon systems, determined by the use of new scientific discoveries and technological progress for military purposes. The main elements of this revolution were: the emergence of automatic fire systems and fast-firing anti-aircraft guns (cannons), the widespread use of the engines for military purposes, the emergence of tanks, airplanes, and combat gas, all of which led to what is now known as the Modern Warfare: *“Between 1917 and 1918, a Revolution in Military Affairs took place which, it is contended, was more than merely that: rather it amounted to a Military Revolution, which was the most significant in the history of warfare to date, and remains so. It amounted to the birth of what will be termed the Modern Style of Warfare”*¹⁷.

The third stage in the field of technical revolution is the emergence and development of nuclear weapons. Therefore, a strategy emerged based on the nuclear weapon¹⁸, that operates with different concepts and principles from those of the classic strategy. In this regard, it is mentioned that the character and procedures of the warfare had changed, because the traditional warfare, especially the land war in the course of which the main objectives of the armed combat were achieved by confronting the belligerent forces within a military operations theatre, was replaced by the nuclear one. In reality, the so-called nuclear arms race¹⁹ did not exclude the strategy based on conventional means of combat, but it has completed the strategic patrimony with an important set of nuclear-based theories. Evidence in this regard is that no nuclear war took place, but a series of classical conflicts were carried out in full nuclear arms race.

Until the Second World War, the means of combat had a tactical character because of their individual effects. During the Second World War, however, strategic bombers, V-type missiles and, finally, the atomic bomb emerged, all of which surpassed the sphere of tactical action. *“This escape”* from the tactical sphere of the armament resulted in an increasing development in the post-war period and led to the emergence of a new category of armament – strategic armament.

¹⁷ Jonathan Bailey, *The First World War and the Birth of Modern Warfare, The Dynamics of Military Revolution 1300-2050*, Ed. M. Knox and W. Murray, Cambridge UP, 2001.

¹⁸ mwi.usma.edu/science-technology-future-warfare/, retrieved on 10.01.2019.

¹⁹ Colin S. Gray, *op. cit.*, Editura Polirom, București, 2010, p. 253.



Currently, the strategic arsenal consists of nuclear warheads of various types and of carrier platforms covering all physical dimensions of the armed combat (terrestrial, naval and air): intercontinental and mid-range missiles, strategic bomber planes, missile submarines, aircraft carriers, surface ships armed with missiles, 5th-generation aircraft, unmanned aerial vehicle, military satellites, etc.

The fourth stage of the technological revolution is considered to be the introduction of digital technology in the weapon systems, doubled by the revolution in military communications. The extremely rapid evolution of technology in those two sectors has major influences on how the military strategy needs to be adapted to new realities. An example in this regard would be the emergence of a new force in the organisational structure of the main military powers, namely the strategic airspace force²⁰.

The dimensions and pace of these technological changes were accessible to states such as the US, Russia, China, which established the goal of dominating the field of high technology, including their military applicability, and were able to allocate important resources to this purpose. They also highlighted the possibilities generated in the military field by the technical-scientific revolution, which did not mean that these possibilities automatically became realities in all countries where the economic possibilities and political choices could be identical to those of the mentioned states. As a partial conclusion, it can be stated that the military strategy, as well as the business strategy (here the technological revolution) had to evolve in response to the constantly changing operational environment²¹.

3. The impact of the advent of the helicopter on military strategy

Prior to the invention of the aircraft, a belligerent nation sent its army against the enemy army in order to penetrate the country's vulnerable interior. Sometimes, battles lasted no more than a day, a battle by which a winning side was decided, for instance the way

²⁰ <https://www.space.com/president-trump-space-force-directive.html>, retrieved on 20.02.2019.

²¹ hbr.org/2002/04/maneuver-warfare-can-modern-military-strategy-lead-you-to-victory, retrieved on 18.12.2018.

Napoleon managed to win at Austerlitz²². But, most of the times, the battles were bloody and ended in an indecisive result; the wars were simple exercises of physical and psychological exhaustion and wear. As the war became total, the armed forces became more and more numerous and equipped with more and more powerful weapons, and the decisive battle became an increasingly difficult objective to achieve.

Up to a certain level, the naval fleets were also forced to fight at the tactical level of the war. Once the maritime superiority was conquered, the fleet could carry out several actions: blockades, bombing the fortresses near the shore, or amphibious operations. In case of blockade, the results were felt indirectly and after long periods of time; in the second case, the results were limited by the range of the anti-aircraft guns from the board of the battle ships. In the latter case, amphibious operations were, generally, only the prelude to ground operations – which brings us back to the cycle army – versus – army.

Air power changed the situation, narrowing the gap between the strategic and tactical levels. Aircraft can perform operations meant to achieve strategic-level effects. Airplanes eliminate the need to deal with land or environment problems due to their ability to fly over armed forces, fleets and geographical obstacles, hitting directly the key centres of a country. This capability offers alternatives to both bloody and prolonged land battles, and naval blockades.

Although the fighter aircraft and strategic bombers have the main roles in the development of air power, the helicopter is gaining more and more ground in this equation. As technology advances are implemented upon these platforms, and as the characteristics of classical conflicts are constantly changing, the helicopter is assigned increasingly defined roles in military operations, especially at tactical and operational levels.

²² <https://www.historia.ro/sectiune/general/articol/austerlitz-batalia-celor-doi-imparati>, retrieved on 15.02.2019.

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Air power changed the situation, narrowing the gap between the strategic and tactical levels. Aircraft can perform operations meant to achieve strategic-level effects.

The helicopter is in its fourth development stage, namely when weapon systems are developed, based on the use of the helicopter, which are able to act in an integrated manner, in at least two of the well-known domains of warfighting (air-land, air-water), by connecting them into in network.

From a historical perspective, most specialists²³ identify three distinct stages in the helicopter's military use:

- after 1940, the helicopter was used to support land forces being assigned to perform observation missions, logistic support missions or medical support missions;
- after the late 50s, both technological developments to which the helicopter was subjected and the tactical roles to which it was assigned created a necessary front in order to use the new weapon for combat support, all of which directly contributed to the manoeuvre of the supported forces, ensuring the movement of the troops and executing fire support;
- another stage is the one after the 1980s. This stage reflected the need to develop the concept of manoeuvre helicopters, combining both elements – the firepower and manoeuvre – based on the creation of independent and autonomous combat structures that became essential in the theatre of operations.

These stages developed more cumulatively than successively and once achieved each stage of development was never abandoned, but rather used as an extension of missions already assigned.

Mention should be made that, after the end of the Cold War and the increasing use of data transfer and satellite technologies, the helicopter is in its fourth development stage, namely when weapon systems are developed, based on the use of the helicopter, which are able to act in an integrated manner, in at least two of the well-known domains of warfighting (air-land, air-water), by connecting them into in network.

3.1. First stage – The role of supporting land forces

Although the helicopter was sporadically used for military purposes, including during World War II, for tasks like tracing cable telephony lines and supplying outposts/forward positions (the primary missions of the Sikorsky H4S and H5S helicopters purchased by the USA and the Great Britain in 1943)²⁴, we can say that specific military tasks were attributed to the helicopter by chance. This was due

²³ Etienne de Durand, Benoit Michele, Elie Tenenbaum, *Helicopter Warfare. The Future of Airmobility and Rotary Wing Combat*, Laboratoire de Recherche sur la Defense, 2012, <http://www.ifri.org>, retrieved on 30.01.2019.

²⁴ Matthew Allen, *Military Doctrines of Major Powers, 1945-1992*, Westport CT, Geernwood Press, 1993.

to the deprivation of the United States Army Air Forces (AAF) of the aircraft used successfully during the Second World War, deprivation caused by the restructuring of the United States Army and the creation of United States Air Force/USAF.

USAF was created by the “*National Security Act of 1947*”²⁵, which established the reorganisation of aviation structures into the U.S. Air Forces (USAF) and U.S. Army Air Forces (USAAF), the latter being part of the U.S. Army. Therefore, USAF started to be a distinct category of the US Armed Forces Structure that took over the Strategic Bombing and Heavy Transport missions, as well as those specific to gaining and maintaining Air Supremacy.

Following the reorganisation, USAAF kept a small, insignificant fleet, which consisted of a small number of aircraft tasked with Troop Transport and Close Air Support/CAS missions. Gradually, the US Army almost completely lost the control of the AAF fleet, having left only a few air assets to carry out observation missions and artillery fire guidance.

Focused on the Bombing Campaign in North Vietnam, USAF neglected the need for CAS and light tactical air transport, thus allowing the USAAF to invest the resources allocated in their own helicopters, transforming and developing the helicopters fleet missions. It was also established the number of helicopters necessary to create a fleet able to meet transport needs. This was the tactical justification of the necessity



The widespread use of combat helicopter began in the Vietnam War. Until that time, helicopters were mostly used to transport troops, identify and evacuate the wounded.

²⁵ U.S. Army, *Army Air Corps*, <http://www.army.mil/aviation/aircorps>, retrieved on 21.01.2019.



and emergence of the Air Mobility concept, which in fact represented the substantiating of the helicopter procurement program developed by the USAAF to this purpose.

Once in use, but also due to its unique flight characteristics, the helicopter initially provided the troops with the freedom to act regardless of the landscape barriers and independent of terrestrial infrastructure.

This stage demonstrated that the helicopter can successfully carry out support missions, showing, however, some limitations such as payload and cabin volume.

Undoubtedly, the most important field where the helicopter was used during this period was medical evacuation. The helicopter allowed the US Medical Service Corps to rescue the pilots who crashed over Bruma city in 1946²⁶.

Once USAAF identified the important role that helicopter can play, their leaders requested the expansion of its capabilities in order to be able to transport troops at large distances. A commitment signed on 4 November 1952²⁷, by which the dimensions that could be achieved by the USAAF aircraft were limited, prevented the services from using helicopters with appropriate dimensions for this type of mission.

Along with the continuous improvement of the platform itself and due to the technological revolution, the helicopter was permanently able to adapt to the learned lessons from each conflict in which it was used.

3.2. Second stage – Combat support role

USAAF played a key role in rapidly adopting the helicopter (from its original destination – transport) among the armed forces and assigning it on combat missions specific to the USAF, namely the CAS, and that was due to the faster understanding of the importance of its use, but also due to the limited CAS support provided by USAF²⁸ despite the fact that the helicopter was more vulnerable to the fire from ground based weapons, much more expensive and the assumed losses were much

²⁶ Otto Kreisher, *The Rise of Helicopter during the Korean War*, in *Aviation History*, 2007, <http://www.historynet.com/the-rise-of-helicopter-during-the-Korean-War.htm>

²⁷ *Office of the Historian. Kennan and Containment, 1947. Milestones: 1945-1952*, <https://history.state.gov/milestones/1945-1952/kennan>, retrieved on 10.01.2019.

²⁸ Morton and David Halperin, “*The Key West Key*”, in *Foreign Policy*, No. 53, 1983, <http://www.jstor.org/stable/1148563>, retrieved on 02.01.2019.

higher than those of the fixed wing aircraft.

The technical characteristics of the helicopter to hover at low and medium altitudes, and the extraordinary field of view provided determined the Land Forces to see it as/the ideal platform to provide fire coordination missions for its artillery, thus not having to expose the controllers in the forward area.

The helicopter’s utility in force projection was identified by US Marine Corps as a component of battlefield preparation by concentration of forces, an action inherent in the landing execution in expeditionary missions, where the bridgehead could not be made directly from ships. In November 1948, the Quantico Academy published a doctrine draft called Phib31Amphibious Operations – Employment of Helicopters, introducing the term “*vertical assault*”. Several years later, USAAF adopted “*Airmobility Doctrine*”²⁹.

The advantage of mobility is not only providing the ability to transport and support forces, but also it sets the tempo of combat. Mobility offers to the one who possesses it, the ability to seek out the opponent, to follow and surprise him by applying fire and engaging into combat the amount of forces needed at a chosen time and place. Due to its potential to quickly change the balance of forces and to destabilise the opponent, mobility exerts a dual effect in the physical and psyche of the troops, materializing in two diametrically opposed directions. This explains the success and the decisive historical role previously played by cavalry³⁰ at its moment of glory and later by the mechanised/tracked infantry – the tank brigades.

Air mobility was systematically used in combat for the first time by the ALAT³¹ (Aviation Legere de l'Armee de Terre) in the Algerian War, as a tactic against the guerrilla war, highlighting the helicopter’s ubiquity as a tactic against the strategic disadvantage represented by the asymmetry of this new type of war.

Therefore, we can state that the use of the helicopter caused the need to develop the concept of air mobility.

Subsequently, based on lessons learned from the Vietnam War, where the USAAF were forced to apply the “*search and destroy*” tactic,

²⁹ Rodney R. Propst, “*The Marine Helicopter and the Korean War*”, Combat Studies Center, 1989, <http://www.globalsecurity.org/military/library/report/1989/PRN1.htm>, retrieved on 28.01.2019.

³⁰ www.hexapolis.com-10-greatest-battles-won-against-overwhelming-odds, retrieved on 13.12.2018.

³¹ Etienne de Durand, Benoit Michele, Elie Tenenbaum, *op. cit.*, retrieved on 30.01.2019.

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Once USAAF identified the important role that helicopter can play, their leaders requested the expansion of its capabilities in order to be able to transport troops at large distances.

The most ambitious concept of helicopter use was that of U.R.S.S. in the war in Afghanistan. Performing manoeuvre based on helicopter use was deepened and developed in the most extensive context by the Red Army. Russian strategists.

Russian strategists were able to accurately estimate the vulnerability of the tank to the use of ATGM/Anti-Tank Guided Munitions, and that of aircraft performing CAS to surface-based air defence systems from successive alignments.

the US launched the “Advanced Aerial Fire Support System”, program known as the 1964 Attack Helicopter Program, which resulted in the first attack helicopter – AH-1 Cobra in 1967.



AH-1 Cobra

Further, in a higher phase, the helicopter was transformed into a combat system, the technological development based on this type of platform leading to the creation of autonomous airborne forces.

3.3. The third stage – Manoeuvring role

The most ambitious concept of helicopter use was that of U.R.S.S. in the war in Afghanistan. Performing manoeuvre based on helicopter use was deepened and developed in the most extensive context by the Red Army. Russian strategists based their theory on the lessons learned from the analysis of the Yom Kippur War. Thus, they were able to accurately estimate the vulnerability of the tank to the use of ATGM/Anti-Tank Guided Munitions, and that of aircraft performing CAS to surface-based air defence systems from successive alignments³². The Red Army had 20 air assault brigades consisting of Mi-8 and Mi-24 helicopters and infantry originating from parachutists and motorized infantry, both in an organic scheme. Thus constituted, these brigades acted at a certain tactical-operative level, completely different from the level at which the airborne divisions were acting, in order to occupy strategic positions in the theatre of operations outside

³² Richard Simpkin, *Race to the Swift. Thoughts on Twenty-First Century Warfare*, Brassey's Defence, London, 1985.

the range of helicopters. Focused on the deep attack procedure, these forces successfully penetrated the opponent’s defensive system and their main objective was to surprise and isolate significant amounts of enemy’s forces in order to alter the balance of forces in a certain area of operations.

The subsequent emergence of the air-land operations doctrine that had a much more offensive character and which involved much faster ongoing combat actions also assigned a role in this type of operations to the helicopter. However, the architecture of the new war theatre did not allow the newly developed AH-1 Cobra to hit targets in the depth of the enemy territory. As the technological development advanced, in 1984 the multi-role attack helicopter was developed, AH 64 Apache³³, with superior autonomy which gave it the possibilities to hit the objectives considered priority from depth of the enemy territory.



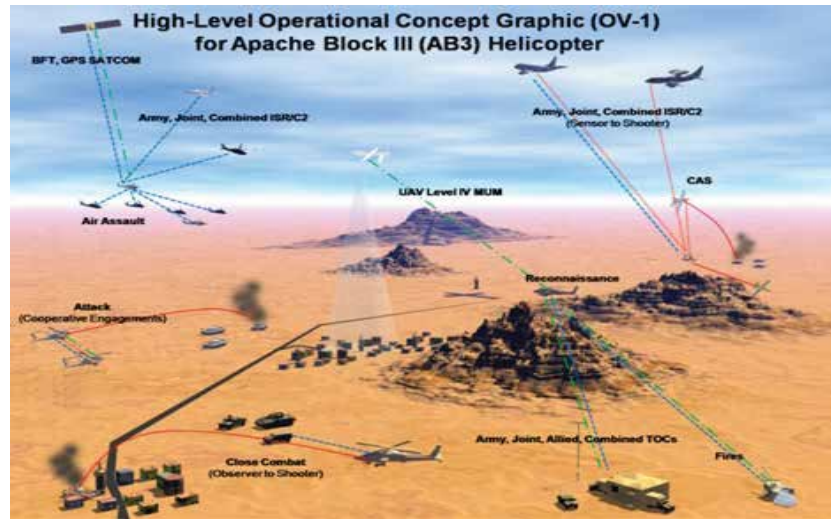
AH 64 Apache

The helicopter gained the role of modelling the battlefield and, supported by an appropriate doctrine, it is seen as the perfect antidote especially against heavy forces that were formed on the skeleton of armoured, mechanised and tanks brigades.

³³ <https://www.boeing.com>, retrieved on 01.02.2019.



All the above-mentioned features, in the context of the technological evolution in the field of information transfer, as well as the use of satellite technology, place the helicopter at the core of certain combat employment advanced operational concepts, by which the helicopter is assigned multiple roles upon taking off.



3.4. The fourth stage – The current multi-role and multi-domain use

All the above-mentioned features, in the context of the technological evolution in the field of information transfer, as well as the use of satellite technology, place the helicopter at the core of certain combat employment advanced operational concepts³⁴, by which the helicopter is assigned multiple roles upon taking off.

Thus, today, the helicopter takes off with weapons onboard, equipped and capable of precisely engaging in combat:

- surface ships in self-defence against air threats;
- submarines in self-defence against air and sea threats;
- all kinds of land combat means, in self-defence against air threats;
- air-to-ground attack means going at low speed, in self-defence against ground-to-air defence.

In order to provide these roles, the helicopters operate together with unmanned or hybrid air vehicles (with mixed manned/unmanned crew), are provided with own and enemy forces tactical situation awareness systems (such as the Blue Force Tracking system). At the same time, they are provided with tactical data and information by ISR/C2-role aircraft and land sensors. The integrated use of the

³⁴ https://dodcio.defence.gov/Library/DoD-Architecture-Framework/dodaf20_ov1, retrieved on 04.02.2019.

helicopter in such a network enables it to be the first one to track the enemy, to understand the tactical situation, to take action and deal with the tactical situation much more efficiently than it has ever been able to do it.

4. The interaction between strategy and technological revolution in the helicopters field

The relations and influences between technology and strategy in the contemporary period are generated by the documents that determine the way of planning a state's defence, namely: National Defence Strategy, Government's White Paper, Military Strategy, Global Strategy etc. In most situations, highly developed states include important chapters of these planning documents which describe the defence system of that state as being based on weapon systems in the project stage or just in the conceptual stage. See the anti-missile shield (in 2007), Future Combat Air System Technology Initiative, "Joint Multirole Helicopter" (JMRH), AFVG (Anglo French Variable Geometry) and more.

This type of approach involves the development of a complex and sophisticated chain. Following the analysis of the potential military threat and weapon systems held by it, there are established strategic objectives and operational requirements for weapon systems that will be further developed to achieve these goals by neutralizing identified threats and achieving a favourable degree of control of the battlefield from a technological perspective. These requirements are then assigned to the profile industry specific of each system that is intended to be built, so that industry can then direct its research and development efforts to the areas where it was guided.

We will further focus on the relationships between technology and strategy in terms of the implications of the developed strategies on two of the current technological initiatives.

4.1. Joint Multirole Helicopter – JMRH

If in the past the success of using the helicopter in combat was based on the use of a platform specialised in different types of missions, a new concept is increasingly being discussed today – JMRH. Following the logical thread in which this new concept is expected to evolve from a technological point of view, it is expected that the specialized



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Although nowadays there are military concepts such as Air Assault that cannot be imagined without the simultaneous, integrated and coordinated participation of the three types of platforms, it is expected that JMRH will be able to execute independently and under more advantageous conditions the missions and typology of this concept.

helicopter fleet to be replaced by a new weapon system called the *Future Vertical Lift – FVL*³⁵.

The expectations of specialists in the field of system performance, beyond keeping well-known helicopter attributes, are aimed at bringing extra speed, increasing the transport capacity, increasing the fire power, extending the range of action, a higher survival level of the crew in the battlefield and, most important, bringing the level of maintenance and use costs to the lowest possible level.

The idea of this project has, of course, started from the need to rejuvenate the helicopter fleet of the world's largest helicopter operator, the United States Army. The overwhelming majority of the helicopters of this impressive fleet is, however, represented by adapted and/or upgraded variants of the base models Black Hawk, Chinook and Apache.

Although nowadays there are military concepts such as *Air Assault* that cannot be imagined without the simultaneous, integrated and coordinated participation of the three types of platforms, it is expected that JMRH will be able to execute independently and under more advantageous conditions the missions and typology of this concept. Hence, after the NH 90/NATO Helicopter 1990 project, the specialised military constructing industry intends to build a vertical take-off and landing aircraft, on a completely new structure. Considering the physiognomy of current conflicts and the particularities of conflict environments, the US Army plans to develop this program, taking into account all possible variables.

Following the experience accumulated from participating in most armed conflicts that followed World War II, the formulation of the operational requirements consisted most likely in transposing over time all the deficiencies of the most famous platforms used in these conflicts. Along with the technological evolution of weapon systems used in air defence and the infinite tendency to identify and assign new and more complex missions, these platforms have progressively shown their weaknesses reaching a level which is not adequate for satisfying the mission requirements specific to the contemporary theatre of operations.

³⁵ <http://www/ivertical-lift.org>, retrieved on 01.02.2019.



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Operational requirements underlying the project include³⁶:

- a minimum transport capacity of 12 fully equipped soldiers;
- a crew consisting of four members;
- the possibility of executing a stationary flight without ground-effect at an altitude of 2,000 meters and 35 degrees Celsius;
- a maximum flight distance of 3,500 km with a speed of 430 km/h;
- the dimensions of FLV may vary according to the mission specificity, but major mechanical equipment and assemblies such as the rotor, landing gear, engines, power installations and cockpit equipment need to be common and interchangeable;
- the new capabilities offered by the FVL's high aerodynamic performance and meanwhile enhanced by the facilities offered by the avionics systems shall allow the FVL to perform a wide range of missions: reconnaissance; anti-submarine and anti-surface combat; special amphibious assault operations; medical and non-medical evacuation; ISR; SAR; C2; CSAR; attack; logistic support and transport.

The FVL concept is also based on the idea that the same type of aircraft will be used to carry out a wide and complete range of missions³⁷. According to the concept, it is expected that this will lead to the use of a low number of aircraft types with an impact on logistic efficiency (maintenance costs, low associated industrial risks, etc.).

The development of this concept has started from the requirements of the new US National Defense Strategy, which estimates that modern wars can be won both on land and above water, in space or in cyberspace or abstract environments. The new FVL platform shall be equipped, shall cope and align with all of this multi-domain battle challenge.

Thus, the priority of the program consists in developing a platform capable of acting in missions of reconnaissance and attack in connection with unmanned aerial vehicles, but at the same time being able to perform some air assault missions from a very large distance.

³⁶ csis.org/events/future-vertical-lift-insights-joint-multirole-technology-demonstrator, retrieved on 28.12.2018.

³⁷ defensenews.com/digital-show-dailies/global-force-symposium/2018/03/30/army-future-vertical-lift-hones-in-on-attack-recon-long-range-assault/, retrieved on 19.12.2018.

The FVL concept is also based on the idea that the same type of aircraft will be used to carry out a wide and complete range of missions. According to the concept, it is expected that this will lead to the use of a low number of aircraft types with an impact on logistic efficiency (maintenance costs, low associated industrial risks, etc.).



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If until now there were taken considerations air assault missions which took place near the contact line or even beyond it, from this point on the first expected impact at the doctrinal level, along with the realisation of the FVL, is that the mission shall be carried out from its own territory, without any need for air protection, from distances that no longer need fire support and increased payload capacity. This will undoubtedly lead to the design of another defence architecture, to the development of other air defence modalities of its own territory, and the emergence of new forms of attacking objectives behind enemy lines.

The estimated industrial impact generates debates that are far from ending regarding the type of helicopter that will be replaced by the FVL, namely the Black Hawk helicopter or the Apache helicopter.

The US National Defense Strategy prioritises the lethality of the weapon system, and the arguments presented by supporters of the idea of increasing the lethality of combat actions through air strikes or those raised by supporters of the idea of increasing lethality by enhancing special capabilities for air strikes should be taken into account.

Based on these debates, the two major US aircraft manufacturers, Bell and Sikorsky-Boeing, offered two important proposals for the project, namely: V-280 Valor and SB-1 Defiant³⁸.



V-280 Valor

Valor version, which has wings, is more fuel efficient, which translates into increased flight autonomy and within a range of much more action.

³⁸ www.breakingdefense.com/2017/10/bell-v-280-vs-sikorsky-boeing-sb1-who-will-win-future-vertical-lift, retrieved on 28.01.2019.



SB-1 Defiant



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The Defiant variant equipped only with rotors is much more agile, so it can be operated in restricted spaces and manages to use field camouflage much more efficiently.

The operational requirements of this new FVL concept consist in overcoming the limits imposed by materials physics and aerodynamics of already existing systems on the market. The operational requirements of this new FVL concept consist in overcoming the limits imposed by materials physics and aerodynamics of existing systems on the market today. At present, both companies agree that the V-280 Valor version, which has wings, is more fuel efficient, which translates into increased flight autonomy and within a range of much more action than its rival, who only has rotors to generate the force of sustainability.

At the same time, the Sikorsky-Boeing builder mentions that the Defiant variant equipped only with rotors is much more agile, so it can be operated in restricted spaces and manages to use field camouflage much more efficiently (hills, valleys, infrastructure elements and vegetation) in order to avoid discovery. Despite the constructive differences, the main strengths of these two aircrafts are common and can be identified by the parameters of speed, range and flight level. Regardless of the model that will be chosen for the development of the new concept, the program is an example of how military strategy can influence and contribute to technological development.



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The primary purpose of the invention is to provide an engine that combines the qualities of four-stroke classical motors with the advantages of rotational motion and the advantages of a variable compression ratio in order to increase efficiency, reduce vibration and reduce engine volume and mass.

4.2. Implications of the technology revolution on strategy – the MRAI4T engine

In opposition to the process presented in the previous subchapter, where the technological revolution is mainly generated by the objectives of the military strategies, the military strategy was almost always revised during the period before the end of the Cold War due to the emergence of new weapon systems and the experiences resulted from their experimental or accidental use in conflicts.

Although the particularities of today's relations between the technological revolution and the military strategy are particularly subordinate to strategic planning documents, there are also potential situations, although isolated, where the technological revolution determines or can lead to the adaptation of military strategies.

Such a possible example can be found, in the form of a project, at the State Office for Inventions and Trademarks from Romania³⁹, called the *four-stroke internal combustion engine* (MRAI4T). We chose to create a scenario whereby such an invention can generate influences on the current military strategies, although the project of the young Romanian inventor does not have impressive budgets such as the JMRH, nor the promotion or the industrial support.

The invention refers to an internal combustion engine which is intended for the means of transportation, having the capability of stationary engine mode. The primary purpose of the invention is to provide an engine that combines the qualities of four-stroke classical motors with the advantages of rotational motion and the advantages of a variable compression ratio in order to increase efficiency, reduce vibration and reduce engine volume and mass.

From a strictly technical point of view, the internal combustion engine solves the problem of limiting the power increase of the classic engines, which is their weakness, by summing up the forces that appear on the surfaces of the pistons directly to an output shaft.

However, analysing from a military perspective the three pillars on which an army is based (the human pillar, the technical pillar

³⁹ <https://inregistrare-marci.ro/verificare-marca-inregistrata-OSIM-EUIPO-WIPO-BOIP.php>, retrieved on 09.02.2019.

and the doctrinal pillar), it is considered that there can be obtained some important advantages by implementing this invention as follows:

❖ **for the human pillar:** simplifying the selection system, general training and the special training of technicians due to the reduction in the used number of engine types; reducing the staff required for operation, maintenance and repair; easy dissemination of knowledge and experience between staff operating the MRAI4T engine;

❖ **for the technical pillar:** easy handling of the speed and torque range by choosing a ratio between volume and different diameter in the MRAI4T engine manufacture; increased yield; increased durability; reduced size; low weight; reduced number of components; low noise level; lack of vibration; an increased ratio between power and mass and between power and gauge; low production costs; low fuel consumption; the possibility of using more sources of energy and fuels while performing the same mission; low noxious emissions;

❖ **for the doctrinal pillar:** possibilities of using the combat system based on the operation of the engine type in different environments (air, water, space) due to the operation of the multi-combustion; the reduced out-of-order time for maintenance leads to a high availability of the MRAI4T engine based weapon system, with a sustained battle pace; reducing the size of the weapon system based on the MRAI4T engine due to the simplification of the power transmission system to the aircraft command and control equipment; interchangeability of the entire engine or at least of the main components which increase the reliability of use and provide a high degree of maintenance; the reduced size and weight allow to increase the weight of the weapon system based on the MRAI4T engine; low thermal, noise/phonetic and radar signature.

Taking into account the expected and presented advantages presented by each of the three pillars, it is easy to deduce that there can emerge important changes following the eventual implementation of this innovative idea in terms of the military strategy.

If the project is developed, there are inevitable important changes regarding the military strategy, such as the development of multi-domain models of weapon systems based on the MRAI4T engine. Given the characteristics and performance above mentioned and taking into account the model of amphibian conveyors (which have terrestrial



and aquatic fields of action), there can emerge and develop new weapon systems that can operate in a combination of at least two of the following fields: ground, air, underwater or space.

It also should be taken into account the redefinition of limits and restrictions imposed by large geographical distances, by the environmental and climate conditions, by the existence or lack of oil resources and processing facilities. These limits will be easily overcome or even ignored in planning future operations.

Based on the use of the multi-combustion and on the increased independence from the fossil fuel facilities and infrastructure (generally used today to ensure propulsion), the weapon systems that will use the MRAI4T engine will thus change the physiognomy of Expedition Operations.

4.3. Development through assimilation and adaptation

Another form in which the technological revolution influences the military strategy is represented by the situation where a state that does not have the necessary resources and infrastructure or access to the most technologically advanced level after the emergence of different technological developments and the adaptation of the strategies in partner states or other more technologically advanced and economically and technologically potent states, develops or assimilates similar technologies, and adapts strategies and doctrines in line with it.

This is the case of the Romanian Air Force, which, in order to prevent the Degraded Visual Environment-DVE, carries out a program of revitalisation and modernisation of the IAR 330 L helicopter fleet. An enhanced video image, the new system configuration and cockpit architecture will allow the application of techniques, tactics and procedures specific to the average helicopter under the conditions of piloting benefits in line with the most up-to-date principles: “Head-up”, “Hands on Controls”, “Eyes-out” and “Piloting on FLIR”.

Since, following the upgrading program, it is estimated that helicopter navigation and pilotage capabilities will be greatly improved, FAR is expected to adapt the helicopter use doctrine to operations that meet the characteristics and performance of a more versatile helicopter with increased mobility and flexibility, with extra speed, but also less vulnerable and harder to be surprised.

5. Conclusions

The intrinsic relationship of the human civilization evolution reported to the evolution of armed conflicts, resulted in an association of each element of the modern security systems with a doctrinal element that can undergo changes or adaptations according defence needs. The function thus generated between the two sets of components, acts and reacts with the evolutionary trend of each component.

The current trend, most likely due to the need to stimulate the business environment, is to develop military strategies based on weapon systems that are still in the project stage but which, in most cases, depending on the success or failure of the weapon system development initiative, must be reviewed or, in some cases, even abandoned.

Unlike the situation where the developing weapon systems are designed as a result of designing long-term military strategies, the technical solutions developed in a short term, which did not originally turn into a weapon system, are introduced into use either under confidentially terms (for their experimental use until the adaptation of the military strategy), or once publicly available information on the technical solution, they are experimentally introduced in the defence system to find the real purpose that changes the military strategy.

The helicopter, as a means of air combat, was initially designed when conflicts were conducted through extensive campaigns involving huge territories, conventional armed forces, and when opponents were relatively equally endowed and behaved relatively predictable. Initial helicopter use, however, was done by commanders trained on conventional warfare instructions, and against unpredictable, hard-to-identify adversaries who used unimaginable techniques, tactics, and procedures in the sphere of conventional warfare. Military strategies based on the use of helicopters in specific missions have been permanently adapted precisely for this reason.

Without neglecting its extremely important role in bringing together human, financial and technological resources around the weapon system, developing a military strategy based on weapon systems still in project stage can also have negative effects. By initially imposing the characteristics of the weapon system at the initiative stage, a system of limiting the performances of the weapon system is involuntarily

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induced or inappropriate fields of use impede the exploitation of the product to its maximum performances in the contemporary combat theatre architecture.

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ROMANIAN MILITARY THINKING FOLLOWING THE GREAT UNIFICATION

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The paper presents the evolution of Romanian military thinking following the Great Unification and the relations between Romanian and European strategic thinking schools. The Romanian military thinking in the interwar period is symptomatic for the Romanian school of military sciences, suggesting the alignment with the ideas of the French school, declining as a model for the official projects of the European armed forces at that particular time. Moreover, the increasing interest in the particular at the expense of the general, the focus on the tactical aspects, the lack of a unitary project as well as a doctrinal cohesion resulted in the works having the potential to coagulate the Romanian military thinking (such as those of Mircea Tomescu) failing to produce the expected effect. Under such circumstances, the Romanian military thinking remained, in some aspects even acutely, counter-current. The present paper also calls attention to the counterfactual perspective of the possible evolution of the Romanian military thinking school, considering it would not have been disbanded immediately after the Second World War by the Soviet school.

Keywords: interwar period, Romanian military thinking, French school, Clausewitzianism, Soviet school.

The Romanian Armed Forces Reorganisation in 1917 and the French School

The transformation of *Hypothesis Z* in a campaign plan, on 14/27 August 1916, resulted in implementing a war scenario resulting from the Romanian military thinking¹. The years of war entailed, to a great extent, putting the doctrinal project into practice and, to a less extent, continuing the theoretical approaches. Moreover, considering the development of the events on the front in Transylvania and on the southern front, namely the withdrawal of the government and the royal court in Iaşi, the Romanian Armed Forces had to be reorganised. The reorganisation was conducted unitarily, grounded on the Great General Headquarters conception, based on Order 1014 on 22 December 1916, *Secret Instructions regarding the Armed Forces Reorganisation*. The reorganisation of the Romanian Armed Forces was not only structural but also normative; the immediate necessity for certain regulations and instructions also entailed their translation, in some cases especially from French, and their implementation: *"To meet the set goals new regulations and instructions (some of them translated from French) were issued in the first half of 1917"*².

¹ In an article analysing the Romanian military thinking previous to the Great Unification (Adrian Lesenciuc, *Gândirea militară românească înainte de Marea Unire. Proiecția oficială prusacă vs dezideratul școlii franceze*, in *Revista Academiei de Științe ale Securității Naționale*, vol. 3, no. 2(5), 2018, p. 162), I noted the following: *"During the period of Romania's neutrality in the First World War, military studies were developed in a new direction: that of projecting defence or action scenarios (hypotheses). Variant A (suggested by General Averescu), meaning the concentration of the armed forces towards the east, and Variant C (suggested by General Christescu), meaning the concentration towards the south were the best-known ones"*. Practically, the mentioned hypotheses were simple theoretical models and exercises, not benefiting from the economic support for the war effort. In August 1916, it was chosen *Hypothesis Z*, *The project of operation in a war against the Central Powers and Bulgaria*. Romania allied with the *Quadruple Entente*. Many military historians consider that the subsequent modification of the campaign plan was the greatest mistake made by the Great General Headquarters. Immediately after the Great Unification, against the background of the discussions relating to correction in terms of geographical position, the area that was the object of the Romanian military action in Transylvania was included in the so-called National Defence Orographic Centre, considering the *"Romanian strategic issue"* became the possible simultaneous attack from the east, west and south.

² Colonel Dr Ion Giurcă, *1917. Reorganizarea Armatei Române*, Editura Academiei de Înalte Studii Militare, București, 1999, p. 237.

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The French geometric school of military thinking, whose last outstanding representative was Marshal Ferdinand Foch, therefore being in the interwar period in decline in relation to the Prussian school, became a frame of reference for the Romanian interwar military thinking.

The reorganisation, accomplished to a great extent with the support of the French Military Mission that came to Romania in 1916, was the natural response to counter the Russian tendencies to impose strategic directions. The mission, encouraged and supported by General Constantin Prezan, provided immediate benefits in terms of reorganisation; however, entailing equality between the French and Romanian officers, the mission also resulted in weakening the Romanian authority, overshadowing the unity of command principle and allowing for the possibility to acknowledge the fact that the “*absolute tutelage*” lay with the French officers (as considered by General Alexandru Averescu). The short-term effects, preponderantly positive, were followed by long-term effects. The French geometric school of military thinking³, whose last outstanding representative was Marshal Ferdinand Foch, therefore being in the interwar period in decline in relation to the Prussian school, became a frame of reference for the Romanian interwar military thinking.

The Romanian military school started to be tailored according to Foch principles, meaning to adapt Napoleonic thought to the reality proper to the period a century after. In *Les Principes de la guerre. De la conduite de la guerre (Principiile războiului. Conducerea războiului)*⁴, the French Marshal could not detach from Napoleonic strategic thinking, projecting his knowledge in relation to the positivist foundation of military sciences (considered to be exact sciences) and to the maintenance of the meaning of mastery associated with military art⁵ (both important characteristics of the French school):

Therefore, there is a theory of war; first and foremost, it includes principles as follows:

- economy of force;
- freedom of action;
- free disposition of forces;
- safety etc.

³ The mentioned school of military sciences, acknowledged as such starting with Jacques Antoine Hyppolite, Comte de Guibert, made mathematics likely to offering instruments to study tactics. By the influence exercised in shaping Napoleon military personality, due to the papers appeared up to the end of the 18th century, or due to the influence of Antoine Henri de Jomini, Clausewitz contemporary and opponent, over the French Emperor way of thinking, it became known throughout Europe, outrunning the Prussian school in the 19th century.

⁴ Ferdinand Foch (Marshal), *Principiile războiului. Conducerea războiului*. Translated from French by Nicolae T. Popescu. Foreword by Major General (r.) Dr I. Cupșa, Editura Militară, București, 1975. Marshal Foch works were published in French, in 1903: *Les Principes de la guerre*, respectively in 1904: *De la conduite de la guerre*.

⁵ According to which the only school of military art is the battlefield.

The existence of the mentioned principles as well as their justification has been largely discussed; however, Napoleon is the one who wrote: “*The principles of war led the great captains whose glorious deeds have been transmitted to us throughout history*”. Therefore, for Napoleon, there are principles of war. Studying the important deeds of the great captains, we can find these principles⁶.

Marshal Foch projection was subsequently translated in a doctrine and, implicitly, in directly applicable regulations and norms, not only in the French but also in the Romanian armed forces. While Europe of those years, characterised by exaggerated militarism, doubled or doubling national ideologies, suggested strategic concepts related to large-scale and long-term wars (Clausewitz projection, thus Prussian, adopted by the first main vector, V.I. Lenin, and translated in the Red Army, Soviet, doctrine) or to *Blitzkrieg*, meaning employing simultaneously, with great cumulative effects, the bombing aviation and the tanks (Clausewitz projection adopted by the other vector, Adolf Hitler), France and Great Britain remained focused on defensive strategies. Moreover, France projected a 100-year old strategy, specific to cabinet wars, extolling the virtues of the “*main battle*” in a Europe of national wars, characterised by “*mass rising*” and attrition.

First Signs of Inadequacy

Under such circumstances, although the Romanian school had the chance to be in the avant-garde of Europe by aligning itself with the Prussian school of military thinking, it was, through the Romanian theorists, continuators of the French military thinking (some of them graduates from the Fontainebleau school, like Marshal Foch, for example), counter current. The formal alignment with the French school was achieved starting in 1924, with the implementation of the *Law on the Armed Forces Organisation* as well as of the regulations stemming from the law. Encouraging the alignment with the French school of thought became, in a certain way, an element of the *România Militară* programme, the journal announcing, in issue no. 7/1927, on page 129, that the officially accepted doctrine was the French one: “*«România Militară» Journal, besides its role of spreading general military knowledge has also, through its publications, the one of clarifying and disseminating, among the officer corps, the doctrine*

⁶ Ferdinand Foch, *op. cit.*, p. 34.

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The adoption of the French doctrinal apparatus, exponent of a strategy that was inappropriate to the time, was characterised by terminological confusions, resulted from the lack of a value grid in adopting the strategic concept, from the appeal to the concepts and the Napoleonic projection of the “unchanging” principles of war, while the entire framework of confrontation (including the elements of the recent technological revolution: the emergence and employment in battle of the aviation, and implicitly the anti-aircraft artillery, the replacement of cavalry troops with tank units etc.)

officially adopted in our armed forces, namely the French armed forces doctrine⁷ expressed in the Large Units Regulation and its annexes)⁸.

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⁷ Practically, there was not an officially adopted French doctrine but a natural propensity, resulting from the influence exercised by the French Military Mission, to such school of thought. The Large Units Regulation was inspired by the French one. However, it was not a doctrine as such. There were Romanian military thinkers of that time who suggested the separation from the French direction and there were also translations from the works of German Generals Erich F.W. Ludendorff or Erich G.S.A. von Falkenheyn, of the Italian General Ettore Bastico or even from the Soviet doctrine, see Ioan SichiŃiu, Alexandru IoaniŃiu, *Elemente de strategie*, Atelierele “Cartea Românească”, Bucureşti, 1936, pp. 140-165.

⁸ Division General (r.) Professor Dr Valentin Arsene, Brigadier General Dr Petre Botezatu (coord.), *Strategia militară românească în epoca modernă*. Foreword by Army Corps General Dr Constantin Degeratu, Editura Nummus, Bucureşti, 1999, p. 107.

⁹ For guidance, see the 2nd volume of *Bibliografia militară românească (1914-1944)*, Central Library of the Ministry of National Defence.

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Towards a Romanian School of Military Thinking?

Benefiting from the experience of war, Romanian officers could analyse and generalise it, to understand and explain the tactical projection of different schools of military thinking, especially the French one, and they could also succeed in integrating in the war discourse aspects of novelty, developed in line with the school of Clausewitz, such as air bombing, only six years after the concept was introduced



Apparently completely aligned with the “officially adopted doctrine”, as *România Militară* projected it in 1927, the Romanian school of military thinking considered the national character of the doctrine. The publication assumed the theme and transformed it in a debate on the doctrine universal or national character.

by Italian General Giulio Douhet (1921)¹⁰. Apparently completely aligned with the “officially adopted doctrine”, as *România Militară* projected it in 1927, the Romanian school of military thinking considered the national character of the doctrine. The publication assumed the theme and transformed it in a debate on the doctrine universal or national character. Among the supporters of the French doctrine, Colonel Țenescu distinguished, having as arguments the immutable character of war, the fact that the future war, regardless the military technology development, will be conducted following the same coordinates: “According to Florea Țenescu, the most logical conclusion was that the French military doctrine should be adopted”¹¹. As for the mobility of the troops, not even Colonel Țenescu referred to the French doctrine, suggesting German principles. With regard to the “national military doctrine affirmation”¹², General Hârjeu distinguished, providing as argument for his position the fact that “the Romanian army has its personality and traditions” (the statement, dating back in 1905, subsequently coagulating a Romanian national doctrine school), as well as Captain Tomescu, who considered that military science needed to be studied in national frame, focusing on patriotism (as spiritual factor in the military education) and on the terrain (material factor). For the promotion of a national doctrine the most categoric ones were Colonel G. Vizanti and Major S. Urlățianu, who proposed a *Romanian Strategy in the Future War*, acknowledged as a lesson of “*Romaniology*” by the one who wrote the foreword, the renowned historian and politician Nicolae Iorga. In fact, Vizanti and Urlățianu took over, in their strategy, elements of Napoleonic conception (therefore of the French school), even though they argued that, for Romanians, the war could have but the “character of a national war”¹³. Unfortunately, the allegedly Romanian school of military sciences provided only one argument, a non-scientific one, emotionally substantiated, to promote that direction: the spirit of sacrifice, the “soul superiority” of the Romanians in the defence war.

¹⁰ Douhet principle was based on the extreme violence of Clausewitz studies, on the total war concept: in his book in 1921, *Il dominio dell'aria*, Giulio Douhet argued that the targets to be bombarded should be large so that the expected effect could be achieved. The purpose of bombings was to bomb the civilians in large urban areas, translated in punishing the “accomplices” to the policy conducted by the enemy governments.

¹¹ Iulian Patca, “*Gândirea militară românească după Marea Unire*”, in Teodor Pavel, Nicolae Ciobanu (coord.), *Armata Română și Marea Unire. Contribuții la realizarea Unirii și la consolidarea statului național*, Editura Daco-Press, Cluj-Napoca, 1993, p. 253.

¹² *Ibidem*, p. 249.

¹³ Colonel G. Vizanti, Major Scarlat Urlățianu, *Strategia românească în viitorul război*, with a Foreword by Professor Nicolae Iorga, Tipografia Curții Regale F. Göbl & Fiii, București, 1932, p. 117.

In a way, the defensive lessons in the summer of 1917 proved those military thinkers right. What emerged from the mentioned orientation was the understanding and promotion of the concept of legitimate war, of defence against aggression towards the national state, its unity, independence, or sovereignty – namely the desiderata of the great strategy (or of the political strategy). The preparation of the country, the discipline of the nation, the economic effort for defence were the pillars of the “war of the entire people”, a concept reflected, about one hundred years before, in the well-known book of Clausewitz, *On War* (*Despre război* – the Romanian edition in 1982). The preparation of the country to face the great changes related to confrontation in Europe entailed using the Clausewitzian concept, reinterpreted mainly by General Ion Manolescu, who insisted on the preparation of the entire war for national defence. This projection, resulting from focusing on the national dimension of doctrinal projection, was reflected in the *Law on the Organisation of the Nation and the Territory for the War Time* on 27 April 1933, which clearly defined the role of the state in the organisation of national defence.

Even though, theoretically, the dispute between the school of thought influenced by the French geometric view and the autochthonous one – not explicitly defined, by mentioning the specific differences from other schools of military thinking, with the exception of the “soul superiority” in engaging in battle – continued, starting with the *Law on the Armed Forces Organisation* on 23 June 1924, based on French theoretical foundations, and the armed forces organisation became tributary to the ideas of Napoleonic origin. The compulsory military service was introduced, the army corps were established, the number of troops was increased, infantry becoming very important, oversizing resulting in deficient training, conducted partially, with less troops and without covering all training stages. Neither the laws on 30 April 1930 and on 28 April 1932 succeeded in balancing the armed forces size and the need for training. In 1934, the new Chief of the Great General Staff, General Ion Antonescu, noticed that the armed forces were too numerous (having a too large structural basis), bureaucratic, having officers who were not properly trained. “The great shortcoming in the preparation of the Romanian armed forces corps of cadres in the interwar period was the rupture between theory and practice”, underlined Generals Arsene and Botezatu in the book *Strategia*



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Around the outbreak of the Second World War, the German school started to regain its influence. The particularities of the German school of thought became obvious especially in the military actions of the Romanian Armed Forces entering the war and less in the theoretical plane, where there were not the necessary conditions to implement the mentioned ideas.

*militară românească în epoca modernă (Romanian Military Strategy in the Modern Age)*¹⁴.

Around the outbreak of the Second World War, the German school started to regain its influence. The particularities of the German school of thought became obvious especially in the military actions of the Romanian Armed Forces entering the war and less in the theoretical plane, where there were not the necessary conditions to implement the mentioned ideas. The appropriate acknowledgement of the role of aviation and mechanised troops in war and the employment of the particular means of war represented the most important elements adopted from the German doctrine. However, once the war ended, the military thinkers of the interwar period could not accomplish their own projects inspired by the French, Romanian or German ideas, as they were imprisoned or marginalised.

Conclusions

The Romanian military thinking proved, throughout time, to be counter current. In the second half of the 19th century, when the French school was dominant in Europe, King Carol I imposed a Prussian type organisation of the armed forces and, implicitly, the Prussian thought lines of force. Following the Great Unification, when the French school ceased to be a reference point in projecting strategic thinking in most Western countries, and when the Prussian school (Clausewitz thinking) was revived through two important vectors: VI.I. Lenin and A. Hitler, the Romanian orientation focused on the French school. The attempt to project a Romanian school of military thinking did not produce the expected results because of the outbreak of the Second World War and especially because of the fact that most Romanian military thinkers were imprisoned or marginalised by the recently installed communist authorities. There followed the years of orientation towards the Leninist Clausewitzianism, in a period when Europe and especially the United States of America renounced the ideas of the illustrious Prussian General, and then, under the political circumstances favourable to a revival of the autochthonous military thinking, it was an alignment with the Clausewitzian thinking previous to the action of the vector Lenin.

¹⁴ Division General (r.) Professor Dr Valentin Arsene, Brigadier General Dr Petre Botezatu (coord.), *op. cit.*, p. 115.

The counter-current position, in the years of United Romania as well as before, starting from the Small Unification, seems to have been put an end to. Doctrinarily – where there is certain resistance to change –, the changes in the nuances in the doctrines of NATO member states entail effects in today Romania in a time horizon of several years. It is enough to mention the projection of information operations, which generated effects in military thinking in synchronicity with the Western world, and in doctrinal plane, in a time horizon of only eight years.

Liberated from political strains, the Romanian military thinking has now a great chance of being synchronous with the Western world and of affirming itself *per se*.

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THE EFFECT OF HEURISTICS AND COGNITIVE BIASES IN MILITARY DECISION-MAKING

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The missions of the Romanian military are becoming more and more complex and difficult to execute. Much of the difficulty of these missions is due to the operating environment characterised by the fact that most decisions are taken under stress and uncertainty.

Under these circumstances, modern research has revealed that people may be prone to judgmental errors due to cognitive biases (cognitive errors). For this reason, it is essential for military specialists to understand how these biases work and to identify the methods by which the military can be educated and trained to cope with them.

Keywords: cognitive bias, heuristics, availability, representativeness, anchoring.

Introduction

The decision, and especially how to take it inside an organisation like the military, is of crucial importance to ensure the success in a conflict. The strategic and operational environment is now increasingly characterised by ambiguity and complexity, and professional militaries face a multitude of factors that can affect their decision-making capacity¹. Studies of cognitive psychology and behavioural economy have highlighted that the existence of an increasing amount of information to be analysed, the shorter time available to make a decision and the unusual dynamics with which some actions on the ground may lead to wrong decisions caused by cognitive errors (cognitive bias)².

Substantial resource allocations for purchasing next-generation military technology must be accompanied by investment in human resource training to successfully use this technique. In this respect, we need to better understand how decisions are made at the individual level and how the most important factors intervene and influence this process.

Where can the effects of heuristics and cognitive errors be observed in the military environment?

Human decision-making is a very complex mechanism. At present, there is fierce debate difficult to complete between the researchers of this phenomenon with regard to the fundamental character of the cognitive processes that influence and determine our intuitive judgment³. More importantly, there is a distinct lack of consensus on how best to address and establish the relevant investigation framework for these processes. These debates indicate that the vast majority

¹ Paul K. Davis, Jonathan Kulick and Michael Egner, *Implications of Modern Decision Science for Military Decision-Support Systems*, Rand, Project Air Force, Santa Monica, CA, 2005.

² Amos Tversky and Daniel Kahneman, *Judgment under Uncertainty: Heuristics and Biases*, *Science* 185, nr. 4157 (27 September 1974), pp. 1124-31, <https://doi.org/10.1126/science.185.4157.1124>.

³ Gerd Gigerenzer, "Fast and Frugal Heuristics: The Tools of Bounded Rationality", in *Blackwell Handbook of Judgment and Decision Making*, ed. Derek J. Koehler and Nigel Harvey (Malden, MA, USA: Blackwell Publishing Ltd, 2004), 62-88, <https://doi.org/10.1002/9780470752937.ch4>.



Most cognitive psychology specialists think that people spend about 95% of time making decisions intuitively. While a comprehensive theory of human decision-making remains to be completed, the data provided by research on heuristics and bias significantly contributes to a better understanding of the wide range of variables that influence decision-making and lead to potential errors in court.

of people's decisions are intuitive. Most cognitive psychology specialists think that people spend about 95% of time making decisions intuitively⁴. While a comprehensive theory of human decision-making remains to be completed, the data provided by research on heuristics and bias significantly contributes to a better understanding of the wide range of variables that influence decision-making and lead to potential errors in court. This is essential for any organization interested in improving the decision-making process of its members. From this perspective, the military does not differ from civil organisations in the desire to optimise decision-making against the background of uncertainty and ambiguity.

A solid knowledge of the factors influencing decision-making can be used by the military to develop tools that improve individual and organisational decision-making and help identify, develop and promote staff capable of making good decisions. This will be particularly important because the operating environment is growing in complexity. In this environment, the effective execution of the mission command will be increasingly difficult and leaders are expected to rely more and more on intuitive decisions. In view of this, it is clear that a better understanding of heuristics and cognitive errors involved in decision-making has important implications for the future armed forces. For example, implementing the results of studies on heuristics and cognitive biases across the armed forces could help modify or adapt the working conditions and job posting requirements to take into account the cognitive processes involved in meeting them. Also, a more solid and widespread understanding of heuristics and cognitive biases could be used to better assess military and commanders to find better match between tasks and individual characteristics. In each of these cases, institutional and individual decision-making can be improved by an appropriate assessment of the heuristics and errors involved in these processes.

The act of command remains the main element that can validate or that can capitalise on any of the new approaches to decision-making. Masters have to combine the two types of intuitive and analytical approaches to make "timely and effective decisions". By appointing

⁴ Pat Croskerry, Geeta Singhal, and Silvia Mamede, "Cognitive Debiasing 1: Origins of Bias and Theory of Debiasing", *BMJ Quality & Safety* 22, nr. Suppl 2 (October 2013), pp. 58-64, <https://doi.org/10.1136/bmjqs-2012-001712>.

commanders, military leaders at all levels are empowered to make quick decisions, and often they are unable to perform detailed analyses or to seek top-level approval. Commanders and chief officers will, if they have not done so before, voluntarily try new approaches and experiment on the ground with new ways of responding to surprises, must critically examine heuristic decision-making and understand how this could lead to subjective and often wrong solutions. The institutional nature of the *Military Decision-Making Process (MDMP)*, organisational culture, and the individual mental processes involved in the way we make decisions lead to the use of these heuristics, and these, in turn, generate many errors (bias).

The standard decision-making standard is the *MDMP*, and this involves an objective rationality based on a linear, step-based model that generates a specific mode of action and is useful for examining stability issues.

Militaries consider *MDMP* as the standard approach to problem solving and decision-making. Complying with this template is refreshing for many of the military, primarily because they are familiar with it. However, what can be done when the enemy does not fight in accord to our assumptions? Recent missions in T.O. Iraq or Afghanistan, where Romanian troops still fight, have shown us that the enemy in the field has not acted and does not act as we wish! This has prompted us to change our initial ideas on how to lead military operations and, above all, how to make decisions.

A practical solution, identified by US military, is shortening the classic decision-making process, *MDMP*. They consider *MDMPs* to be inappropriate for issues of high volatility, uncertainty, complexity and ambiguity. The identified solution is called "*Design*", and looks encouraging, according to Blair S. Williams in the September-October 2010 issue of the *Military Review*⁵.

Design is neither a process nor a checklist. It is a critical and creative thinking methodology that helps commanders understand the environment, analyse problems, and consider potential approaches

⁵ Blair S. Williams, "Heuristics and Biases in Military Decision Making", in *Military Review*, October 2010, 14.

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Design is neither a process nor a checklist. It is a critical and creative thinking methodology that helps commanders understand the environment, analyse problems, and consider potential approaches so they can exploit opportunities, identify vulnerabilities, and anticipate changes during a campaign.

so they can exploit opportunities, identify vulnerabilities, and anticipate changes during a campaign⁶.

As outlined in the new version of *FM 5-0, The Operations Process*, Chapter 3, instead of a universal process of problem-solving (*MDMP*), the *Design* approach considers that military leaders need to first assess the situation and accept that any solution chosen will be unique. Successful implementation of *Design* pursues four concrete objectives that, once achieved, provide the rationale and logic that will guide detailed planning processes. Each objective is an essential component that changes the conditions of the operational environment contributing to the desired final state. These goals need to be taken together to overcome the complexities that characterise the present conflicts, characterized by the prolonged confrontation between states, non-states, and individual actors who are increasingly willing to use violence to achieve their political and ideological goals. The design objectives are: *understanding of insufficiently structured issues; anticipating change; creating opportunities; recognising and managing transitions*.

With *Design*, the most important task is to frame the problem and then redefine it when conditions change. Framing involves on-site improvisations and experiments, especially when militaries are confronted with time and space constraints in the operating environment.

The decision-making and correction methods can be found along a continuum from analytic to intuitive. In intuitive decision making, we use mental heuristics to quickly reduce the complexity of the environment in which we operate. The use of these heuristics exposes us to cognitive errors (cognitive bias) and it is important to know them in order to reduce their negative effects.

Heuristic cognitive bias

Nobel Laureate Daniel Kahneman and Professor Amos Tversky were the first to thoroughly analyse the effects of heuristics and cognitive errors in making decisions. Unhappy with the discrepancies of the classical economy in explaining the human decision process, Kahneman

⁶ Department of the Army, "FM 5-0 The Operations Process", 26 March 2010, <https://fas.org/irp/doddir/army/fm5-0.pdf>.

and Tversky have developed the initial principles of a discipline now known as *behavioural economics*. Unlike the pre-existing classical models (such as the expected utility theory) describing human behaviour through rational maximization of cost-benefit decisions, Kahneman and Tversky provided a simple framework for analysing human behaviour observed on the basis of uncertainty choices, risk and ambiguity⁷. They have suggested that when faced with numerous sensory inputs, human beings reduce complexity by using heuristics. During these mental processes of simplifying an overwhelming amount of information, *cognitive errors (cognitive bias)* usually arise from unconscious errors generated by our methods of mental simplicity. It is important to note that the use of heuristics does not generate each time an error, but under these conditions we are simply more prone to make mistakes. "These errors also do not have a cultural or ideological conditioning, these being semi-conscious processes, and the phenomena identified by Kahneman and Tversky have resisted numerous experimental tests but above all resist the reality. They are considered robust, consistent and predictable.

In psychology, *heuristics* is a concept that refers to intuitive and rapid mental operations in certain personal or social contexts, decision making, probability estimation and value prediction. The most common and used heuristics are: availability; representativeness; anchoring.

A. Availability

When confronted with new situations, people naturally compare them to similar situations stored in memory. These comparison processes happen automatically "*in mind*". These past situations are available for use and, most of the time, they are appropriate to make sense of new situations encountered in everyday life. However, the comparisons that are made are rarely produced by an intense deliberation process, especially when acting in an environment under pressure of time. These available memories have been predetermined unconscious by the circumstances we have experienced in our past. These past memories, which appear to us as similar circumstances, affect our judgment when assessing the risk and/or probability of future events. Finally, four cognitive errors can result from the use of heuristics of availability: *retrievability bias, search set bias, imaginability bias, and illusory correlation bias*.

⁷ Amos Tversky and Daniel Kahneman, *op. cit.*

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A soldier will assess the risk of being injured or killed in combat on the basis of the occurrence of this event among his comrades. The availability of these past events with frequent occurrences helps us quickly judge the subjective probability of future events.

Particular attention must be paid to *retrievability bias*, this occurs when the frequency of similar events in our past strengthens preconceptions about comparable situations that occur in the future. For example, a soldier will assess the risk of being injured or killed in combat on the basis of the occurrence of this event among his comrades. The availability of these past events with frequent occurrences helps us quickly judge the subjective probability of future events. For example, the probability of subjective assessment of future attacks by using improvised explosive devices (IED) will most likely be higher for a military assisting in such attacks than for a soldier who has just read about it during preparation for the mission. The distortion in assessing the occurrence of such events takes place because the real probability of the occurrence of future attacks is independent of the personal experience of each military in such situations⁸.

Similarly, sustained attention to an event or a series of past events can also increase the availability of these events. Always, military pilots, after an airplane event, for example, stopping an engine in flight, will appreciate the greater the risks of this event occurring in the future. The actual probability of a future fly-off is not higher than it was before this event, but organizational efforts to avoid this incident will increase due to the subjective impression that the probability of stopping an engine in flight is higher. Individuals exposed to the outcome of a probability event give a higher post-eventual probability than those not exposed to this event. This is called *retrospective (hindsight bias)*.

When we combine the retrospective matching error and the recall error, we are unable to protect ourselves from the occurrence of a popular euphemistic event as a black swan. Nassim Taleb describes the black swans as historical events that surprised humanity because they were considered as nonexistent or extremely rare. We all suppose that all the swans are white; this information is in our working memory⁹. For example, looking back on the terrorist attacks of September 11, 2001, they could now be fully imagined only that at that time there were numerous intelligence agencies in the US government who were publicly responsible for something that was not even plausible that it can be produced. In addition, memories of some past disasters bring

⁸ Blair S. Williams, *op. cit.*

⁹ Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*, Random House, 2007.

us an upper limit to the perceived risk today. Many of the preventive security measures to be taken by each state are now based on the cessation of another type of attack 09/11, when in fact the next attempt may take a completely different form that cannot be imagined at present. (Because our searches in the memory of previous experiences are limited).

Given the possibility of occurrence of black swan events, we should constantly ask ourselves whether we have memories available when we are confronted with new situations. And if so, do these memories help us or not? Do our decisions become more or less risky? Can our opponents exploit this phenomenon?

B. Representativeness heuristic

Representativeness is a heuristic that people use to assess the likelihood that an event, person or object falls into a larger category of events, people or things. To quickly classify a new situation, we will examine it according to the characteristics of the category of events with the most occurrences, if we find that it is in line with the features of the broader category, we place it mentally in this class of events, or category of persons or objects¹⁰. This heuristic is a normal part of ordinary mental processing, but it is also prone to errors. Representativeness leads to five potential cognitive errors: *insensitivity to prior probability of outcomes, base-rate neglect, insensitivity to sample size, misconception of chance, and the failure to identify regression to mean*.

Misconception of chance, one of the cognitive errors generated by heuristics of representativeness, occurs because many people understand wrong items of chance. For example, suppose you watch the roulette game in a casino. The following three red and black sequences could appear: RNRNRN or RRRNNN or RNNNNN. Which sequence is more likely? The answer is that all of these sequences are equally probable; however, if you were like most people in similar experiences, then you most likely chose RNRNRN¹¹. This sequence is the most popular because people expect the fundamental features of the equilibrium sequence (50% black and 50% red) to be equally present

¹⁰ Amos Tversky and Daniel Kahneman, *op. cit.*

¹¹ Daniel Kahneman and Amos Tversky, „*Prospect Theory: An Analysis of Decision Under Risk*”, in *Handbook of the Fundamentals of Financial Decision Making*, Volume 4, World Scientific Handbook in Financial Economics Series, Volume 4, World Scientific, 2012, pp. 99-127.

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– if we did a simple mathematical calculation, we would get for each variant a probability of 1.56% ($0.5*0.5*0.5*0.5*0.5*0.5= 0.015625$). If the sequence was NNNNNN, then you will probably hear people saying that “Red is definitely coming” – this is the error of the players. Many people expect the equilibrium pattern to return after a long black period; however, random laws have not changed. Probability of the appearance of the red ball is equal to the probability of the black ball. The result is that we unconsciously judge future events based on the representation of the sequence, not on its likelihood.

Next, if we should consider the following issue:

Which scenario is more likely: 1) “North Korea will test a nuclear weapon in 2019” or 2) “North Korea will have internal troubles and test a nuclear weapon in 2019?”

Probably many would choose the second scenario as the best answer, but they will be wrong. The reason is that the more specific the description, the less likely the event is. The two events occurring in the same year are less likely than a single event; however, many people tend to judge an event as more likely because it is described by more specific information. This human tendency has potential implications for military decision-making, as knowledge of the situation improves with the help of technology. Adding new details in a situation can make the scenario seem more plausible, yet the mere discovery of additional information does not change the likelihood that the situation actually occurs¹².

Another cognitive error generated by representativeness heuristics is *insufficient identification of regression to mean and the root cause of its occurrence is because people mistakenly attribute the cause and effect of a phenomenon because they do not know or do not recognise the effects of normal statistical distribution*. It says that: the maximum performance is usually followed by results below the maximum performance (i.e. tending to average) and the minimum performance is followed by better performance than the minimum performance (i.e. they tend to average).

From the flight training pilots’ discussions with experienced flight instructors, they noted that an exceptionally smooth landing, which is smoothly executed, is usually followed by a poor landing, and after a hard landing, heavily criticised, landing is much improved.

¹² Blair S. Williams, *op. cit.*

The instructors have concluded that verbal rewards are detrimental to learning, while verbal punishments are beneficial, contrary to what the psychological theory of learning supports¹³. Awareness of the regression to the mean is similar to the understanding of the learning curve where we have the so-called plateau where the progress of the pupil decreases after a period of growth.

In other words, we often fail to correctly identify the conditions that lead us to the regression to the mean, because we expect, intuitively, that future scores are representative of previous scores. Moreover, we attribute causal explanations to obtained achievements that are actually irrelevant to the activity itself.

C. Anchoring

When faced with a new problem, most people make an initial assessment. As time passes, they correct this initial assessment, but often this adjustment is usually inadequate and does not match the final situation.

The British in the Second World War exploited the human mental errors that could be made by their enemies. They exploited the cognitive errors vis-a-vis the German anchors, preparing and implementing a deception plan called the *Cyprus Defence Plan*¹⁴. Following the capture of the Crete Island by the Germans, the British were worried that the approx. 4,000 Cypriot soldiers were insufficient to reject a German attack. By creating a fake division headquarters, barracks and specific buildings along with a whole system of false messages and telegrams, the British tried to convince the Germans that they are actually on the island 20,000 soldiers. A fake defence plan, with maps, charts, and orders, was passed through double agents in a lost briefcase, directly into the hands of the Germans. The Germans and the Italians fell into this net. This deception anchored the Germans in the belief that there are over 20,000 soldiers on the island for the next three years of war. Despite their own analysis that the number could be too high, the interceptions of information and post-war documents revealed that the Germans thought without doubt that the number was the real one. This exhibits another negative effect of anchoring: excessive confidence intervals. The Germans were more confident in their basic

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¹³ Amos Tversky and Daniel Kahneman, *op. cit.*

¹⁴ Chris Chant, “A Successful British Deception of WWII – The «Cyprus Defence Plan»”, Chris Chant’s Blog, 4 July 2016, <http://www.cmchant.com/british-cyprus-defence-plan-wwii>.



Awareness of the regression to the mean is similar to the understanding of the learning curve where we have the so-called plateau where the progress of the pupil decreases after a period of growth. In other words, we often fail to correctly identify the conditions that lead us to the regression to the mean, because we expect, intuitively, that future scores are representative of previous scores. Moreover, we attribute causal explanations to obtained achievements that are actually irrelevant to the activity itself.

assessment than in subsequent assessments of the contradictory information they had obtained. In short, the Germans were anchored at an incorrect initial value and made insufficient adjustments in the coming period.

Exceeding this anchoring phenomenon is difficult. Even when the subjects in a test task are informed of the existence of this error, research has shown that anchoring persists. As for the highly volatile, uncertain, complex and ambiguous environments in which military professionals work, they need to improvise and experiment with a variety of new methods in order to have the desired success. In order to avoid anchoring, it may be necessary for the problems that have arisen to be reincorporated again, however, this could be a difficult solution in an environment under the pressure of time.

The approaches initiated by the Romanian Armed Forces specialised structures to prevent or mitigate the effects these cognitive errors cause during military actions

In the Romanian Armed Forces, the measures to prevent or mitigate the effects that cognitive errors may cause during the decision-making process are developed by the *Center for Social and Behavioural Investigations* and put into practice together with psychologists specialising in the military units subordinated to the Defence Staff.

The intervention of military specialists takes place on two levels, one of drawing up manuals, brochures, guides dealing with such subjects and another plan, that of specialized interventions, where the psychologists of the unit carry out concrete actions to train the military participating in missions in theatres of operations outside the national territory or complex international exercises.

On the first level of the specialised work, the Centre for Social and Behavioural Investigations has developed, during the 4 years since its establishment, a number of 5 specialised papers that are used by military psychologists during the preparation for the fight. These are:

- *Manual for psychological training and operational stress control* – this manual is meant for all military personnel, but especially to group, platoon and company commanders, participating in missions in theatres of operations, as well as structures set up to support the families of these militaries. The information contained in the manual and their practical

relevance for high-risk missions are strengths of military training and, implicitly, for the maintenance of mental health of the military, for organisational health and for improving professional performance¹⁵.

- *Developing intercultural competencies: a guide for Romanian soldiers participating in missions outside the territory of the Romanian State* – this guide provides both military officers participating in missions outside the territory of the Romanian State and those involved in training them for mission important milestones for acquiring skills a cultural invoice to facilitate contact and good cooperation with all actors involved in this type of mission¹⁶.
- *Knowledge and support of subordinates in the context of high-risk assignments. Practical Guide for Commanders* – this paper provides, in a systematised and intelligible manner, information, recommendations and exercises specifically designed for the commanders to better understand their subordinates, how they might react in demanding contexts which involves a high-risk mission and the most appropriate ways in which they can act to reduce these effects¹⁷.
- *Crisis intervention and psychological first aid: operational guide* – this guide provides psychologists in the military system as well as other people interested in providing psychological support to those affected by traumatic events, the main theoretical milestones behind this kind of psychological intervention as well and concrete patterns to achieve it, accompanied by examples of documents that can be used (worksheets, leaflets) in these interventions¹⁸.

The discipline of knowledge management was introduced in the curriculum at the National Defence University “Carol I”, containing topics dedicated to heuristics and biases. Discipline is taught in postgraduate specialisation courses (e.g., internal management control, lessons

¹⁵ Vasile Marineanu (coord.) et al, *Manual pentru pregătirea psihologică și controlul stresului operațional*, Editura Centrului Tehnic-Editorial al Armatei, București, 2015.

¹⁶ Cristian Popescu et al, *Dezvoltarea competențelor interculturale: ghid pentru militarii români participanți la misiuni în afara teritoriului statului român*, Editura Centrului Tehnic-Editorial al Armatei, 2015.

¹⁷ Vasile Marineanu (coord.), Elena Pîrlitescu, Ilona Voicu, *Cunoașterea și sprijinul subordonaților, în contextul misiunilor cu grad ridicat de risc. Ghid practic pentru comandanți*, Editura Centrului Tehnic-Editorial al Armatei, 2014.

¹⁸ Ilona Voicu, Vasile Marineanu, *Intervenția în criză și primul ajutor psihologic: ghid operațional*, Centrul Tehnic-Editorial al Armatei, București, 2016.

As for the highly volatile, uncertain, complex and ambiguous environments in which military professionals work, they need to improvise and experiment with a variety of new methods in order to have the desired success. In order to avoid anchoring, it may be necessary for the problems that have arisen to be reincorporated again, however, this could be a difficult solution in an environment under the pressure of time.



The discipline of knowledge management was introduced in the curriculum at the National Defence University "Carol I", containing topics dedicated to heuristics and biases. Discipline is taught in postgraduate specialisation courses (e.g., internal management control, lessons learned) and career (Strategic Leadership in Defence Information), but also in Information Systems and master's degree courses (Project Management).

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learned) and career (Strategic Leadership in Defence Information), but also in Information Systems and master's degree courses (Project Management). Students also use concepts of heuristics and biases in military applications conducted within the military leadership discipline. They are based on the excellent book wrote by Marinela-Adi Mustață, PhD and Cristina Bogzeanu, PhD, *The Heuristic and Bias Program. Applications and Implications in the Military Field*, published at the "Carol I" National Defence University Publishing House in 2017¹⁹.

Far from being enough, these papers address some aspects of the importance of making a good decision for the present and future success of military action and have the merit of bringing attention to the need for expertise in this area.

Conclusions

The volatility, uncertainty, complexity and ambiguity of the military operating environment require military professionals to make quick decisions in situations where standard military decision-making procedures are either too specialised or inefficient. The speed with which the operational decisions are made may make it impossible to develop an elaborate approach, such as *MDMP* or *Design*. Consequently, commanders, sometimes the entire military personnel, can find themselves in the situation where they will make decisions predominantly intuitively.

In this article, we presented the most used heuristics that people use to make intuitive decisions and we analysed some of the cognitive errors generated by their use that can lead to mistaken decisions. When subjective evaluations, ego and emotion are interconnected with cognitive processes, intuitive decision making is full of dangers. We have to constantly strive to avoid these cognitive conflicts and to propose to compensate them when they occur.

Militants could improve decision-making by incorporating the results of applied psychology research. These results can be found not only in the area of research, education and instruction, but also in the operational area by accepting procedural and organizational changes.

¹⁹ Marinela-Adi Mustață, Cristina Bogzeanu, *Programul euristiciilor și biasurilor: aplicații și implicații în domeniul militar*, Editura Universității Naționale de Apărare "Carol I", 2017.

By doing so, the soldiers will be able to avoid some mistakes in the future and thus increase their ability to successfully carry out the combat missions they have received.

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POSSIBLE RECONFIGURATIONS OF NATO IN THE 21ST CENTURY – FROM THE ATLANTIC TO GLOBAL DIMENSION –

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The article presents some views and comments on some of the global players in the 21st century, such as NATO, an alliance constrained to currently act in a profoundly changed global order.

There are presented and succinctly analysed the transformation of NATO nature, its competences and scope, from the perspective of the “Pacific Century” paradigm, as well as the North Atlantic Alliance possible responses to the current security challenges.

The Warsaw Summit set as priority goal the consolidation of the transatlantic partnership through strengthening NATO-EU cooperation, seeking a common understanding of security and cooperation with the European Union related to issues such as: cyber-security, hybrid threats countering, maritime security.

Keywords: global challenges, regional organisations, strategic partners, hybrid threats, NATO-EU cooperation.

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Introduction: NATO, a Westphalian-type Structure in a World of Global and Asymmetrical Challenges

The classical understanding of NATO doctrine is that it is a defensive political-military alliance, strictly delineated not only geographically and strategically but also in terms of the types of members or competences¹.

However, at the beginning of the 21st century this *traditional view* related to what NATO is and to its future (considering the *status quo supportive trend* regarding NATO nature, composition, competences and scope) is increasingly countered by another trend (supportive of NATO *profound and radical transformation* to become an alliance tailored to meet the challenges specific to the 21st century).

It is increasingly evident that NATO, if it intends to survive, in terms of strategic concept and military alliance as such, *must adapt*². So far NATO pace and mode of adaptation have been relatively timid, in my opinion, compared to the dimension, intensity and type of challenges in the 21st century, a century that can be defined by the concept of globalisation.

In this world defining itself as a global world, a **global village**, as it is also mentioned in the doctrine³, *NATO must seek its own meaning of globality* (and, why not, of glocality⁴). It is essential to conduct,

NATO, if it intends to survive, in terms of strategic concept and military alliance as such, must adapt.

¹ Art. 3, art. 5, *The North Atlantic Treaty*, NATO, 4 April 1949, updated 21 March 2016, http://www.nato.int/cps/en/natolive/official_texts_17120.htm, retrieved on 11.07.2016.

² NATO, *Active Engagement, Modern Defence. Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation*, NATO Summit, Lisbon, 19-20 November 2010, NATO Public Diplomacy Division, Belgium, www.nato.int, retrieved on 11.07.2016.

³ David Held, Anthony McGrew, David Goldblatt, Jonathan Perraton, *Transformări globale. Politică, economie și cultură*, translated by Ramona-Elena Lupașcu, Adriana Ștraub, Mihaela Bordea, Alina-Maria Turcu, Editura Polirom, Iași, 2004, pp. 51-52.

⁴ *Glocal* – term adopted in Romanian following “blurring” the frontiers between countries and people due to the Internet. The term “glocality” intends to combine the concepts of “global” and “local”. In this regard, there are also the lexemes “glocalism”, “glocalisation”. The Romanian words are created following the English words “glocality” and “glocalization”. The term is mentioned in the late ’80s in an article signed by a Japanese economist in *Harvard Business Review*, being adopted in other languages (French, *glocalité*, *glocalisation*). Being “glocal” means combining local and global elements in human activities.



In such a world, fragmented, glocalised, and having chaos islands, which does not resemble the Westphalian world, ordered, sovereign, delineated by nation-state spaces, for which NATO was established, this construction of “defensive-alliance”- type seems not to fit, in its traditional format.

in this context, the *strategic analyses on the nature of a glocal NATO*, in an *increasingly post-state international system*, in which there are asymmetrical, transnational, unconventional challenges and extremely powerful non-state actors⁵. A world that increases its unpredictability instead of becoming a safer world, a world from which civilisation clashes have not been excluded being attached, on the contrary, more importance each and every day (in spite of cultural globalisation⁶ that should have helped individuals and peoples to better know each other, to interact more deeply and easily, to faster find common points and to increase tolerance through mutual knowledge and dialogue).

In such a world, fragmented, glocalised, and having chaos islands⁷, which does not resemble the Westphalian world, ordered, sovereign, delineated by nation-state spaces, for which NATO was established, this *construction of “defensive-alliance”- type seems not to fit, in its traditional format.*

NATO is essentially, even today, a Westphalian alliance, specially tailored for such a model. The subsequent updates to NATO basic strategic concept, in terms of competences, types of operations, areas of involvement, legal frameworks to allow operation in new dimensions *cannot substitute for the need for a profound, authentic reform of NATO*, the only one able to radically transform this alliance from a structure of the 20th century in a *post-Westphalian structure, specific to the global world of the 21st century*. Secondly, as an alliance established following this model, NATO was thought to act in a strictly delineated geographical area⁸, *composed of the territories of sovereign states, having clear, limiting-geographic, well-defined conditions* to enlarge by inviting new members (*“European states”*, according to Art. 10 of the Washington Treaty⁹).

Therefore, in its classical concept, NATO can invite only “European states” to join the alliance (the treaty does not clearly define what *“European”* means for an alliance like NATO). Thus, what was considered *“European”* at the end of the 20th century tends not to be considered

⁵ Vasile Simileanu, *Conflicte asimetrice*, Editura Top Form, București, 2011, pp. 29-31.

⁶ David Held et al, *Transformări globale*, op. cit., pp. 387-407.

⁷ Robert Cooper, *Destrămarea națiunilor. Ordine și haos în secolul XXI*, translated by Sebastian Huluban, Editura Univers Enciclopedic, București, 2007, pp. 103-108.

⁸ *The North Atlantic Treaty*, op. cit.

⁹ Art. 6, *The North Atlantic Treaty*, op. cit.



“European” in the 21st century, once with the emergence of new regional-European and international political circumstances, the ascension of new regional powers, the changes in the European power game. All the mentioned aspects *have changed firstly the perception and then the political reality on the ground, according to other political-strategic paradigms corresponding to other movements in the global power game.*

The EU weakening under the impact of the migrant flows that besiege the Western capitals, threatening the very realist perspectives of assuring, by the EU, the European citizens freedom of movement and civil rights, the series of terrorist attacks in Western countries, the impact of the negotiations related to Brexit or the populist policies in some European states, all result in *changing the European political geography in the medium and long term*, the perception of who is European and who is not. There are thus created the premises for introducing some *“European circles”* instead of *“united Europe”*, in which the *“core Europe”* would be represented by the EU Western member countries, the definition and perception of *“European”* being implicitly diluted in relation to the EU member countries that are not part of the *“core Europe”*.

In this context, NATO should consider that Europe has become totally different following 2016, after the EU has been confronted with the flow of migrants (a reality for which the Alliance has not had a coherent strategy to manage the existing situation), and in the context of the EU negotiations with the United Kingdom related to Brexit.

NATO is thus a classical alliance, established based on a model of international political system that was specific to the 20th century (the system in 1949, the year in which NATO was established), having a classical structure (being composed *exclusively of states*, not having non-state actors, regional or infra-regional organisations, and not accepting non-state actors as *“members”* or *“partners”*).

The Doctrinal Trend of a *“Global NATO”*

Although NATO has consistently intended, after the end of the Cold War and the collapse of the USSR, to *adapt* to the new international political environment and, consequently, to *avoid its disappearance* (as an organisation *strictly connected to a certain historical conjuncture, specific to the bipolar world*), these reform efforts *have not seemed*,

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The current geopolitical evolution is influenced by actors and/or events such as migrant waves (including based on economic reasons), by cross-border movement of the population in conflict areas, by regional organisations for integration or economic-political cooperation.

so far, sufficient to make NATO a “genuine 21st century” alliance. We could say that, currently, NATO is a classical, Westphalian, alliance, to which have been added certain elements of response to the challenges that are specific to the 21st century, but not profound enough to result in an **essential** change of the Alliance, an evolutionary one, to operate in a post-Westphalian, global, world.

Acknowledging such a lack in the strategic approach to the future NATO, there have been voices pleading for a *global NATO*¹⁰. This trend (global NATO) is subsumed, in my opinion, under the need for *radical reform* of this classical Westphalian alliance, which has to act in a *post-state world*, strongly influenced by non-state actors.

The current geopolitical evolution is influenced by actors and/or events such as migrant waves (including based on economic reasons), by cross-border movement of the population in conflict areas, by regional organisations for integration or economic-political cooperation. It is a world in which arise the issues of private military defence, supranational armed forces establishment, as well as of establishing military corps of great transnational companies and mercenary armies¹¹, capable of operating in areas of conflict to defend the private interests of these actors (including the surveillance of the oil and gas pipelines that cross areas marked by political instability, conflict areas, areas having territories in dispute between states or state and non-state actors)¹² etc. In such a world, much more different from the state one¹³, NATO has to act, to face asymmetrical, unconventional, non-military challenges, having an impact similar to that of an armed conflict, besides transnational challenges¹⁴, in a world having strictly delineated frontiers in a strictly delineated geographical area.

¹⁰ Ivo H. Daalder, James Goldgeier, *Global NATO*, in *Foreign Affairs*, 1 September 2006, published by the Council of Foreign Relations, <https://www.foreignaffairs.com/print/1113291>, retrieved on 10.07.2016; Mahdi Varius Nazemroaya, *The Globalization of NATO*, in *Clarity Press*, 2012, www.globalresearch.ca/the-globalization-of-nato-2/5307198, retrieved on 14.07.2016; Richard Weitz, *Is the Global NATO Dream Over?*, 22 November 2010, <http://thediplomat.com/2010/11/is-the-global-nato-dream-over/2>, retrieved on 4.07.2016; *Will NATO Look East?*, 18 May 2012, <http://thediplomat.com/2012/05/will-nato-look-east>, retrieved on 4.07.2016.

¹¹ Silviu Nate, *Geopolitica unei lumi imperfecte. Competiție tehnologică și securitate în mediul privat*, Editura Top Form, București, 2014, pp. 58-90.

¹² *Ibidem*, pp. 91-101.

¹³ George Maior, Robert Cooper, *despre ordine și haos în secolul XXI, Introducere la Robert Cooper, Destrămarea*, pp. 5-6.

¹⁴ Vasile Simileanu, *Conflicte asimetrice*, Editura Top Form, București, 2011, pp. 29-35.



The concept of a *global NATO* is an extremely challenging one. However, it has not been seriously and thoroughly analysed, through the prism of the elements of NATO radical reform, either in doctrine or in the meetings and discussions within NATO. NATO remains a nation-state alliance, developed on a Westphalian vision to protect such states, in a world that has changed its nature, becoming one of transnational, non-state threats and actions.

Brief Overview of the Importance of Warsaw NATO Summit regarding a NATO Reform

There were set three key goals for the Warsaw NATO Summit, in July 2016, as follows: to strengthen NATO collective defence, to project stability beyond the Alliance borders, to expand the cooperation with the EU. Part of the Warsaw Summit conclusions, such as NATO involvement in counter-terrorism operations, the Alliance support for its partners maritime capabilities as well as for its partners ability to provide humanitarian assistance, seem to be innovative, reflecting a NATO genuine role in the global world of the 21st century¹⁵.

The Warsaw Summit has therefore been viewed with great hope as a strategic opportunity for NATO to redefine its future direction while assuring the Alliance role to remain “an essential source of stability in an uncertain and unpredictable world”¹⁶. From this perspective, it is clear that NATO intends to act more decisively in the global world of the 21st century, but it remains to be seen how far it will succeed in reforming itself to become a genuine 21st century alliance.

The current NATO adaptations to the world perceived as “uncertain and unpredictable”, such as the participation in counter-piracy operations off the coast of Somalia, the protection of the freedom and security of maritime navigation in the area, the intervention in Afghanistan, are examples of NATO reformist trend. However, these examples

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¹⁵ In the communique, NATO Secretary General introduces a goal open towards shaping a global profile for the Alliance (“project stability beyond NATO borders”). In the content of this goal it is also mentioned NATO involvement in the Middle East (approving the deployment of NATO AWACS to support the Global Coalition against ISIL), https://www.nato.int/cps/en/natohq/news_133063.htm. See also Pre-Press Summit Conference by NATO Secretary General Jens Stoltenberg, 4.07.2016, https://www.nato.int/cps/en/natohq/opinions_133053.htm, retrieved on 12.03.2017.

¹⁶ “Deputy Secretary General addresses”, https://www.nato.int/cps/en/natohq/news_132749.htm, retrieved on 12.03.2017.



The current NATO adaptations to the world perceived as “uncertain and unpredictable”, such as the participation in counter-piracy operations off the coast of Somalia, the protection of the freedom and security of maritime navigation in the area, the intervention in Afghanistan, are examples of NATO reformist trend. However, these examples are not sufficient to highlight NATO role as a 21st alliance in the “uncertain and unpredictable” world.

are not sufficient to highlight NATO role as a 21st alliance in the “uncertain and unpredictable” world NATO Secretary General refers to, which is the world at the beginning of the 21st century (**a post-state, globalising world, in which can succeed only alliances** having global design, competences, components and capabilities much more different from what we currently understand by *Westphalian* military alliances such NATO).

NATO remains an *alliance subsumed under its historical role*, to keep peace in Europe¹⁷, in the political system of the 20th century, through a *transatlantic alliance linking the West in a homogenous civilisation, from not only military but also political standpoint* (transatlantic alliance, by building a strategic bridge between the old Western Europe and the new Western world, understood as being represented by North America)¹⁸. This military and political alliance has cemented the Western civilisation, providing it with coherence and power, in a *world in which powerful civilizational identities are essential to maintain and project power in other regions in the world and even worldwide*¹⁹. Through the contribution of this transatlantic (although not exclusive) alliance, the West withstood in the bipolar period of the 20th century and triumphed against the other bloc of power developed based on the socialist doctrine, demonstrating the coherence and strength of a type of civilisation (the Western one) based on a set of shared values (democracy, liberty, human rights, rule of law, which became the values of the entire Europe and were also supported by NATO).

Considering that NATO is a Westphalian-type alliance, having goals and ways that are *pretty modest for the involvement in the global, post-state, security order of the 21st century*, the following challenges are presented as examples of “reform” for NATO transformation in an “*alliance adapted to the 21st century*”: the need to respond to an “*unpredictable Russia*”, the presence of an “*arc of instability over the Middle East and North Africa*”, international terrorism, proliferation

¹⁷ “The Warsaw Summit and the New Security Environment”, Keynote Address by NATO Deputy Secretary General Alexander Vershbow at the Assembleia da Republica, Lisbon, 23.06.2016, www.nato.int/cps/en/natohq/opinions_132747.htm, retrieved on 4.07.2016.

¹⁸ NATO Parliamentary Assembly, “Declaration on Transatlantic Relations”, May 2014, www.nato-pa.int, O80 SESP 14 E rev.2, retrieved on 11.07.2016; “Transatlantic Declaration on EC-US Relations”, 1990, https://eeas.europa.eu/us/docs/trans_declaration_90-en.pdf, retrieved on 11.07.2016; “The New Transatlantic Agenda”, https://eeas.europa.eu/us/docs/news_transatlantic_agendaen.pdf, retrieved on 11.07.2016.

¹⁹ “The New Transatlantic Agenda”, *op. cit.*



We note that, currently, NATO perceives its main challenges in a pretty conventional manner: thus, the Alliance perceives as the main threat to the security environment not to be non-state actors but a state actor – Russia, characterised as “an unpredictable actor”; consequently, defining the 21st century world as “an unpredictable world”.

The following paradox arises: although NATO does not (yet) define as a post-Westphalian actor, the 21st century reality is not perceived as a reality in which the main actor is the state having predictable actions.

of ballistic missiles, cyber-attacks. In NATO view, cyber-attacks generate “*a difficult and unpredictable security environment*”²⁰, seen as representing *the most challenging situation NATO has been faced with since the end of the Cold War*²¹. An emergency adaptation of the Alliance to such challenges led, during the Wales NATO Summit (2014), to the so-called *Readiness Action Plan*, which decided to triple NATO Response Forces, amounting to 40,000 troops, to establish a *Rapid-Reaction Spearhead Force*, to establish some NATO commands in the Alliance eastern countries, necessary for planning, logistics and re-strengthening. Moreover, it has been implemented the concept of “*Enhanced forward presence*” in the eastern part of the Alliance, which also comprises four multinational battalions, on a rotational basis, in three Baltic states and in Poland²².

Therefore, we note that, currently, NATO perceives its main challenges in a *pretty conventional manner*: thus, the Alliance perceives as the main threat to the security environment not to be non-state actors but a *state actor* – Russia²³, characterised as “*an unpredictable actor*”²⁴; consequently, defining the 21st century world as “*an unpredictable world*”, therefore post-Westphalian, because, in such a world, the states behaviour is predictable, ordered in compliance with international standards and norms. Therefore, the following *paradox arises: although NATO does not (yet) define as a post-Westphalian actor, the 21st century reality is not perceived as a reality in which the main actor is the state having predictable actions.*

We note that NATO does not relate to Russia in the terms of the classical Cold War (as a conventional threat, a *state actor* having a hostile potential), but in the terms of a new Cold War (relating to the old historical adversary but in the terms of the *new global world*)! Thus, the old historical adversary (Russia) during the “*first*” Cold War now becomes an “*unpredictable actor*”, which means, in NATO perception, that Russia would be an *actor that is developing new unconventional*

²⁰ “Wales Summit Declaration, issued by the Heads of State and Government participating in the meeting of the North Atlantic Council in Wales”, 4-5 September 2014, www.gov.uk/government, retrieved on 4.07.2016.

²¹ *Ibidem.*

²² “The Warsaw Summit and the New Security Environment”, *op. cit.*

²³ NATO, “Warsaw Summit Communiqué”, issued by the Head of State and Government participating in the meeting of the North Atlantic Council in Warsaw, 8-9 July 2016, Press release (2016) 100, issued on 9 July 2016, www.nato.int, retrieved on 11.07.2016.

²⁴ *Ibidem*, see also “The Warsaw Summit and the New Security Environment”.



ROMANIAN
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Russia is seen as a state (classical) actor having an atypical behaviour, specific to the global world, which operates in a global world, according to its rules, while NATO remains a Westphalian alliance that notices "this unpredictable behaviour" of Russia but still does not reform itself so that it can operate according to the rules of the 21st century global world.

strategies, based on the rules of the 21st century global world (a world free from the constraints of international norms, the UN Charter, which rigorously defined the 20th century Westphalian world). Therefore, Russia is seen as a state (classical) actor having an atypical behaviour, specific to the global world, which operates in a global world, according to its rules, while NATO remains a Westphalian alliance that notices "this unpredictable behaviour" of Russia but still does not reform itself so that it can operate according to the rules of the 21st century global world.

Besides this "conventional source of unpredictability", as NATO considers Russia to be, there are also perceived *other non-Westphalian threats*, which come from non-state actors, such as: international terrorism, maritime piracy, areas of instability in failed states in North Africa or the Middle East, where state authority is not functional or it is strongly conquered by non-state actors.

Thus, NATO has conducted, starting in 2003 – the year when ISAF operation was launched in Afghanistan –, *outside the strict area of responsibility*, missions such as: counter-piracy mission off the coast of Somalia, stability in the eastern flank of the Alliance (by assisting partners such as the Republic of Moldova, Georgia, Ukraine), NATO missions in Afghanistan and Kosovo to combat terrorism, post-conflict situations stabilisation, military intervention in Libya, partnership initiatives in the Middle East (Istanbul Cooperation Initiative, with partners such as Kuwait, Bahrain, Qatar and UAE or Mediterranean Dialogue, programme involving Egypt, Israel, Jordan, Mauritania, Morocco and Tunisia)²⁵, Iraqi officers training, NATO Training Mission in Iraq, since 2011, helping Tunisia to combat terrorism, providing expertise regarding special operations and border security assurance or supporting Jordan in cyber defence operations. All these are provided as *concrete examples of NATO involvement outside its strict area of responsibility* (as defined through the founding treaty)²⁶.

Starting in 2016, we notice another area of increasing interest for NATO (without noticing the complementary tendency to deeply reform

²⁵ NATO, Istanbul Cooperation Initiative (ICI), "Reaching out to the broader Middle East", updated on 18 November 2011, www.nato.int, retrieved on 11.07.2016.

²⁶ *The Warsaw Summit and the New Security Environment*, op. cit.



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in this regard), namely: strengthening military maritime capabilities, but in a limited (not global) manner; interest in maintaining NATO ability to preserve and protect the freedom of navigation in the Atlantic Ocean and the Mediterranean Sea; NATO objective to assure some stable areas in the vicinity of the Alliance (projecting NATO capabilities *beyond the immediate vicinity* of the Alliance, in order to assure a *stable immediate vicinity*)²⁷.

Through these examples, NATO presents itself, in the view of the reformist trend commentators, as an alliance *already capable* of projecting its power beyond its borders²⁸. It would be intended, through these examples, to affirm that NATO *has already adapted* to the 21st century global world, that *it has already acted* as an actor of the 21st century world, that it is capable, *in its current form (without a major change in the structure, mission, capabilities, mode of operation, set objectives, assumed through a reforming treaty of the Alliance)*, of facing the typical challenges of the 21st century.

If we have a thorough look at the key objectives of the Warsaw Summit, we notice objective number two (*projection of stability beyond the Alliance borders*), in the sense of strengthening the above-mentioned examples, where NATO has already involved.

The presence of this objective on the agenda of the Warsaw discussions in July 2016 indicates a *constant intention of NATO to remain open to reform*, but this trend is not sufficiently determined to trigger a *genuine, deep reformation of NATO (in the sense of a global and global NATO, simultaneously)*.

The objective set by NATO, to "assure a stable vicinity" (which entails diverse operations in the states *beyond the immediate borders* of the Alliance), is subsumed under NATO *traditional goal* to "defend the Alliance borders". It is thus a *limited extension (in the beginning) of the strict responsibilities* set through the Alliance founding treaty, which demonstrates *the beginning of NATO way to adapt, to reform. However, it is a long way from it to assuming the global or double-ocean profile of NATO.*

²⁷ "Warsaw Summit Communiqué", op. cit., see also Judy Dempsey, *Strategic Europe, Is NATO Taking on More than It Can Chew?*, Carnegie Europe, <http://carnegieeurope.eu>, retrieved on 11.07.2016.

²⁸ Judy Dempsey, *ibidem*.

The objective set by NATO, to "assure a stable vicinity" (which entails diverse operations in the states beyond the immediate borders of the Alliance), is subsumed under NATO traditional goal to "defend the Alliance borders".



A glocal NATO, through a new strongly reformist strategic concept, which considers the need for real, total reconfiguration of the concept of military alliance in the 21st century, thus converts into a key objective, which is necessary for the Alliance survival and adaptation to this new world.

The Istanbul Cooperation Initiative or the Mediterranean Dialogue, the military experience of NATO in Afghanistan and Kosovo, the experience in combating international terrorism and in post-conflict stabilisation cannot justify NATO assuming a *genuine, strong profile of a “21st century alliance”*²⁹, but signifies *only modest attempts to adapt NATO to some of the challenges in the 21st century*. For example, *NATO has not assumed a genuine reformist strategic concept (the global/glocal³⁰ character of the Alliance, in the 21st century)*.

So far, *NATO has not explored, in its reformist strategic concepts, its perception relating to the way in which it understands to manage not only globalisation but also glocal processes*. According to authors such as Arjun Appadurai, it should be considered the *existence of five global flows* (ethnic/people flow, media, technologic, financial – money and financial instruments – flows and the flow of ideas, manipulated by individuals and non-state actors), which are reconfigured, resulting in cultural hybrids, generating glocalisation³¹. Managing the interactions between global and local processes, between the security challenges perceived by global actors as 21st century challenges at global level and the local challenges, specific to certain geographical and cultural areas, can be considered a *type of mission for the 21st alliances*.

A *glocal NATO*, through a **new strongly reformist strategic concept**, which considers the need for *real, total* reconfiguration of the concept of military alliance in the 21st century, thus converts into a *key objective*, which is necessary for the Alliance survival and adaptation to this new world.

A *global NATO* (either as an alliance auxiliary to the UN, a certain UN armed force, at global level, or an independent alliance, without being connected to another global entity, deeply reformed itself)

²⁹ As it is intended through the new *NATO Strategic Concept*. See NATO, “*Active Engagement*”.

³⁰ Veronica Dumitrașcu, *Imperialismul cultural. Globalizarea culturii consumului*, in Ilie Bădescu, Lucian Dumitrescu, Veronica Dumitrașcu, *Geopolitica noului imperialism*, Editura Mica Valahie, 2010, pp. 117-118, where the concept of “*glocalisation*” is related to the one of “*cultural hybridisation*”, namely a phenomenon of interdependence between the global and the local, having unique results in different geographical areas (G. Ritzer, 2010). It is about the supporters of the *theory of hybrid cultures emergence*, as a result of the fusion of the global and the local, a theory different from the one promoted by Huntington (homogenous civilizational areas, one different from another, which exist in the context of some global processes). For authors such as Roland Robertson (2001), the world of glocalisation is “*the plural world based on the differences between and within geographical areas*”, where “*the important actors are individuals and local groups*”.

³¹ Cited in Veronica Dumitrașcu, *Imperialismul cultural*, op. cit., p. 118.

is an entity capable of developing *operations of a new type and largely extended* compared to the current goal of NATO.

What it was considered, pretty timidly, in my opinion, by the Warsaw Summit in July 2016, namely “*projection of stability beyond NATO borders*” can be developed, during another summit, in an extremely visionary strategic concept, capable of providing NATO with a totally different profile than the current one (an exclusively transatlantic alliance).

“*Projection of stability beyond the Alliance borders*”, as it was understood at the Warsaw Summit, can be a *beginning* in the serious approach to a genuine NATO reform so that this Westphalian alliance can become one proper to the 21st century, having an *extended profile compared to what it is today*.

NATO – EU Relation and the Dimension of a Global Alliance

Within the Warsaw Summit, NATO set as a *main objective to strengthen the transatlantic partnership by strengthening NATO-EU cooperation*. It is thus intended to enhance the cooperation between the two organisations, to have a common understanding of security, and to strengthen the cooperation with the EU relating to a set of issues such as: cyber security, countering hybrid threats, maritime security³².

Since NATO Lisbon Summit, in 2010, NATO had as objective “*to remain an essential source of stability in an uncertain and unpredictable world*”, which entails (in the current circumstances) two dimensions: enhancing collective defence and projecting *stability in the vicinity of NATO*³³.

NATO thus continues to represent the expression of a regional collective security alliance and it has not (yet) taken the step to a genuine “*global alliance*”³⁴ (although it has relations with many

³² *The Warsaw Summit and the New Security Environment*.

³³ *Ibidem*.

³⁴ Although it can be interpreted, in a broad sense, as openness to a more decisive reform on *NATO adapted role to the changing world* (the Alliance objective to *project stability, based on a 360 degree approach and on the attachment to a set of values, democracy, rule of law, human rights, complementarity with international actors*), which already means a *theoretical pillar* for a future NATO as a global alliance that projects stability in any region of the world, not only in the near vicinity of its borders. See points 81 and 82, 83, 84, 85 in *The Warsaw Summit Communiqué*.



Within the Warsaw Summit, NATO set as a main objective to strengthen the transatlantic partnership by strengthening NATO-EU cooperation. It is thus intended to enhance the cooperation between the two organisations, to have a common understanding of security, and to strengthen the cooperation with the EU relating to a set of issues such as: cyber security, countering hybrid threats, maritime security.



The dimension of a global NATO is provided by a series of relations NATO currently has with non-member states outside its strict area of responsibility, as it is defined in the founding treaty, and beyond its mission "to defend peace in Europe".

non-member states in different parts of the world³⁵, conducting a series of programmes that provide a partnership framework with such states)³⁶.

Thus, the dimension of a *global NATO* is provided by a series of relations NATO currently has with non-member states outside its strict area of responsibility, as it is defined in the founding treaty, and beyond its mission "to defend peace in Europe":

- *relations with New Zealand* (in 2012, it was signed the Individual Partnership and Cooperation Programme)³⁷ – this country contributing the efforts led by NATO in Afghanistan, as part of the International Security Assistance Force and "Resolute Support" mission to train, advise and assist the Afghan forces;
- NATO cooperation with a series of countries that are not part of the official system of NATO partnerships but are reunited in a quite vague system ("partners across the globe"/"global partners"); it is about the cooperation with countries in diverse regions of the world (Australia, South Korea, Mongolia, Pakistan, Afghanistan, alongside Japan, New Zealand);
- the Alliance launched, in 2004, a programme specially destined to the Middle East, called *Istanbul Cooperation Initiative*. This cooperation offer was destined and accepted by four of the six member states of the Gulf Cooperation Council;
- NATO launched, in 2014, another programme called "Defence and Related Security Capacity Building Initiative", destined inclusively to some countries such as the Republic of Moldova, Georgia and Jordan;
- *relations with Japan* (cooperation started in 1990), Japan being one of the first NATO partners worldwide; in 2013, it was signed a joint political declaration and, in 2014, it was signed an agreement on cooperation in combating maritime piracy and countering terrorism; in doctrine it is also mentioned Japan involvement in the international Security Assistance Force in Afghanistan led by NATO;

³⁵ As it is intended through the New Strategic Concept at the NATO Lisbon Summit/2010: "NATO must continue to be effective, in a changing world, against new threats, **with new capabilities and new partners**" (Foreword, NATO, *Active Engagement, Modern Defence*).

³⁶ https://en.wikipedia.org/wiki/Foreign_relations_of_NATO, retrieved on 4.07.2016.

³⁷ Rick Rozoff, *NATO Enlargement: From the North Atlantic to the South Pacific*, in *Global Research*, 5 June 2012, www.globalresearch.ca, retrieved on 11.07.2016.

- the relations with states in Latin America have also mirrored the premises of a NATO global vision. Thus, we mention here the launch of NATO Maritime Group 1 (deployment of Alliance troops in the Caribbean territorial waters); the beginning of cooperation between Colombia of President Santos and NATO, aimed at "enhancing cooperation on human rights, military justice and troop training";
- it should be mentioned, in the efforts to build a global strategic profile for NATO, the meeting in January 2012, at the level of NATO member states chiefs of defence, where there were invited officials in the countries in the category of NATO strategic concept of "global partners". Practically, third of the 194 UN members attended the meeting, an aspect highlighting the establishment of a network of NATO global partners;
- *relations with India* (another emergent power, interested in playing a role in the Pacific by the concept of "Double Ocean" or by supporting the strategic paradigm of "Indo-Pacific Region")³⁸. It should be mentioned the fact that NATO invited India to participate as a partner, in 2011, in BMD (Ballistic Missile Defence), democracy being highlighted as a value shared by the two international actors. India is seen by NATO as a regional power that can support NATO interests and missions in areas such as South Asia or South West Asia, starting from the common objective to counterbalance China's emergence power in these regions;
- *relations with Australia* (being often raised the issue of Australia's NATO membership, although it is not a European country, according to the Alliance founding treaty). Australia is considered a NATO *de facto* member state, and it is seen as "one of NATO's partner across the globe"³⁹, as well as Japan, South Korea, Singapore. It is to note the signing, in 2012, by the two partners, of a joint political declaration, and the signing

³⁸ Patrick M. Cronin, Darshana M. Baruah, *The Modi Doctrine for the Indo-Pacific Maritime Region*, 2 December 2014, <http://thediplomat.com/2014/12/the-modi-doctrine-for-the-indo-pacific-maritime-region>; Abhijit Singh, *India's Emerging Indian Ocean Strategy*, 28 December 2015, <http://thediplomat.com/2015/12>; Danielle Rajendram, *From "Look East" to "Act East" – India Shifts Focus*, 19.12.2014, <http://www.dw.com/en/opinion>, retrieved on 8.12.2016.

³⁹ Rick Rozoff, *NATO Enlargement*. See, for example, *NATO Global Programme. Views from Asia-Pacific Region*; "The Science for Peace and Security Programme Project. NATO Global Perception – Views from Asia-Pacific Region"; *Executive Summary*, funded and implemented under the framework of NATO SPS Programme and in cooperation with NATO Public Diplomacy Division and Tallinn University of Technology, Estonia. www.nato.int, retrieved on 4.07.2016.



NATO configures (although timidly) a genuine global alliance (by initiating the partnership with countries in the Pacific, such as Australia), in the global power play in the Pacific Ocean (or, by extension, in the Asia-Pacific area).

of an Individual Partnership and Cooperation Programme, in February 2013, an increasingly deep partnership in the 21st century, to *“jointly approach future global challenges”*⁴⁰. Therefore, NATO configures (although timidly) *a genuine global alliance* (by initiating the partnership with countries in the Pacific, such as Australia)⁴¹, in the global power play in the Pacific Ocean (or, by extension, in the Asia-Pacific area).

We mention that, in the case of the (incipient) trend of NATO reconfiguration as a *“global alliance”*, in the context of an as important challenge for the role of NATO as *unconventional threats*, namely the *consolidation and expansion of the role of certain regional organisations* that have a strong economic and political profile⁴² – some of them intending to add a military dimension –, in the future, such as ASEAN, SCO, APEC, and even East Asia Summit⁴³, to which some commentators refer as *“NATO regional replicas”* (e.g., *ASEAN being regarded by some analysts as a “NATO of the Pacific”*)⁴⁴, it would be generated the risk for *NATO European partners* (especially the EU and, individually, the states in Europe that are NATO members) *to be left aside in the Pacific game*, without having any role in this essential geopolitical movement of the 21st century (from the Atlantic to the Pacific). Thus, while *NATO would initiate, develop, and enhance partnerships* (and would declare some of them *“strategic partnerships”*, as there are now defined those related to European countries and the EU (*the current “strategic partners”, condemned to a strictly regional, limited, development in relation to a highly reconfigured, global NATO*)).

⁴⁰ As expressed by General Knud Bartels, Chairman of NATO Military Committee, https://en.wikipedia.org/wiki/Foreign_relations_of_NATO, retrieved on 4.07.2016.

⁴¹ *“Will NATO Look East?”*, 18 May 2012, <http://thediplomat.com/2012/05>, retrieved on 4 July 2016; Daryl Morini, *“Will Australia Embrace NATO?”*, 20 June 2012, <http://thediplomat.com/2012/06>, retrieved on 4.07.2016.

⁴² Geethanjali Nataraj, *“India Looks East to ASEAN with Delhi Dialogue”*, 4 March 2016, www.eastasiaforum.org, retrieved on 15.04.2016.

⁴³ *“APEC Economic Leaders 2014 Declaration: Beijing Agenda for an Integrated, Innovative, and Interconnected Asia-Pacific”*, 11 November 2014, Council on Foreign Relations, www.cfr.org, retrieved on 15.06.2016.

⁴⁴ Luis Durani, *“ASEAN, A Pacific NATO?”*, 14 April 2016, <http://moderndiplomacy.eu/index.php?option=com>, retrieved on 15.04.2016.

Suggestions regarding NATO Extended and Strengthened Role in the Context of the *“Pacific Century”* Paradigm. The Strategic Concept of *“Double Ocean”* *“AP ESR” – Atlantic-Pacific Extended Strategic Region*



In a changed political context (the global, multipolar world, having chaos islands, of the 21st century), with non-state, unconventional actors acting in an unpredictable manner (outside the rules of the Westphalian world for which NATO was established), *the hegemon itself*⁴⁵ *that guarantees the Alliance starts to be highly contested by competitors* (in a multipolar world). Therefore, *the 21st century can surprise by rethinking NATO including as an Alliance that has to protect its hegemon (!), and not vice versa* (it should be thoroughly analysed the hypothesis of a reversal in terms of NATO fundamental goal, *from the protection of old Europe to the protection of the hegemon itself*, in the context of a multipolar world having emergent regional powers, *simultaneously, all having strategies from which the competition with the hegemon cannot be excluded*). Under the circumstances in which the poles of geopolitical interest would balance in the Pacific area, through a fundamental change in the global paradigm⁴⁶, NATO could be re-dimensioned, in the sense of becoming a new alliance, intended to defend the interests and preminent position of the hegemon

⁴⁵ Here, as a dominant political actor in an international system, capable, at a certain moment, of ordering the system according to its own strategic vision.

⁴⁶ According to the paradigm of *“Pacific Century”*, through which we understand a movement of the global pole of power to the Pacific Ocean, seen as the global ocean, which will define the hegemon of the 21st century world as the actor capable of fundamentally influencing and even controlling, geostrategically, geoeconomically, an extended area comprising the Pacific Ocean littoral states and their continental areas – the Caribbean area having a key importance, including because of the immense ocean subsoil resources.



Alliance for the Pacific suggests that: since the new reforming treaty enters into force, moving NATO fundamental existential goal in the Pacific area, making it a global player in the power game in the Pacific area, NATO, operating based on the global paradigm of the "Pacific Century" will redirect its capabilities, structures, instruments and mechanisms to the new strategic direction to ensure a predominant role for the hegemon (the USA) in the world centre of gravity (the Pacific).

in the Pacific, leaving old Europe⁴⁷ or using the military capabilities of NATO European member states to conduct strategic operations in the *Pacific*, meant to strengthen and maintain the position of the hegemon in the area (place of confrontation) highly contested by the *great powers of the 21st century*. From a transatlantic alliance, NATO, considering the needs of the American hegemon, in terms of change and security, *could radically reconfigures, becoming ALSO an alliance for the Pacific*, meaning it could use *(through a new, reformist treaty)* the capabilities, instruments, mechanisms that are *already offered* by its current structure or it *could establish* new structures, mechanisms, institutions, instruments, capabilities that are necessary for the operation in the Pacific area. It could be possible by signing a new treaty, to radically reform NATO *(strategically transforming it into an Alliance for the Pacific too)*.

We use the syntagma *Alliance for the Pacific* and not the one of the *Pacific Alliance* for many reasons as follows:

A. Alliance for the Pacific suggests that: since the new reforming treaty enters into force, moving NATO fundamental existential goal in the Pacific area, *making it a global player in the power game in the Pacific area*, NATO, operating based on the global paradigm of the *"Pacific Century"* will *redirect its capabilities, structures, instruments and mechanisms to the new strategic direction to ensure a predominant role for the hegemon (the USA) in the world centre of gravity (the Pacific)*. It means that, not only the already existing dimension of the current NATO, but also its new institutions, mechanisms and structures that will be established through the new reforming treaty

⁴⁷ In 2013, America, through the voice of its leaders, seemed determined not to abandon old Europe but to further consider it *"the cornerstone of the engagement with the rest of the world"*. Nevertheless, it is introduced an interesting idea that can be converted in a scenario that is worth analysing, namely the one that the movement of America to the Pacific should be mainly seen as an **economic one** (implemented by the Trans-Pacific Partnership – TPP, as an economic agreement, and not by a military alliance or by a defensive military agreement of NATO type). In this regard, America would plead (in 2013) **for a combination of new transatlantic economic agreements (under negotiation) and a TPP**, agreements seen as *"complementary, being intended to modernise and strengthen the global economic rules of the 21st century"*. In other words, **for America, at that specific moment (2013), an economic agreement of a TPP type would be more efficient than a modernisation or relocation of a reformed NATO towards the Pacific**. See *"Vice President Biden on Asia-Pacific Policy"*, June 2013, Council on Foreign Relations, www.cfr.org.asia-and-pacific, retrieved on 15.06.2016.

to allow NATO action in the Pacific, regarding NATO not as a historical, traditional alliance, but as a structure meant to preserve the hegemon pre-eminence in the Pacific *will be made available to the new NATO strategic goal (which is beyond the interest to protect old Europe, moreover, using Europe as a resource to meet the hegemon interests in the Pacific)*⁴⁸. Therefore, in this scenario, we witness the following context: multipolar world, high risk of confrontation or unconventional confrontations with other great powers that intend to be global actors in the Pacific area, simultaneous ascension of many regional powers in the Asia-Pacific area intending to impose their rules and strategies in the Pacific⁴⁹; orientation of most of these ascending powers, interested in acting and dominating the Pacific against the hegemon; increasing interest and strategic dimensions of these powers, involved in the Pacific, in weakening the hegemon and changing the profile of the global power system (by imposing a new global paradigm such as the *Pacific Century* as an Asian Century, of the Asian powers, for example. In this context, the hegemon is forced to focus on *maximising its power in the Pacific*⁵⁰, to succeed in dominating the power game having global implications from this area⁵¹. To this end, the hegemon *is constrained either to weaken the level of protection provided, historically, to old Europe (the historic mission becomes too costly) and to focus on the Pacific alone, with own forces (weakening or abandoning NATO, which cannot overcome its historical period, the defensive alliance of Europe, guaranteed by the American hegemon)*.⁵²

⁴⁸ Working scenario that provides conceptual and operational openness in this regard, in point 98 in *Warsaw Summit Communiqué*.

⁴⁹ See, for example, Ankit Panda, *"ASEAN-India and East Asia Summits: India's Opportunity to Act East"*, 21 November 2015, <http://thediplomat.com>, retrieved on 14.04.2016.

⁵⁰ *"The United States and the Asia-Pacific Region. Security Strategy for the Obama Administration"*, February 2009, www.cnas.org/files/document, retrieved on 11.04.2017.

⁵¹ *"Clinton's Speech on America's Engagement in the Asia-Pacific"*, 28 October 2010, Council of Foreign Relations, www.cfr.org, retrieved on 15.06.2016. See also *"The United States and the Asia-Pacific Region: Security Strategy for the Obama Administration"*, February 2009, www.cnas.org/files/document; Hillary Clinton, *"America's Pacific Century"*, 11 October 2011, <http://foreignpolicy.com/2011>, retrieved on 15.06.2016.

⁵² The issue arises if NATO, in 2016, *"can defend Europe"* (an issue of **different** strategic interests of NATO member states towards Russia, for example), existing the risk of NATO being a *"Christmas gift"* (*"beautifully packed in declarations and empty inside"*). See Judy Dempsey, *"Strategic Europe, The Warsaw Summit and the NATO Christmas Tree"*, posted by Julian Lindley-French, 11 July 2016, Carnegie Europe, <http://carnegieeurope.eu>, retrieved on 11.07.2016; Judy Dempsey, *"Strategic Europe, For NATO, Now Comes the Hard Part"*, posted by Judy Dempsey, 9 July 2016, Carnegie Europe, <http://carnegieeurope.eu>, retrieved on 11.07.2016.



The hegemon is constrained either to weaken the level of protection provided, historically, to old Europe (the historic mission becomes too costly) and to focus on the Pacific alone, with own forces (weakening or abandoning NATO, which cannot overcome its historical period, the defensive alliance of Europe, guaranteed by the American hegemon).



In the second variant, the system hegemon supports a strong reform movement within NATO.

By it, the traditional transatlantic alliance meant to protect old Europe becomes a "21st century alliance", meaning that, through its new goal, it is intended to use the instruments, capabilities, mechanisms and forces of the European states to protect the hegemon interests, threatened/exposed/contested in the Pacific.

on the Pacific alone⁵³, with own forces (weakening or abandoning NATO, which cannot overcome its historical period, the defensive alliance of Europe, guaranteed by the American hegemon), or chooses to reform the Alliance in order to ensure its freedom of action in an area for which NATO was not built, but in which it becomes necessary to involve (to contribute to the stabilisation of the situation in the Pacific).

In the second variant, the system hegemon⁵⁴ supports a strong reform movement within NATO, by either adapting the already existing mechanisms, structures, instruments or establishing new ones specially for NATO news strategic goal (to defend the hegemon interests in the Pacific). By it, the traditional transatlantic alliance meant to protect old Europe becomes a "21st century alliance", meaning that, through its new goal, it is intended to use the instruments, capabilities, mechanisms and forces of the European states to protect the hegemon interests, threatened/exposed/contested in the Pacific. The transatlantic link, functioning, in the case of NATO, in compliance with its initial goal, exclusively for the protection of old Europe, gets reversed, in the uncertain and unpredictable world of the 21st century: Europe becomes a security provider (through individual states as well as through the EU specific mechanisms, adapted to be functional in the Pacific) for the hegemon threatened by an "uncertain and unpredictable world", not only by a multipolar world. The capabilities of Europe are reconfigured, according to the new strategic concept of NATO, which becomes an Alliance for the Pacific too, namely a system to protect the hegemon

⁵³ It is already officially acknowledged the need for consolidating a network of "allies and partners in the Indo-Asia-Pacific region", by the USA, "the recognition of the global significance of the Indo-Asia-Pacific region", where America intends to become the "security partner for the countries in the region, to strengthen and adapt the American durable presence in the region". See Admiral Harry B.Harris, Jr, U.S. Navy, Commander, U.S. Pacific Command/USPACOM, Hawaii, 27 May 2015, "U.S. Pacific Command Guidance", www.pacom.mil, retrieved on 15.06.2016.

⁵⁴ We consider a conventional designation for the dominant actor in the current international system of power distribution, which is one that has recently got out of the phase of complete unipolarity (therefore preserving a unipolar dimension – in terms of the military, the provision of security – and, currently, in a world in transition to multipolarity, according to some commentators). See Sergei Karaganov, "Eurasian Way Out of the European Crisis", in *Russian in Global Affairs, Different Opinions*, 02.06.2015, www.rusemb.org.uk/opinion/44, retrieved on 11.07.2016.

that sees its position threatened by diverse competitors in the Pacific. The use of existing alliances, their reconfiguration to be capable of operating effectively in the new areas of global interest become strategic saving movements for the hegemon.

As an Alliance for the Pacific, NATO comes with the expertise, instruments, mechanisms, capabilities of the European states and the EU, as a global actor, America's strategic partner, to be used in the global centre, the Pacific. In this scenario, the hegemon chooses to rely on a drastic reconfiguration of the role of a limited, regional, alliance (changed into a genuine global alliance, capable of acting in the Pacific area) rather than to establish a special protection and affirmation structure (comprising states in the Asia-Pacific area, traditional or recent allies). This variant provides NATO European and the EU (as a strategic partner of America, within the transatlantic partnership) member states with the strategic opportunity to consequently act in the Pacific.

This trend can be illustrated through the possible employment of the mechanism used by NATO to enlarge in Eastern Europe, in the '90s, or the mechanism through which the USA attracts NATO European member states to act jointly in Afghanistan. Thus, in October 2001, NATO invoked art. 5. In 2003, NATO conducted the first mission outside its traditional area of responsibility, namely the mission in Afghanistan (NATO led the international coalition ISAF). It was possible through the castling between the USA and the Alliance, the latter being practically in the foreground of and coordinating the military actions in Afghanistan. Since that moment on, international cooperation has been conducted under the aegis of NATO, the mission in Afghanistan lasting for 11 years. Through this formula, NATO has been used by the USA as a mechanism to regulate the power game within the Alliance, keeping Europe in a quite secondary and extra-military role (peacekeeping operations, diverse humanitarian missions, cooperation with international organisations, infrastructure protection etc.), while the main role (the military one) and the offensive operations have remained the USA and other Anglo-Saxon countries responsibility.



As an Alliance for the Pacific, NATO comes with the expertise, instruments, mechanisms, capabilities of the European states and the EU, as a global actor, America's strategic partner, to be used in the global centre, the Pacific. In this scenario, the hegemon chooses to rely on a drastic reconfiguration of the role of a limited, regional, alliance (changed into a genuine global alliance, capable of acting in the Pacific area) rather than to establish a special protection and affirmation structure (comprising states in the Asia-Pacific area, traditional or recent allies).



The Pacific Alliance suggests that: the hegemon is interested in leading and controlling the world power game that is configuring in the Pacific area by deciding to establish a new structure, an alliance comprising exclusively the states in the Asia-Pacific region, states that already have or are going to have the quality of America “strategic partners”, states interested in playing in the Pacific area (India, Australia, New Zealand, Japan, South Korea, Singapore etc.).

B. Pacific Alliance suggests that: the hegemon is interested in leading and controlling the world power game that is configuring in the Pacific area by *deciding to establish a new structure, an alliance comprising exclusively the states in the Asia-Pacific region*⁵⁵, states that already have or are going to have the quality of America “*strategic partners*”, states interested in playing in the Pacific area (India, Australia, New Zealand, Japan, South Korea, Singapore etc.). The use of certain strategic dimensions of these actors interested in playing in the Pacific area, which are *compatible or open* to the interests of America, leads to the creation of *special partnership links with them, materialised in a special alliance between the hegemon and regional states*. In this variant, NATO remains subsumed under a historical role (a simple regional, transatlantic alliance, protecting old Europe), while the hegemon focuses on the Pacific global game, establishing its own structures on the ground to serve its strategic interests: *the Pacific Alliance*.

In another scenario, the *hegemon also uses existing regional frameworks (East Asia Summit, ASEAN)*, to develop, with them or starting from joint dialogue mechanisms, new alliance frameworks necessary to control the Pacific game. In other words, America *does not allow for the transformation of regional organisations (in the Asia-Pacific area) in competitors* (e.g. ASEAN taking over by a rival power and its transformation in a structure America cannot control or conflicts with its strategic interests in the Pacific or whose interests are not compatible with those of the hegemon, having another vision – that of an Asian Community, of an Asian Century, in which there is no room for the hegemon belonging to the “*Western civilizational area*”⁵⁶).

⁵⁵ See also the hypothesis (currently presented by some analysts as less likely) for the USA to establish an *alliance based on a Pacific treaty, of NATO type*, necessary for the USA to be positively seen by the traditional allies in the Eastern Asia region and to counter the emerging power of China in the region. “*Will the United states set up a NATO-like Pacific Treaty Organization in Asia? If so, how?*”, Question submitted by Felix Seidler, from Institute for Security Policy at the University of Kiel, Germany, 3 June 2013, answered by Stewart M. Patrick, Senior Fellow and Director of the International Institutions and Global Governance Programme. Council of Foreign Relations, www.cfr.org, retrieved on 15.06.2016.

⁵⁶ Paragh Khanna, *Lumea a Doua. Imperii și influență în noua ordine globală*, translated by Doris Mironescu, Editura Polirom, Iași, 2008, pp. 236-239.

C. Global NATO suggests that: *NATO transforms in a “21st century alliance”, namely a global player*⁵⁷. The hegemon chooses not to renounce the traditional transatlantic link (keeping it as it is, namely *maintaining NATO historical role, that of protecting old Europe*). Meanwhile, *without involving old Europe in the Pacific game* (the difference from scenario no. 1), the hegemon chooses to *initiate (through NATO) a series of strategic relations with the states in the Asia-Pacific region*⁵⁸ (development, consolidation, expansion of special relations, strategic partnerships, initiation of cooperation and assistance programmes etc. by NATO with states such as Australia, Japan, New Zealand, Philippines, India, Singapore, South Korea etc.)⁵⁹. Thus, we see a NATO that has expanded its historical role, to protect Europe, that has extended its intervention level, from the current modest goal (to ensure stability in its near vicinity) to the global goal (intervention wherever the globe, direct intervention in the Pacific, intervention in the Asia-Pacific). In this regard, NATO will develop a series of mechanisms, institutions, funds, programmes, operations, capabilities, partnerships, diplomatic initiatives, intended specially for the Asia-Pacific area (**a NATO Strategic Centre for Operations in Asia-Pacific, an Asia-Pacific Contact Bureau, a NATO Council for the Asia-Pacific Region**, maybe developing a consultation mechanism – **a NATO-China Council for the Pacific Issues, a NATO-India Consultation Centre for the Indo-Pacific Region, a NATO-Russia Consultation Council for the Pacific** and **other dialogue, negotiation and consultation formats** between other actors and a NATO that has really become a global structure, a scenario through which the hegemon is interested in *assuring the dialogue with the main global actors in the Pacific*). Many NATO diplomatic initiatives with the states in the region have already been in place, demonstrating that the radical reforming trend

⁵⁷ Hypothesis in which an essential role in NATO global evolution is granted to the so-called NATO “*partners across the globe*” or “*contact countries*” capable of transforming NATO in a global alliance of democracies. See Andreas Speck, “*A Global NATO? From NATO to a Global Alliance of Democracies?*”, 23 February 2009, The Broken Rifle, no.81, War Resisters’ International, UK, <http://www.wri-irg.org/en/node/6721>, retrieved on 4.07.2016.

⁵⁸ Starting from the consolidation of point 98 in the *Warsaw Summit Communiqué*.

⁵⁹ See also “*Clinton’s Speech on America’s Engagement in the Asia-Pacific*”, Council of Foreign Relations, October 2010, www.cfr.org, retrieved on 15.06.2016.



NATO transforms in a “21st century alliance”, namely a global player. The hegemon chooses not to renounce the traditional transatlantic link (keeping it as it is, namely maintaining NATO historical role, that of protecting old Europe). Meanwhile, without involving old Europe in the Pacific game (the difference from scenario no. 1), the hegemon chooses to initiate (through NATO) a series of strategic relations with the states in the Asia-Pacific region.



In a "Pacific Century", this intervention, based on a reforming treaty, which will transform NATO in a genuine "21st century alliance", will be a global one, allowing for NATO direct involvement worldwide and especially in the key Pacific region (or the Asia-Pacific region, in an extended variant).

(of transforming NATO in an alliance of democracies, namely of a global NATO⁶⁰) is as real as possible, not a phantasmagoria.

NATO has set the modest (but a *road opener for re-configuring its strategic concept towards a global NATO*⁶¹) objective to "assure a secure, stable frontier", namely to stabilise the regions, countries in the *immediate vicinity* of its borders. NATO action *beyond its borders* is currently intended to either intervene in areas affected by conflicts or confronted with unconventional phenomena (maritime piracy) or to assist the countries at its borders to ensure a stable climate in the area. In a "Pacific Century", this intervention, based on a reforming treaty, which will transform NATO in a genuine "21st century alliance"⁶², will be a global one, allowing for NATO direct involvement worldwide and especially in the key Pacific region (or the Asia-Pacific region, in an extended variant). It depends on the current NATO member states, on how visionary they are now, to imagine their intervention, through NATO, in the key area of the whole power game, which is the Pacific⁶³.

⁶⁰ The initiative of a global NATO dates in 2006, belonging to the USA ambassador to NATO, Ivo Daalder, and to James Goldgeier, https://en.wikipedia.org/wiki/Foreign_relations_of_NATO, retrieved on 4.07.2016.

⁶¹ We cannot forget another instrument that is important for NATO reformist trend to its globality (*Berlin Partnership Policy, which stipulates the "expansion of practical dialogues and cooperation with any nation that shares the Alliance values and the interest in international peace and security"*). Such a framework for the political dialogue between NATO and partner states (considering here the special category of "partners across the globe", which also refers to NATO intention to involve in the Pacific area) is not sanctioned through a new, reforming, treaty, one having the same legal value as the founding treaty (in 1949), which denotes the lack of NATO leaders determination to adopt the radical reform trend. Point 98 is essential, in our opinion, for NATO involvement in the Pacific. See point 98 in the *Warsaw Summit Communiqué*.

⁶² See NATO, *Active Engagement*.

⁶³ As it is, for instance, the case of the Poles, interested in the power game in the Asia-Pacific region, opening discussions with NATO partners in the Pacific (Australia), before the Warsaw Summit, since April 2016, focusing on "key international issues having strategic importance for Poland and Australia", the Polish ambassador emphasising that "Poland and Australia share strategic interests in promoting and strengthening international order based on the law" (an international dimension to which that of the security situation in the South China Sea was added). The theme of the discussions was the exchange of ideas regarding regional and global security, being a "complementary instrument of the political bilateral consultations between the two countries". See "Security Situation in Europe and Asia in the Context of NATO Summit in Warsaw": videoconference of Polish and Australian think tanks, 6 April 2016, www.ms.gov.pl/en/foreign_policy/nato_2016/0_security_situation_in_europe-and_asia_in-context_of_nato_summit_in_warsaw, retrieved on 4.07. 2016.

Conclusions

NATO responses to the security challenges proper to a post-state world remain, for the time being, of *Westphalian type*, even if we refer to military operations conducted beyond the Alliance borders: taking over, in 2003, the lead in the international coalition in Afghanistan – ISAF, the first NATO mission outside its defined area, the campaign in Libya, in 2011, the maritime operation *Ocean Shield* conducted off the coast of Somalia against piracy, or the support provided by NATO, for the EU mission *Sophia* in the Mediterranean Sea, against the networks of migrant traffickers⁶⁴. Therefore, currently, according to the conclusions of the Warsaw Summit and the Alliance mode of action, it can be stated that:

- NATO mainly remains a *Westphalian-type structure* (exclusively conceived by sovereign states, comprised by states having objectives, limits and competences set by states, intended to mainly respond to some classical, conventional, military threats);
- NATO remains a *defensive military alliance, not evolving to a regional (transatlantic) security community*⁶⁵, which would entail a higher level of freedom of action and types of operation, set to the Alliance, starting from a superior level of trust between the members and therefore of extension of NATO competences;
- NATO continues to identify its classical competitors (states such "an unpredictable Russia"), which, however, act in a new political context ("an uncertain and unpredictable world", as NATO defines the 21st century world), overlooking the existence of some unconventional competitors (collective non-state actors, such as the massive waves of migrants, having fixed targets and destinations for an undetermined period of time);
- NATO is a historical structure, established for a precise goal (to ensure peace in Europe), but, in the 21st century, maintaining this goal does not appear to be the only fundamental role of NATO.

⁶⁴ "Deputy Secretary General addresses NATO's Warsaw Summit objectives in Lisbon", 23 June 2016, http://www.nato.int/cps/en/natohq/news_132749.htm, retrieved on 4.07.2016.

⁶⁵ Although having the ambitious objective to reform, through a series of documents, declarations, through the *New Strategic Concept* adopted at the Lisbon Summit/2010 etc.



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NON-STATE ACTORS AND CHEMICAL WEAPONS THREAT LEVEL IN MIDDLE EAST AND NORTH AFRICA

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Started initially as riot movements focused mainly on inflicting governmental changes, the Arab revolutions rapidly degenerated into ethnic and sectarian conflicts affecting thousands of people and generating the biggest humanitarian crises after the World War II. The incapacity of national governments to manage the crises led to the rise and development of powerful radical Islamic groups all seeking to seize the political power and as many territories as possible. Extended over the large areas of the Middle East and North Africa, some of these Islamic radical groups became a real WMD threat by their capabilities to develop and employ chemical weapons in their military and terrorist actions. This article seeks to determine the chemical threat level posed by these radicalised jihadi groups.

Keywords: Islamic State, Ansar al-Islam, chemical threat level, chemical attacks.

Introduction

As of December 2010, the Middle East and North Africa were focused on continuing social and political transformations. The so-called "Arab Spring" led not only to the overthrowing of authoritarian governments from Libya and Egypt, but it also initiated some extremely bloody internal conflicts in countries such as Syria and Iraq. These social conflicts and riots, although, in the long term, they can lead to significant political changes and the establishment of democratic political systems, in the short term, it seems that all the countries from the geographical area under review will have to deal with certain highly volatile and unstable political and security situations.

This article analyses the chemical threat level created by the post-transitional instability that was generated by the "Arab Spring" and the way it affects the chemical weapons (CWs) non-proliferation regime in the subject regions. The analyses focus in particular on the jihadi groups diasporas, who have concerns related to the development and use of chemical weapons in order to achieve political and military goals. Some of the states from the Middle East and North Africa have developed chemical weapons programmes. Despite the synergic efforts of the Organisation for the Prohibition of Chemical Weapons and United Nation Office of Disarmament Affairs, the level of expertise regarding the synthesis of chemical weapons is still present in the area and many of the existing experts, for various reasons (economic, political views, ideology, personal frustrations, personal security and family threat, etc.), have chosen to associate themselves with various jihadi groups and develop different chemical and biological weapons programmes for them. As such, taking into consideration the effects of the "Arab Spring" in the area, the article evaluates the chemical weapons capabilities of various jihadi groups that are active in the area of interest. The results of the evaluation are further used to determine the chemical weapons threat level and its associated risks and consequences.

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The military doctrines considered that unconventional weapons can counter the technological military superiority of the economic developed states and influence the regional politico-military power balance between the countries of different regions. As such, Middle Eastern and North African countries such as Libya, Egypt, Syria and Iraq initiated various armament programmes among which the non-conventional weapons systems occupied a central place.

Short history of chemical weapon programmes developed by various countries from the Middle East and North Africa

After the World War I, chemical weapons became a permanent concern for the developed countries and it was believed that only adequate economic development can support such a weapon programme. Between 1960 and 1970, the non-conventional weapons gradually became part of the arsenal of developing countries. In that period, the military doctrines considered that unconventional weapons can counter the technological military superiority of the economic developed states and influence the regional politico-military power balance between the countries of different regions. As such, Middle Eastern and North African countries such as Libya, Egypt, Syria and Iraq initiated various armament programmes among which the non-conventional weapons systems occupied a central place. For the purpose of this article, I will briefly present the characteristics of the non-conventional weapon programmes of the 4 countries of interest.

Libya began its chemical and biological weapons programme in the 1980s under the rule of totalitarian leader Muammar Qaddafi. Two politico-military factors can be considered primordial in starting such a programme. The first element considered by Colonel Qaddafi was the one to compensate the military inferiority of Libya in relation to its neighbours, particularly Egypt and Israel. The second element was the regional arms race and the danger posed by Syria and Iraq which were very close to acquiring unconventional weapons. Furthermore, in this political-military context, Qaddafi's calculations proved that a successful chemical weapons programme would grant him and his totalitarian regime immunity from any attempts to overthrow them.

In the 1980s, the Qaddafi regime built 3 chemical weapons production facilities¹. The first facility was built at Rabta, near Tripoli, under the name of *Pharma-150* and had an estimated production capacity for nerve or vesicant chemical warfare agents (CWAs) of around 4.5 tons per day². Libya also built two other facilities³, heavily

¹ *Country Profile, Nuclear Threat Initiative*, <http://www.nti.org/country-profiles/libya/>.

² Joshua Sinai, "Libya's Pursuit of Weapons of Mass Destruction", in *Nonproliferation Review*, Spring-Summer 1997, <http://cns.miis.edu/npr/pdfs/sinai43.pdf>.

³ *Ibid.*

fortified against any air attack. Once with the production of chemical warfare agents, Libya began the development of chemical weapon delivery systems and made a special effort to produce ballistic missiles⁴. In 1993, Egypt, Libya and few other Arab countries announced that they would not sign the Chemical Weapons Convention (CWC) if Israel did not abandon its nuclear weapons programme. In 2003, following a secret agreement with the United Kingdom that aimed to normalise Libya's relations with the international community, Libya allowed one US-British team to inspect its non-conventional weapons production facilities⁵. As a result of this inspection, in December 2003, Libya announced its decision to forego its unconventional arms programmes and its intention to adhere to all weapons of mass destruction non-proliferation treaties⁶. In 2004, Libya sent a partial declaration to the Organization for the Prohibition of Chemical Weapons (OPCW)⁷ in which it declared the possession of 3,500 bombs intended to be loaded with various chemical warfare agents and of 24.7 tons of neat sulphur mustard and 1,390 tons of chemical warfare agent precursors⁸. The Organization for the Prohibition of Chemical Weapons started systematic inspections activities over Libya's declaration. The OPCW inspections showed that the declared arsenal was overestimated and it lay under major degradation.

Syria's interest in unconventional weapons began in the 1970s and there are evidences that, prior to the 1973 Yom Kippur war, Egypt helped Syria by initiating programmes for the development of various offensive Chemical, Biological, Radiological and Nuclear (CBRN) capabilities⁹. At the beginning of its non-conventional weapons programme, Syria acquired CBRN capabilities from other countries, but in the early '80s it began developing these capabilities in its own production complexes. Syria's chemical weapons programme was motivated by its attempts to balance the security equation in the area and to create an advantage

⁴ *Country Profile, Nuclear Threat Initiative*, <http://www.nti.org/country-profiles/libya/>.

⁵ *Ibid.*

⁶ Arms Control Association, "Chronology of Libya's Disarmament and Relations with the United States", <http://www.armscontrol.org/factsheets/LibyaChronology>.

⁷ *Ibid.*

⁸ Organisation for the Prohibition of Chemical Weapons, "OPCW Inspectors Return to Libya", <http://www.opcw.org/the-opcw-and-libya/opcw-inspectors-return-to-libya/>.

⁹ *Country Profile, Nuclear Threat Initiative*, <http://www.nti.org/country-profiles/syria/>.

Syria's chemical weapons programme was motivated by its attempts to balance the security equation in the area and to create an advantage over Israel's conventional military superiority. Furthermore, in order to hinder Israel's air superiority, Hafez al-Assad's political regime decided to develop ballistic capabilities that could hit Israeli territory with chemical or biological warheads.



ROMANIAN
MILITARY
THINKING

Iraq started to develop chemical weapon programmes in the early '60s. During the Iran-Iraq war, the latter widely used tabun, sulphur mustard and sarin against both the Iran armed forces and its own Kurdish populations. Iraq's chemical weapons programme was ended as a result of the implementation of United Nations Security Council Resolution 687 issued after the first Persian Gulf War.

over Israel's conventional military superiority. Furthermore, in order to hinder Israel's air superiority, Hafez al-Assad's political regime decided to develop ballistic capabilities that could hit Israeli territory with chemical or biological warheads¹⁰.

As a result of internal and external pressures, in 2013, Syria signed the Chemical Weapons Convention and, by mid-2014¹¹, with the support of the international community, transferred its entire chemical arsenal abroad for destruction. Between 7 July 2014 and mid-August of the same year, the United States totally destroyed 600 tons of nerve and vesicant chemical warfare agent precursors that belonged to Syria's arsenal. The destruction was for the first time carried out on a special ship (Cape Ray) that sailed in the international waters during the entire process¹². The neutralisation of chemical warfare agents was carried out by a hydrolytic chemical process produced in a special mobile installation and the reaction mass was later destroyed by incineration on shore. This method fully protected the environment and no harm was done to ocean water or terrestrial areas of transfer and incineration. Other 200 tons of various precursors were sent for destruction in the United Kingdom¹³.

Iraq started to develop chemical weapon programmes in the early '60s. During the Iran-Iraq war, the latter widely used tabun, sulphur mustard and sarin against both the Iran armed forces and its own Kurdish populations. Iraq's chemical weapons programme was ended as a result of the implementation of United Nations Security Council Resolution 687 issued after the first Persian Gulf War. Until December 1998, the United Nations Special Commission (UNSCOM) inspectors had supervised the destruction of 38,537 various types of chemical munitions, 690 tons of chemical warfare agents, more than 3,275 tons of chemical warfare agent precursors and over 425 pieces of essential production equipment used for CWAs

¹⁰ *Ibid.*

¹¹ "Syria Chemical Weapons Facilities 'Destroyed'", Al-Jazeera, 1 November 2013; Organisation for the Prohibition of Chemical Weapons, Announcement to Media on Last Consignment of Chemicals Leaving Syria, OPCW News, 23 June 2014, www.opcw.org.

¹² David Alexander, "U.S. Ship Finishes Neutralising Syria's Worst Chemical Arms: Pentagon", Reuters, 18 August 2014, www.reuters.com; Jim Garamone, "Cape Ray Begins Neutralizing Syrian Chemical Materials", DoD News (Washington), 7 July 2014, www.defense.gov.

¹³ "UK to Destroy More Syria Chemical Weapons", Al-Jazeera, 9 July 2014, www.aljazeera.com.



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synthesis¹⁴. The UNASCOM confirmed the destruction of 88,000 chemical munitions, over 690 tons of CWAs in weapons or loaded in different storage systems, approximately 4,000 tons of CWAs precursors and 980 pieces of essential equipment intended for the production of chemical weapons¹⁵. Although Iraq signed the CWC in 2007, the security situation allowed only the partial fulfilment of the OPCW inspection teams mandates aimed to check the complete destruction of Iraq chemical weapons programme and its entire chemical arsenal. An investigation done by C.J. Chivers of the New York Times revealed that the neutralisation and destruction of Iraqi chemical weapons did not have the expected effect. After the 2003 war, in Iraq, there were recovered about 5,000 chemical munitions of various types (warheads, artillery shells and air bombs)¹⁶. Although these munitions were produced before 1991, they represent a real chemical threat that resulted in the contamination of at least 17 American soldiers and 7 Iraqi police officers¹⁷. An investigation done by Chivers and Eric Schmitt revealed CIA's¹⁸ effort to recover the chemical weapons placed on the weapons black markets in Iraq. As a result of the operation, over 400 Borak missiles were recovered (bought) and destroyed, many of them containing sarin¹⁹. The civil war began in Syria caused concern regarding the legacy of Iraq's chemical weapons programme. In July 2007, the Islamic State conquered one of Iraq's former chemical weapons production facilities that belonged to its chemical weapons programme. The representatives of the United States of America believe that this production facility still contains what was left from the Iraqi chemical arsenal²⁰. The latest UN report regarding the unconventional weapons programme of Saddam Hussein's regime stipulates that this facility contains 2,500 chemical rockets of 122 mm calibre loaded with sarin,

Egypt is one of the few countries that used chemical weapon after World War I. There are proofs showing that, during the intervention in the civil war in northern Yemen, Egyptian forces used aviation bombs and artillery shells loaded with sulphur mustard and phosgene against Royalist forces and civilians in northern Yemen.

¹⁴ Thirteenth quarterly report on the activities of the United Nations Monitoring, Verification and Inspection Commission in accordance with paragraph 12 of Security Council resolution 1284, S/2003/580, 30 May 2003, United Nations Security Council, p. 40.

¹⁵ UN Security Council Document S/1999/356, Annex 1 para 19.

¹⁶ C.J. Chivers, "The Secret Casualties of Iraq's Abandoned Chemical Weapons", in *New York Times*, 14 October 2014, www.nytimes.com.

¹⁷ *Ibid.*

¹⁸ Operation Avarice.

¹⁹ C.J. Chivers and Eric Schmitt, "C.I.A. Is Said to Have Bought and Destroyed Iraqi Chemical Weapons", *New York Times*, 15 February 2015, www.nytimes.com.

²⁰ *Ibid.*



In the early 1980s, Egypt received aid from the United States to develop its CBRN defensive capabilities. With regard to international non-proliferation treaties, Egypt is one of the non-signatory states of the CWC, motivating that it will remain outside of the CWC as long as the problem of the Israeli nuclear program is not taken into account.

180 tons of sodium cyanide and numerous artillery shells containing residues of sulphur mustard²¹. However, these items are manufactured in 1980 and it is unlikely that they can be used for military purposes.

Egypt is one of the few countries that used chemical weapon after World War I. There are proofs showing that, during the intervention in the civil war in northern Yemen, Egyptian forces used aviation bombs and artillery shells loaded with sulphur mustard and phosgene against Royalist forces and civilians in northern Yemen. There are few available sources for a consistent analysis about the Egyptian chemical warfare agents programme developed after 1970. There is some information about the cooperation between Egypt and Syria in the chemical weapons programmes of these two countries. It is assumed that, after 1980, Iraq was included in this cooperation as well. However, there are not enough reliable sources confirming that Egypt continued its 1970s chemical weapons programme. Moreover, in the early 1980s, Egypt received aid from the United States to develop its CBRN defensive capabilities. With regard to international non-proliferation treaties, Egypt is one of the non-signatory states of the CWC, motivating that it will remain outside of the CWC as long as the problem of the Israeli nuclear program is not taken into account.

Jihadi groups and their concerns for the development and use of chemical weapons

Islamic State and chemical weapons

Less than one year ago, the Central Command of the United States Army announced that one of the Islamic State (IS) experts in weapons of mass destruction was killed following an air strike over some IS targets in Mosul, Iraq. Iraqi engineer Mahmoud al-Sabawi²² was part of the expert team who worked on former Iraqi President Saddam Hussein chemical weapons programme. After the 2003 invasion of Iraq by the US troops, Al-Sabawi, as many other Iraqi soldiers, joined the Islamist group al-Qaeda in Iraq. Before being killed, al-Sabawi, also known as Abu Malik, was coordinating one of the Islamic State programmes

²¹ Julian E. Barnes, "Sunni Extremists in Iraq Occupy Hussein's Chemical Weapons Facility", in *The Wall Street Journal*, Washington, 19 June 2014, <http://online.wsj.com>.

²² Salih Jasim Muhammad Falah al-Sabawi was part of the team of chemical experts who set up the al-Muthana factory which produced mustard gas and sarin.

designed to create some specific military capabilities by which the Islamic State would be able to employ offensive chemical weapons. This information caused concern among American military analysts because it confirmed other information related to the attempts of Islamic State to purchase or smuggle any kind of weapons of mass destruction. Furthermore, the intelligence sources from Syria and Iraq engaged in the war against the Islamic State could not specify exactly neither what role this expert played nor how advanced the IS chemical weapon programme was. An official of the United States Army Intelligence Service stated for *The Daily Beast* that "He was gathering a lot of equipment—we're not really sure for what—before we killed him, but it's concerning that someone who was fairly seriously high up in the [chemical weapons] infrastructure linked up with [ISIS]. This wasn't some enlisted guy"²³. This information not only cast a new light on the Islamic State's concerns of production and usage of chemical weapons, but reopened the old humanity wound that was caused by the genocide of the Kurds in Halabja in the late 80's²⁴. The capacity of Islamic State to produce chemical weapons was seen by military analysts as a nightmare scenario. However, this scenario appeared to be confirmed as early as the summer of 2014 when radical Sunni militants captured the al-Muthanna chemical weapons complex. After the takeover of the complex, the Iraqi Government informed the United States that in al-Muthana complex laid an important stock of chemical munitions belonging to Saddam Hussein's chemical weapons programme²⁵. Although the stock remained in the al-Muthanna chemical weapons complex is evaluated by UNSCOM's experts²⁶ as deprecated and highly

²³ Noah Shachtman, "ISIS Chemical Weapons Specialist Was 'Gathering Equipment' Before He Was Killed", in *The Daily Beast*, 30 January 2015.

²⁴ In the evening of 16 May 1988, Iraqi troops conducted a chemical attack using sarin and mustard gas against the ethnic Kurds from Halabja. The air strike (14 sorties using each 8 fighters MIG and Miraj, coordinated from helicopters) takes almost 5 hours and was preceded by a line of indiscriminate attacks using conventional and incendiary weapons (napalm). The attack produced between 3,200 and 5,000 dead and 7,000-10,000 wounded. It was planned and conducted as part of Al-Anfal military campaign in North of Iraq and had as main objective the rejection of Iranian offensive (Zafar 7 Operation).

²⁵ Julian E. Barnes, "Sunni Extremist in Iraq Occupy Hussein's Chemical Weapons Facility. Officials Don't Believe the Militants Will Be Able to Create a Functional Weapon From the Material", in *The Wall Street Journal*, 19 June 2014.

²⁶ United Nation Special Commission.

Although the stock remained in the al-Muthanna chemical weapons complex is evaluated by UNSCOM's experts as deprecated and highly deteriorated, the interests of the Islamic State for it demonstrates that, if they get the chemical weapons offensive capabilities, they will not hesitate to use them over those who are not subject to the authority of the new caliphate.

deteriorated²⁷, the interests of the Islamic State for it demonstrates that, if they get the chemical weapons offensive capabilities, they will not hesitate to use them over those who are not subject to the authority of the new caliphate.

The interest of the Islamic State in developing a chemical weapons programme dates back to the beginnings of its existence. Abu Musab al-Zarqawi, the Jordanian terrorist who founded the group in 1999²⁸ and gained his military experience in Afghanistan, was constantly interested in not only in purchasing the chemical weapons but also in how to use various poisons in terrorist actions. Zarqawi was born in 1967, in Jordan, and up to the moment when he established the aforementioned terrorist group, he was involved in several terrorist plots and spent several years in prison. He also has travelled twice in Afghanistan to join the Afghan Jihad. In 2000, during his second term in Afghanistan, he arranged a deal with Osama bin Laden, which allowed him to establish a terrorist training camp in the eastern of Afghan city of Herat. The camp was dedicated to the training of extremists from Jordan and, in accordance with the understanding, they would act on their own account and were not affiliated to al-Qaeda. At that time, Zarqawi's terrorist organisation started its research on using poisons and chemical weapons in its operations. After the American decision to participate with troops in Afghanistan, in October 2001, Zarqawi has joined for a while the mujaheddin who fought against US troops, then he abandoned the fight and withdrew in Iran and later in Iraq. Here, he reportedly engaged himself in a collaborative relationship with Iraqi Kurdish extremist group Ansar al-Islam, founded in 2001. At that time, Ansar al-Islam group controlled a small semi-autonomous region in Iraqi Kurdistan, near the Iranian border.

As in the case of Zarqawi, Ansar al-Islam was supported by al-Qaeda but the group maintained its independence from it. This group was also very interested in developing chemical weapons or poisons which would be subsequently used in terrorist attacks.

²⁷ Iraqi Govern appreciated that in complex remained around 2500 chemical missile.

²⁸ What we call today Islamic State was established in 1999 by Abu Musab al-Zarqawi under the name of Jamaat al-Tahwid wa-i-Jihad (JTWJ). The initial goal was to change the political regime in Jordan although its leader gained jihadi experience in Afghanistan where he met Osama Bin Laden.

By the end of 2002 and the beginning of 2003, Ansar al-Islam's terrorist activities and increased interest thereof for the manufacture of chemical weapons²⁹ led to a disagreement between President George W. Bush's advisers regarding planning of some attacks over the Group's camps in northern Iraq³⁰. The Department of Defense, through the voice of the Chairman of the Joint Chiefs of Staff, not only endorsed this action, but also made the military plan for the neutralisation of the terrorist camp. President Bush, fearing that the plans for ousting Saddam Hussein from power would be thus compromised, declined this option. In the end, this operation was implemented due to strong opposition from the Department of State. In March 2003, when US troops raided the Ansar al-Islam camp facilities, they found laboratories in which the group tried to manufacture different toxic chemicals and poisons.

In this context, and taking advantage of its experience in Afghanistan, Zarqawi advanced in his terrorist career. In 2004, he was promoted leader of the al-Qaeda Branch in Iraq. From this leadership position and taking advantage of al-Qaeda resources, Zarqawi continued his chemical weapons programme focusing mainly on the creation of a network of chemical weapons specialists that would also include access to former Saddam Hussein's engineers. This type of network-based warfare was financed from several sources, including hostage taking, taxes collection, businesses vandalising, looting materials from former factories belonging to Saddam Hussein, weapons trafficking and taxation of land from controlled areas. Al-Qaeda's chemical weapons programme in Iraq was further confirmed by al-Hashimi Hisham, ISIS analyst (Islamic States in Iraq and Syria)³¹ and security adviser to Iraqi National Office, who declared: *"Zarqawi assigned Abu Mohammed al-Lubnani³² and an engineer called Ammar al-Ani to handle the chemical weapons profile. Special development units were built on farms ... to the north of Baghdad. However, all the development experiments failed due to difficulties in acquiring basic manufacturing materials or local replacements.*

²⁹ Ansar al-Islam tried to manufacture in Khurmali camp (North-East Iraq) sulphuric acid, ricin and some other toxic chemicals that later would be used in terrorist attacks in Europe and United States.

³⁰ Micah Zenco, *"Foregoing Limited Force. The George W. Bush Administration's Decision Not to Attack Ansar Al-Islam"*, in *Journal of Strategic Studies*, August 2009.

³¹ Previous name of Islamic State.

³² Zarqawi's deputy.



In 2006, after the killing of al-Zarqawi in an air raid, his successors, Abu Ayoub al-Masri and Abu Omar al-Baghdadi, continued the chemical warfare agent project initiated by al-Qaeda in Iraq. Al-Masri and al-Baghdadi set up, in October 2006, the Islamic State of Iraq. Coincidentally, exactly in the same month, a series of attacks with chlorine took place over various targets on the territory of Iraq.

manufacturing materials or local replacements. They were also unable to control the strength of the explosion once the chemicals or poisonous stuff burned or melted”.

Although these experiments were doomed to failure, the fact that the chemical weapons proliferation activities led by Zarqawi were not limited to the territory of Iraq was worrying. US military officials made public the fact that Zarqawi also trained other jihadi groups in the use of toxic chemicals as ricin. Thanks to that training, the terrorists would be able to carry out attacks in Europe or other countries of interest. Thus, on 26 April 2006, the Jordanian authorities announced the dismantling of an al-Qaeda plot to use chemical weapons in Amman. The objectives of this terrorist attack were the US Embassy in Amman, the Jordanian Prime Minister’s Office and the headquarters of the Jordanian Intelligence Service. Following a night raid at a terrorist cell in Amman, the Jordanian Special Forces seized 20 tons of chemicals, including sulphuric acid and very much explosive³³. The intention to use sulfuric acid is not very clear because it can be used both as a vesicant chemical warfare agent and, in combat, in most of the cases, as an enhancer for conventional explosives. The planning officer within the terrorist cell that was to execute the operation, Al Jayyousi, said later that he received direct orders from Abu Musab al-Zarqawi. Moreover, during the interrogatory, he said: *“I took explosives courses, poisons high level, then I pledged allegiance to Abu Musab al-Zarqawi, to obey him without any questioning”*³⁴.

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- In October 2006, a car bomb that carried two chlorine tanks of 100 litres was detonated in Ramadi, wounding four Iraqis³⁵.

³³ John Vause, Henry Schuster and David Ensor, *“Jordan Says Major al-Qaeda Plot Disrupted”*, CNN International.com, 26 April 2004.

³⁴ Ibid.

³⁵ Peter Bergen (CNN National Security Analyst), *“Al Qaeda’s Track Record with Chemical Weapons”*, CNN iReport, 7 May 2013.

- In January 2007, a suicide attacker detonated a chlorine tanker. The explosion killed 16 people but did not lead to the dissemination of chlorine³⁶.
- On 20 February 2007, a chlorine attack took place in Baghdad. The attack killed 5 and contaminated 140. Just one day later, a similar attack took place in Taji, killing 9 people and contaminating 150. In that same day, the Iraqi Government forces discovered two chlorine factories in Fallujah and Karma³⁷.
- In February 2007, a bomb hit a chlorine tanker in the North of Baghdad, killing 9 people and intoxicating other 148. A few hours later, a pickup truck loaded with chlorine cylinders exploded, killing 1 man and sending over 50 in hospital. All 50 hospitalised victims were showing the symptoms characteristic for contamination with chlorine.
- On 16 March 2007, al-Qaeda in Iraq planned and executed three suicide attacks using chlorine tanks. Detonated over different targets³⁸ from the cities of Ramadi, Fallujah, and Amiriya, the explosions killed two policemen and contaminated more than 350 people³⁹.
- Also in March 2007, a truck loaded with chlorine was detonated in southern Fallujah. The result of the attack: 6 dead and 250 wounded or infected persons. Few days later, a suicide attack was simultaneously executed with two trucks, one of which was loaded with chlorine. The explosion killed 14 American servicemen and injured 57 Iraqi soldiers⁴⁰. The purpose of this attack appears to be the retaliation against the Anbar Salvation Council for its support against al-Qaeda in Iraq.

³⁶ Bill Roggio, *“Al-Qaeda’s Chlorine Attacks the Dirty War in Anbar”*, in *The Long War Journal*, 17 March 2007.

³⁷ Ibid.

³⁸ The al-Qaeda type of attacks were conducted to one hour interval and had as main purpose the mass killing of Albu Issa tribe, a declared opponent of al-Qaeda and supporter of new Iraqi Government.

³⁹ Damien Cave and Ahmad Fadam, *“Iraqi Militants Use Chlorine in 3 Bombing”*, in *The New York Times*, 21 February 2007.

⁴⁰ Bill Roggio, *“Fallujah Government Center Struck by Chlorine Suicide Attack”*, in *The Long War Journal*, 28 March 2007.



ROMANIAN
MILITARY
THINKING

Regarding the capacity of the Islamic State to produce chemical warfare agents, it can be said that although there are obvious concerns, IS failed to synthesise them. An important role in diminishing the IS's capacity to produce chemical weapons was played by the American air strikes. In 2008, the US Air Forces hit the Islamic State chemical factories situated in al-Tarmiya.

- A month later, in April 2007, three chlorine tanks were detonated. Two in Ramadi (27 killed and 30 contaminated⁴¹ in the first attack and 6 killed and 10 infected in the second⁴²) and one in West Baghdad (1 dead and 2 injured).
- In May 2007, a chlorine bomb exploded in a village from Diyala province, killing 32 people and wounding 50.
- In June 2007, a car bomb exploded in Diyala. The gas used intoxicated at least 62 American soldiers⁴³.

If we compare the number of the attacks and their achieved effects, we can draw the conclusion that they were badly planned and executed because much of the toxic chemicals were damaged by the heat produced by the explosives used to disseminate them. The attacks, although produced hundreds of victims, cannot be considered as a feasible way to cause massive casualties. Although probably this was not the main objective of the attacks, the main effect was generalised panic and an impressive number of civilians intoxicated with chlorine. The symptoms and the degree of intoxication of the victims revealed that the attacks produced a dose of contamination that could not be considered lethal. However, in high concentrations, chlorine can cause fatal lung damage. Although widely used in World War I, because of its physical and chemical properties, chlorine can no longer be considered effective enough to be used as an improvised chemical weapon. As a last resort, and in the view of the chemical attacks efficiency, we can say that the Islamic State experiments in the development and use of chemical weapon miserably failed. In the case of chlorine, if not used directly on an indoor target (in enclosed space), it cannot be considered as a lethal weapon like the ones in the category of modern chemical weapons.

Regarding the capacity of the Islamic State to produce chemical warfare agents, it can be said that although there are obvious concerns, IS failed to synthesise them. An important role in diminishing the IS's capacity to produce chemical weapons was played by the American air

⁴¹ Alissa J. Rubin, "Chlorine Gas Attack by Truck Bomber Kills Up to 30 in Iraq", in *The New York Times*, 7 April 2007.

⁴² Bradley Hope, "Police on Alert as Chlorine Hits Iraq", in *The Sun*, 1 May 2007.

⁴³ Jim Garamone (American Forces Press Service), "Terrorists Using Chlorine Car Bombs to Intimidate Iraqis", in *DoD News*, 6 June 2007.

strikes. In 2008, the US Air Forces hit the Islamic State chemical factories situated in al-Tarmiya. According to al-Hashimi⁴⁴, in the attack there was also killed Abu Gazwan al-Hayali, the engineer who supervised and protected the engineers and specialists employed there. The American troops did not find any clue that the factory would produce chemical warfare agents or dissemination systems.

In 2010, US and Iraqi forces killed Zarqawi's two successors. This event paved a new way for Abu Bakr al-Baghdadi in rebuilding and expanding his jihadi organisation. In 2011, immediately after the outbreak of the revolution in Syria, al-Baghdadi gradually expanded the scope and influence of his organisation. In the same year, al-Baghdadi renamed the organisation as the Islamic State of Syria and Iraq.

In 2014, taking advantage of the political and social destabilisation of Iraq and Syria and the divergent geopolitical interests of Arab States in the region, the Islamic State captured Mosul. By continuing its successful military operations, the Islamic State was able to capture important regions in Northern and Western Iraq. At the same time, it extended its control over key areas in northern Baghdad, where there were former production facilities or chemical laboratories part of Saddam Hussein's chemical weapons programme. Fortunately, these facilities were completely destroyed by UNSCOM inspectors⁴⁵.

Once with the intensification of the US led coalition aerial attacks, the Islamic State lost strategic initiative. After August 2014, the Islamic State lost military initiative in Iraq as well. The Islamic State military operations were almost stopped by both coalition air strikes and ground forces. The fact that the ground forces engaged in the fight against Islamic States are both regular and military forces and various militias that belong to the various ethnic groups settled in the area is noteworthy. After October 2014, the Islamic State was constantly defeated on all fronts from Syria and Iraq. This new military posture of the Islamic State may explain why it reconsidered its military options including the chemical warfare strategy. Much more, the last events in the Middle East show that the Islamic State ambitions for the purchase or production of chemical weapons have revived.

⁴⁴ Hisham al-Hashimi, analyst specialised in Islamic Stat that works for Iraqi Office for National Security.

⁴⁵ See "Second Report of the Executive Chairman of UNSCOM", S/23268, 4 December 1991.



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At the end of January 2015, a chemical incident took place in one of the Islamic State's factories from Mosul where the chlorine bombs were manufactured. According to a blogger from Mosul, Maouris Milton, *"The Islamic State members informed nearby residents about the incident and advised them to shut the doors and windows. The Islamic State members stated that was a gas leak caused by an air strike. But there were no air strikes ... the area's residents were panicked"*.

A few days later, on 29 January 2015, Islamic State fighters were seen trying to extract some chemical substances and poisons from the chemical waste carefully buried by UN experts in Tikrit. According to Hisham al-Hashimi, the Iraqi National Security Office's analyst specialised in matters of the Islamic State of Iraq, the concrete structure of the toxic waste was an impenetrable obstacle for the Islamic State fighters, resisting to numerous attempts to destroy it with explosives.

For the time being, the chief specialist of the Islamic State is an Egyptian engineer with a Masters in chemistry obtained from Cairo University. According to the same analyst, al-Hashimi, it is believed that the Egyptian engineer is working in an agricultural area situated at South of Baghdad. His assistant was killed in a US air strike few weeks ago.

Ansar al-Islam

Ansar al-Islam is a radical jihadist insurgent group which operates in Iraq⁴⁶ and Syria⁴⁷. The group was founded in 2001 on the territory of Iraqi Kurdistan and follows a salafi ideology that requires the strict application of Sharia law in the controlled areas surrounding the city of Biyara, and North-East of Halabja, near the border with Iran. After the invasion of Iraq in 2003, the group members became insurgents and fought against the United States forces and its Iraqi allies. After the withdrawal of American forces from Iraq, the group continued to fight the Iraqi Government. After the outbreak of civil war in Syria, Ansar al-Islam expanded its insurgent actions on the Syrian territory and also fought against Syrian forces loyal to President Bashar al-Asad. On 29 August 2014, through a statement signed by

⁴⁶ "Ansar al-Islam", <http://fas.org/irp/world/para/ansar.htm>.

⁴⁷ Aymenn Jawad Al-Tamimi (11 May 2014), *"Key Updates on Iraq's Sunni Insurgent Groups"*, Brown Moses Blog, retrieved on 26 May 2014.

50 of its leaders, Ansar al-Islam ceased to exist and merged with the Islamic State⁴⁸. Even though this statement may be considered the document through which the group ceased to exist, its elements who declined the junction with the Islamic State still operate as an independent jihadist group.

As the Ansar al-Islam group is developing as an independent entity, some issues have raised concerns regarding its military actions: interest in chemical weapons; possible connections with the totalitarian regime of Iraq led by Saddam Hussein and its ties with Iran.

In early 2003, more than 30 militants of the Ansar al-Islam group were captured and imprisoned in the Kurdish capital of Sulaymaniyah⁴⁹. The *International Herald Tribune* noted that, as a result of the prisoners' interrogatory, critical information was revealed regarding the chemical warfare capabilities of the group⁵⁰. Other data-related information obtained by intelligence services led to the conclusion that the Ansar al-Islam group developed and tested offensive chemical capability using ricin and cyanides⁵¹. The *Washington Post* also reported that, in the fall of 2001, Ansar al-Islam was able to procure and smuggle, chemical warfare agents of VX type through Turkey⁵². Barham Salih, the Prime Minister of the Patriotic Union of Kurdistan, said there were clear evidences concerning chemical tests carried out by Ansar al-Islam on animals⁵³. Another Kurdish leader confirmed Salih's statement⁵⁴. After General Powell's speech at the UN, on 5 February 2003, Ansar al-Islam allowed a small group of reporters to inspect the areas where it was believed that the group produced chemical weapons, specifically in Khurmali and Sargat. The group could not confirm or deny the development of chemical weapons on the ricin base⁵⁵.

⁴⁸ "IS Disciplines Some Emirs to Avoid Losing Base – Al-Monitor: The Pulse of the Middle East", in *Al-Monitor*, "Jihadist Group Swears Loyalty to Islamic State – Middle East – News – Arutz Sheva", in *Arutz Sheva*, retrieved on 7 November 2014.

⁴⁹ Jonathan Schanzer interview with Barham Salih, 10 January 2003.

⁵⁰ *The New York Times*, 6 February 2003.

⁵¹ *Al-Hayat* (London), 22 August 2002; *Los Angeles Times*, 9 December 2002.

⁵² Jonathan Schanzer interview with Barham Salih, 10 January 2003.

⁵³ *Ibid.*

⁵⁴ Jonathan Schanzer interview with PUK representative, Washington, D.C., March 2003.

⁵⁵ *Ibid.*



Chemical weapons threat level analysis in the Middle East and North Africa

Based on the information presented throughout the article, I will make a brief analysis of chemical warfare capabilities of the jihadi groups that operate in various regions of the Middle East and North Africa. The result of the analysis can reveal, with some scientific accuracy, the level of threat posed by the jihadist group over the studied areas. It also can give us a clear picture about how serious this threat is and how easily it can be transferred all over the world.

In evaluating the jihadist chemical weapons capabilities, I will consider only the following elements: chemical weapons or toxic industrial materials *capabilities, opportunities* for employment of such capabilities, and *intention*. In this respect, by capability, one should understand as the capacity of jihadi groups use chemicals as method of warfare. This capacity is based on their ability to acquire, manufacture, deploy and use such kind of chemical warfare systems or to commit other various resources to this purpose. The analysis is based on the available information concerning: chemical hazards on the territory of the new Caliphate, available weapon systems, chemical warfare agents production and storage facilities, existing research and development facilities and the methods used for dissemination of the toxic agents or their transport to the target. In restrictive terms, the analysis will be designed by following a number of six (6) questions:

1. *Who*: characteristics of the jihadi groups that have the ability to use chemical weapons in their planned and carried out actions.
2. *What*: which are the toxic substances possible to be used?
3. *When*: the moments when chemical weapons or toxic industrial chemicals may be used.
4. *Where*: defines the type and location of potential targets.
5. *Why*: which are the objectives and goals for which the chemical weapons may be employed?
6. *How*: concept of employment of chemical weapons and toxic chemicals.

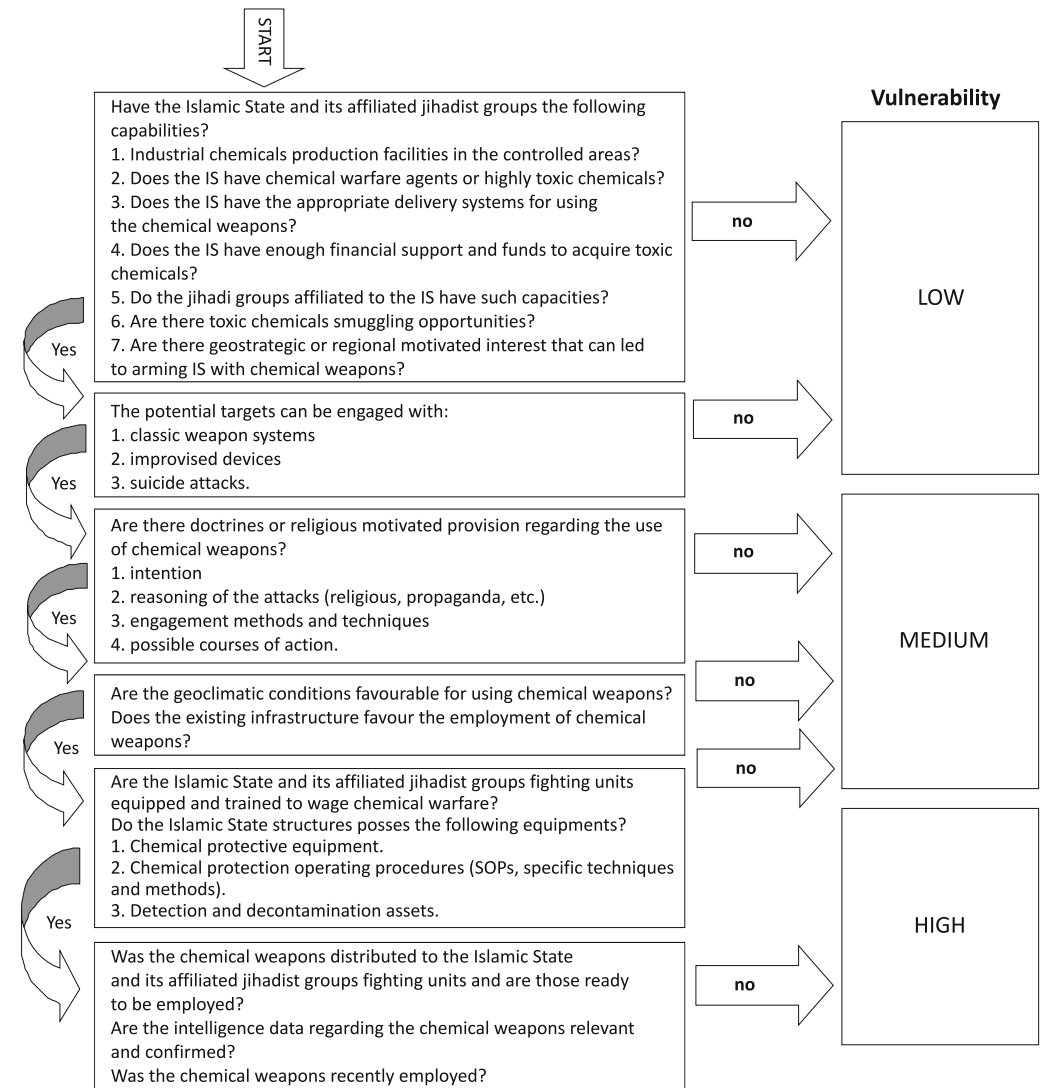
For the purpose of this article, the *opportunity* for engaging chemical weapons is defined as that absolutely necessary condition of the enemy that must be fulfilled and which guarantees that the chemical weapon employed on a specific target becomes effective. Basically, the analysis will reflect a combination of factors synthesised in the trinomial *when, where* and *how* the jihadist groups may use chemical weapons.

The opportunity for engaging chemical weapons is defined as that absolutely necessary condition of the enemy that must be fulfilled and which guarantees that the chemical weapon employed on a specific target becomes effective. Basically, the analysis will reflect a combination of factors synthesised in the trinomial when, where and how the jihadist groups may use chemical weapons.



The *intention* is represented not only by the goal and objectives of the jihadi groups for use of chemical weapon but also by their decisions concerning the selection of targets and methods used for striking them. For example, the intention may be to produce casualties, contamination, degradation of jihadi groups' opponents operational capacity, creating panic or merely the demonstration of the jihadi's capabilities of using chemical weapons, anywhere and anytime.

To determine the vulnerability, we used the following algorithm:





To determine the chemical weapons threat level posed by the jihadi groups' military operations, I used a threat level matrix model that I compiled from those used by various NATO member states and few other non-allied/neutral countries security systems. At the same time, the matrix presents the deductions revealed by the above presented facts and figures regarding the use of chemical weapons by the various jihadi groups in previous operations.

The presented deductions represent the foundation for the final conclusions.

Threat and vulnerability factors	Conclusions resulting from the analysis of threat factors	Threat level
Chemical capabilities	<p>The Islamic State has no specific capacities to use of chemical weapons. However, it has under its control many former chemical weapons production facilities, as well as a fair developed chemical industry containing chemical plants and afferent laboratories and experts. IS does not have chemical ammunition, but controls areas where this weapons systems were destroyed and it may posses some deteriorated chemical weapons delivery systems that can serve the reverse engineering purposes. IS succeeded to create a credible infrastructure and expertise regarding chemical weapons.</p> <p>The Islamic State managed to create an infrastructure of expertise in chemical weapons. IS has professionals who have previously worked in the chemical weapons programme of Iraqi dictator Saddam Hussein, as well as many other chemical engineers and toxicologists educated in prestigious universities worldwide.</p> <p>Financial funds are sufficient for purchasing the basic materials used in chemical weapons synthesis, but the international verification regime of Chemical Weapons Convention drastically diminished their trade.</p>	Medium

Threat and vulnerability factors	Conclusions resulting from the analysis of threat factors	Threat level
	Geopolitical interests are diverging, but there is no state in the area that supports the Islamic State chemical warfare intentions.	
Economic motivation	There is no economic justification for the use of chemical weapon. Those two states on whose territory the Islamic State established (and declared) the Caliphate are signatories of the Convention for the Prohibiting of Chemical Weapons.	Low
Politic and religious motivation	There is political and/or religious motivation that can stop the Islamic State to use chemical weapons. The IS's medium-term declared objective is to extend its territories that are already under its administration and impose Sharia law in its most radical form. Once the chemical weapons are purchased or produced by the IS, it is highly likely and possible that they are used against other ethnic-religious groups settled in the conflict areas. There is a strong religious justification for establishing, widening and strengthening the Caliphate, and all means can be indiscriminately used for this purpose. The Islamic State's fighters are exceptionally motivated religious. IS's fighters have genocide trends especially against other religious groups that do not endorse their political ideas.	High
History of chemical weapons usage	Chemical weapons were used before, but without the expected efficiency. The attacks were deficiently planned and coordinated and the offensive capabilities are either limited or unconventional. There is an increasing trend in the interest for chemical weapons or toxins.	Low
Intention	The intention was proved.	High





Threat and vulnerability factors	Conclusions resulting from the analysis of threat factors	Threat level
Security situation	The security forces in the area, with the intelligence and lethal support of the international coalition have blocked the production or acquisition of modern chemical weapons for the time being. The security forces are unable to control the illicit activities on the territory of the Caliphate. The security forces are unable to deter the Islamic State's chemical weapons programme.	High
Constrains	There are no constraints on the use of chemical weapon.	High
Conflict fluidity	The Islamic State's disputed or controlled areas are changing frequently, quickly and almost without warning. The disputed areas on the outskirts of the Caliphate were engulfed into an attrition type of conflict similar to World War I. The air strikes executed against Islamic State forces had limited success. There is no consistency or synergy of the coalition forces that fight against the Islamic State. Frequently there can be observed conflicts between various ethnic and religious groups that are engaged in the same military operation against the Islamic State.	Medium
Local population	The population from the conflict areas is terrorised by the atrocities committed by Islamic State's fighters. The humanitarian crisis in the occupied or disputed areas is extreme. The number of refugees exceeds the capacities of the destination countries. Various ethnic groups support only their own militia.	High
Group cohesion and leadership	There is information that reveals cohesion problems between the ethnic groups and fighting militias, on both sides. There are many power struggles or divergences regarding the ways to fulfil medium- and long-term objectives. The authority of the Caliph is not universally recognised.	Medium
CW readiness level	Almost non-existent.	Low



Threat and vulnerability factors	Conclusions resulting from the analysis of threat factors	Threat level
Deterrence actions	Precise, sporadic and uncoordinated. Air strikes have limited efficiency due to the lack of a consistent information system on the ground. Intelligence exchange among the coalition partners is limited.	Medium
Geopolitical interest in the region	Very divergent, but one may notice a sufficient cohesion regarding the Islamic State threat.	Medium
Crimes level	Jihadi groups have a high level of mobility and they can move undetected in the entire area of interest. The law enforcement troops, critical infrastructure targets and civilian population are under constant threat of jihadi groups. Radical jihadi gangs act with high violence. The number of members in one attack cell is more than 4. This staff structure gives to jihadi attack groups a tactical advantage. They can mutually support any type of actions even if they are independently planned and conducted.	Medium to high
Law enforcement actions	Police or security forces are ineffective in carrying out deterrence tasks. Their actions rarely catch the suspects and the responses to emergency calls are delayed by various administrative or legal factors.	High
Security forces training and readiness	The level of preparation is under international standards. Many of the members of such forces are corrupt, unqualified, irresponsible or collaborate with criminals for various reasons.	Medium
General security level	The general situation is characterised by insecurity but not a total lawlessness and impunity.	Medium to High
Intelligence regarding jihadi groups area of operations	Areas controlled by each jihadi group cannot be accurately identified and are extremely fluid and interrelated.	High

Conclusions

From the above analysis, it appears that the Islamic State's chemical weapons threat level is *Medium*. This threat level also applies to almost all IS affiliated groups. Once this radical jihadi structure is fully able to procure or develop a viable method for synthesis and dissemination of chemical warfare agents, it will undeniably use them. This scenario becomes even more predictable as the offensive operations of the Islamic State were slowed down and in some territories its forces were forced to conduct tactical retreats. The political and religious credibility, the territorial expansion and strengthening of the Caliph and Caliphate authority is closely linked to its military successes⁵⁶. As a result, any military option that can guarantee success, including chemical weapon, is possible.

For the time being, the most recent development of chemical weapons by jihadi groups in Iraq and Syria was limited to chlorine attacks. Although those attacks prove that the groups have limited understanding of the techniques and methods required to make a chemical weapon effective, those attempts demonstrate a change in the IS (and its affiliates) approach that may, if developed and followed by jihadist operations outside the studied areas, open a new era in which the world will encounter an increasingly deadly chemical terrorism producing mass casualties.

The failure of technique in Iraq and Syria may not be considered as a norm and more importantly it is not a failure of imagination. In the long term, it is unreasonable to believe that, if those techniques are improved and exported outside Iraq and Syria, the jihadi groups will not plan attacks against chemical infrastructure generating significant number of civilian casualties. Over even a longer term, it is difficult to anticipate how the coming together of radical ideology, increasing access to already widespread knowledge, acceptance of instrumentality of violence, and further empowerment of individuals will play out.

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EUROPEAN SECURITY AND THE SIGNIFICANCE OF THE F-35

Air Commodore Frans OSINGA, PhD

The introduction of the F-35 in the Air Force marks an important transition from fourth generation to fifth generation combat aircraft.

It will become a key asset in Europe's air defence and strike capabilities, as non-stealth platforms have very little chance of surviving the Russian threat posed by A2AD.

The F-35 will become a critical "high demand-low density" asset, which makes it possible for NATO to carry out long-range precision strike missions as well as defensive or offensive counter-air missions in a contested environment.

But the F-35 aircraft is much more than simply replacing a fighter aircraft with another. Its true significance is a strategic and political one, and it has to be analysed from the perspective of European security. And this perspective is worrying.

Keywords: F-35, air power, Russia, air superiority, conventional deterrence.

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Introduction – Addicted to the Air Power Advantage

The west has become addicted to its air power dominance. Since Operation Desert Storm in 1991 the military and political utility of air power has vastly increased. Indeed, a revolution in military affairs took place which was largely based on the rapid evolution in air power capabilities. Stealth fighters and bombers, persistent Intelligence Surveillance Reconnaissance (ISR), the proliferation of precision guided munitions, Suppression of Enemy Air Defence (SEAD) and Electronic Warfare (EW) capability, networking of sensors, shooters and Command and Control (C2) nodes, all combined to make the offence superior to defence in air warfare. The resulting persistent air superiority offered a virtual sanctuary that could be exploited for various purposes, such as ISR, Interdiction, Close Air Support (CAS) and strategic attacks. Air strikes became unprecedentedly accurate. With Precision Guided Munitions (PGMs), one fighter could attack several targets in one mission, including dug-in tanks and artillery and intense air attacks could now obliterate entire armoured columns. The result was a drastic shortening of the time required and the risk involved for ground units to complete the coalition victory, as Operation Iraqi Freedom once again demonstrated. Conventional strategic attack too was rediscovered. Precision munitions, stand-off and stealth capabilities offered new possibilities for strategic attacks against multiple target-categories of a nation state (military units, leadership, and critical infrastructure). Even if targets were in the vicinity of civilian objects, it was now possible to attack these nearly simultaneously in order to rapidly degrade the functioning of the entire 'enemy system' from the first moment of a campaign and cripple the strategic command capabilities before attacking fielded forces. Finally, Desert Storm suggested that military operations need not necessarily entail

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massive civilian casualties and the measure of ‘collateral damage’ to civilian infrastructure seemed to be controllable^{1,2}.

In the arena of irregular warfare air power too has made huge strides in effectiveness due to persistent and wide area ISR, highly precise CAS and interdiction with unprecedented short response times and improved air-land integration. In stabilization and Counter-Insurgency (COIN) missions this provides forces protection, allows Special Operation Forces (SOF) teams to cover wider areas than before with lower risk, and can assist so-called proxy-forces. This ‘Afghan Model’ has proven its worth in Afghanistan (2001–2014), Northern Iraq (2003), Libya (2011) and Mali (2013) and currently in the fight against Daesh³. Air power is also one of the few assets available that can target terrorist groups and guerrilla fighters in remote regions and do so relatively effectively and cheaply without risks associated with the employment of large numbers of ground troops^{4, 5}.

Enhanced effectiveness and decreased risks translated into greater political utility to the extent that air power has become the “go-to” military instrument for many international crises. Thus, immediately following Operation Desert Storm, offensive air power was employed to enforce No Fly Zones in the context of peace operations in the Balkans and northern Iraq and subsequently also in southern Iraq. During second half of the 1990s western air power was twice pivotal as the key military instrument of Western coercive diplomacy against Serbia (Operation Deliberate Force and Operation Allied Force). In 2003, the US-led coalition used its air dominance so effectively against Iraqi

¹ This brief overview of air power developments draws from: Frans Osinga, “Air Warfare in the Postmodern Era”, in Julian Lindley-French and Yves Boyer (eds.), *The Oxford Handbook of War*, Oxford University Press, 2010.

² For descriptions of the new western way of war see for instance: (1) Martin Shaw, “The New Western Way of War”, Polity Press, London, 2005. (2) Christopher Coker, “Humane Warfare; the New Ethics of Postmodern War”, Abingdon, Routledge, 2002.

³ For an up to date discussion of air power in COIN see: Joel Hayward (ed.), “Air Power, Insurgency and the “War on Terror””, Royal Air Force Centre for Air Power Studies, Cranwell, 2009.

⁴ Benjamin Lambeth, “Air Power Against Terror”, RAND, Santa Monica, 2005.

⁵ For a welcome study of the air operations of Iraqi Freedom, see: Benjamin Lambeth, “The Unseen War, Allied Air Power and the Takedown of Saddam Hussein”, Naval Institute Press, 2013, Annapolis, MD.

ground forces that the ground offensive proceeded virtually unopposed and with unprecedented speed to Baghdad to topple Saddam Hussein. In 2011, NATO air power was employed in Libya in support of the UN doctrine of Responsibility to Protect, which amounted to a campaign of coercive diplomacy. Indeed, precision age air power suits the western sensibility concerning collateral damage and has become the defining and indeed normative feature of the western way of warfare.

The Air Power Gap: The Paradox

There is a remarkable paradox though. While Europe’s security concern from 1990 till 2014 have put an emphasis on expeditionary and power projection capabilities – which are precisely some of the key attributes of air power – Europe disinvested in air power. It has underappreciated the extent to which the new western way of war with its emphasis on risk mitigation, casualty sensitivity, and force protection depends on a continuous umbrella of sophisticated air power assets that provide rapid precision intelligence and if necessary kinetic response capabilities. Europe’s often discussed capability gap is largely an air power gap – as became evident during operation Allied Force: US forces catered for 60% of all sorties, dropped 80% of all expended ordnance, provided 70% of all support sorties and 90% of all SEAD and EW missions, not to mention the fact that without US support NATO would have lacked effective command facilities⁶. Europe was fatally and unacceptably dependent on US “enablers” and “precision shooter”. Already in 1997 senior defence analysts warned Europe to ‘mind the gap’ as Europe was losing its ability to operate alongside US forces⁷.

In response, since 1999 NATO has launched several initiatives, starting with the Defence Capabilities Initiative (DCI), which identified

⁶ For a full analysis, see for instance John Peters et al, “European Contributions to Operation Allied Force; Implications for Transatlantic Cooperation”, RAND, Santa Monica, 2001.

⁷ David Gompert, Richard Kugler and Martin Libicki. “Mind the Gap, Promoting a Transatlantic Revolution in Military Affairs”, Institute for National Strategic Studies, National Defence University Press, Washington, D.C.



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six areas of high priority involving strategic air lift, air-to-air-refuelling (AAR), SEAD, Support Jamming, PGM and Secure Communications⁸. Over the past decade by and large those shortfalls have persisted⁹. Budgetary constraints were one culprit of Europe military deficit¹⁰, but the heart of the problem is policy re-orientation and force restructuring. Most European armed forces have retained their orientation on static man-power intensive territorial defence. By 2005 Europe still had 1.5 million people in arms, and in excess of 10,000 tanks. But only 10 to 15% of those troops were actually deployable¹¹. NATO thus embarked on a 'Transformation' initiative which stood for accelerated innovation, catching up on the RMA, adopting the Network Centric Warfare concept, improving expeditionary capabilities, and closing the capability gap, in short, adopting the New American Way of War¹². However, complacency¹³, vested service interests, inter-service rivalry, different perspectives within political and military elites on the necessity to really transform their militaries in light of the absence of real security threats, and other societal priorities – the financial and economic crises – all contributed to the disappointing pace of military innovation in Europe¹⁴.

⁸ This discussion draws from: Frans Osinga, "The Rise of Transformation", in Theo Farrell, Terry Terriff and Frans Osinga, "A Transformation Gap, American Innovations and European Military Change", Stanford University Press, Stanford, 2010.

⁹ For a very detailed study of European air power developments and the problem of the air power gap, see: Christian Anrig, "The Quest for Relevant Air Power", Air University Press, Maxwell AFB, Alabama, 2011.

¹⁰ Kees Homan, Bert Kreemers, Frans Osinga, "De Militaire Staat van de Europese Unie", Clingendael Research Paper, The Hague, May 2001.

¹¹ For a detailed account, see: Bastian Giegerich and William Wallace, "Not Such a Soft Power: the External Deployment of European Forces", in *Survival*, vol. 46, no. 2. Summer 2004, pp. 163–184.

¹² For this argument, see for instance: (1) David Gompert and Uwe Nehrlich, "Shoulder to Shoulder, The Road to US-European Military Cooperation", RAND, Santa Monica, 2002. (2) Hans Binnendijk and Richard Kugler, "Transforming European Forces", in *Survival*, vol. 44, no. 3. Autumn 2002.

¹³ Hans Binnendijk, "The Impact of Global Trends on Air and Space Power in NATO", in *Air and Space Power in NATO, Future Vector Part I*. Joint Air Power Competence Centre, Kalkar. July 2014, p. 39.

¹⁴ Stephen Larrabee, Stuart E. Johnson, et al, "NATO and the Challenges of Austerity", RAND, Santa Monica, 2012, p. IX.

Thus, European air forces continued their decline, reducing the number of bases and command facilities and disbanding NATO's once formidable Ground Based Air Defence (GBAD) capabilities. Very few air forces invested in long range stand-off strike, SEAD or EW capabilities. AAR and ISR capabilities grew only very slowly if at all. By 2011 combat capable fighter strength was about 1,200, down from 3,000 two decades earlier, with numbers continuing to fall rapidly annually. This implied that air campaign intensity and sustainability would suffer dramatically, keeping in mind that a small-scale air campaign such as Allied Force eventually required about 1,000 combat aircraft. Importantly too, two decades after stealth had demonstrated its huge operational and strategic relevance, no European military had a stealthy 5th Generation aircraft in its inventory.

Addicted to US Support

The over-reliance on US so-called "enablers" (long range strike, EW, SEAD, ISR, C2) became increasingly problematic for the Alliance. Operation Unified Protector (OUP), the intervention in Libya in 2011, once again demonstrated the severity of the air power gap¹⁵. In a repeat of Operation Allied Force, OUP was probably impossible without US support despite the fact that it was a very limited operation with only 55–150 daily sorties (it never achieved the 350 daily sortie rate aimed for). Sustainability was becoming a distinct issue, too: a number of European coalition partners had to withdraw their commitment during the operation due to maintenance requirements. Others suffered shortage of precision munitions quite early into the operation, suggesting that stockpiles were dramatically low.

Several analysts thus concluded that without US support, European militaries can most likely perform only one moderate-sized operation at a time and will be hard-pressed to meet the rotation requirements of a protracted, small-scale irregular warfare mission¹⁶. And US support has

¹⁵ For an excellent comprehensive study of OUP and its implications for the Alliance, see: Karl Mueller (ed), "Precision and Purpose, Airpower in the Libyan Civil War", RAND, Santa Monica, 2015.

¹⁶ *Ibid*, 14.



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As one official study noted in 2014, Europe must take into account that it has to be capable of independently securing its interests at the periphery of NATO's geographical Area of Operational Responsibility. "With the current shortfalls, NATO has a challenge in meeting its Level of Ambition. Given the trends the gap between capability and ambition will only become worse".

become in doubt. In June 2011, US Defence Secretary Gates predicted a NATO consigned to "military irrelevance" in a "dim if not dismal future unless allies stepped up to the plate [...]. US political leaders [...] may not consider the return on America's investment in NATO worth the cost"¹⁷. Moreover, the so-called pivot to Asia implied a significant shift of the US foreign and defence policy from Europe and the Middle East to the East and South-East of Asia¹⁸. This means that it can no longer be assumed that under any circumstance the US will be willing to make substantial contributions in terms of capabilities and competencies to Europe. Therefore, as one official study noted in 2014, Europe must take into account that it has to be capable of independently securing its interests at the periphery of NATO's geographical Area of Operational Responsibility. "With the current shortfalls, NATO has a challenge in meeting its Level of Ambition. Given the trends the gap between capability and ambition will only become worse"¹⁹.

A Revisionist Russia

With the Spring 2014 annexation of the Crimea, the emergence of a revisionist Russia has transformed the air power gap from primarily an operational handicap during expeditionary interventions, as well as a political embarrassment, into a security problem. Russia has become an unpredictable power, according to Francois Heisbourg, and indeed Russia displays increasingly an anti-western political narrative which is fuelled by nationalism, honour, and a historic perception of identity and humiliation by the West. It manifests an enmity towards international law, western institutions and values. It seemingly wants to regain the Cold War era spheres of influence between Russia and Western Europe²⁰. Its military doctrine and capabilities seem geared to support this political aim. In waging persistent shadow wars

¹⁷ Ian Traynor, "US Defense Chief Blasts Europe over NATO", in *The Guardian*, 11 June 2010.

¹⁸ U.S. Department of Defense, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense", January 2012.

¹⁹ Joint Air Power Competence Centre, "Diminishing Air Power Capabilities, in *Present Paradox, Future Challenge*, Kalkar, March 2014, p. 77.

²⁰ For such an assessment of the challenge that Russia poses to Western Europe, see for instance: (1) Matthew Kroenig, "Facing Reality: Getting NATO Ready for a New Cold War", in *Survival*, Volume 57-1, 2015, pp. 49-70. (2) François Heisbourg, "Preserving Post-Cold War Europe", in *Survival*, Volume 57-1, 2015, pp. 31-48.

using cyber-operations, the deployment of special forces dressed as civilians and "little green men", disinformation campaigns and denying involvement, it deliberately tries to remain below the threshold of NATO Article 5. This Hybrid Warfare^{21, 22}, however, may not be the real or only problem now facing Western Europe²³.

What the Crimea crisis really demonstrated was the rapid modernization of Russian conventional forces. It demonstrated the ability to conduct intimidating snap exercises – some involving up to 150,000 military personnel – along the borders of Eastern European countries involving large army and air formations. Part and parcel of this new strategy is the threat of nuclear weapons. The combination of these capabilities translates into options to rapidly create facts on the ground forcing NATO and the EU to develop quick responses. Russia could then influence that response by threatening with nuclear escalation²⁴. While this does not necessarily mean Russia is prepared for a direct confrontation with NATO, Russian Prime Minister Medvedev did not reassure Western leaders when he stated that there is the risk of a 3rd world war and the emergence of a new cold war²⁵.

The 2016 NATO Warsaw Summit communiqué recognizes that Russia's "aggressive actions, provocative military activities and its demonstrated willingness to attain political goals by the threat and use of force are a source of regional instability and fundamentally

²¹ For a discussion of Russia's hybrid warfare concept see for instance: Alexander Lanoszka, *Russian Hybrid Warfare and Extended Deterrence in Eastern Europe*, in *International Affairs*, Volume 92-1, 2016, pp. 175-195.

²² For a lengthy treatment of Russian Hybrid Warfare from a NATO perspective, see: Guillaume Lasconjarias and Jeffrey Larsen (eds), "NATO's Response to Hybrid Threats", Forum Paper 24, NATO Defence College, Rome, 2015.

²³ (1) Mark Galeotti, "Hybrid, Ambiguous, and Non-linear? How New is Russia's 'New Way of War'?", in *Small Wars & Insurgencies*, Volume 27-2, 2016, pp. 82-301. (2) Samuel Charap, "The Ghost of Hybrid War", in *Survival*, Volume 57-6, 2015, pp. 51-58.

²⁴ See Elbridge Colby & Jonathan Solomon, "Facing Russia: Conventional Defence and Deterrence in Europe", in *Survival*, Volume 57-6, 2015, pp. 21-50. (2) Johan Norberg, "Training to Fight: Russia's Major Military Exercises 2011–2014", Swedish Defense Research Agency (FOI) Report, 5 December 2015, online at <https://www.foi.se/reportsummary?reportNo=FOI-R-4128-SE> (accessed Jan. 2016), p. 62.

²⁵ Sam Jones, "Dmitry Medvedev Warns of 'New Cold War'", in *Financial Times*, 13 February 2016, online at <http://www.ft.com/cms/s/0/a14e8900-d259-11e5-829b-8564e7528e54.html#axzz4liVoaRgz>.



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The 2016 NATO Warsaw Summit communiqué recognizes that Russia's "aggressive actions, provocative military activities and its demonstrated willingness to attain political goals by the threat and use of force are a source of regional instability and fundamentally challenge the Alliance".

challenge the Alliance"²⁶. Subsequently, since 2014 a flurry of initiatives was taken to demonstrate resolve and unity, avoid the perception of weakness that Russia could exploit, and to re-assure Baltic, Central European and Scandinavian countries. A renewed emphasis has been placed on deterrence and collective defence²⁷. The Very High Readiness Joint Task Force (VJTF) was launched, small headquarters would be established and the NRF was to be expanded. Small military capabilities would be prepositioned in the east, air policing would be intensified and the number of exercises enhanced. In Estonia, Latvia, Lithuania and Poland multinational battalion sized battle groups would be established to "unambiguously demonstrate, as part of our overall posture, Allies' solidarity, determination, and ability to act by triggering an immediate Allied response to any aggression"²⁸.

The A2AD Challenge: Losing the Certainty of Air Superiority

However, Russia's military modernisation is particularly geared towards negating NATO's asymmetric advantage in the air power arena, undermining NATO's conventional deterrence capabilities. Russia has invested heavily in Anti-Access and Area-Denial (A2AD) capabilities: EW systems, cyber warfare capabilities, and long-range Surface to Surface Missiles (SSM) and Surface to Air Missile (SAM) systems. As a result, today, the West needs to reconsider how to preserve Western supremacy in the commons (sea, air, space and cyber-space) and how to use the commons to project power in a contested environment. As US Air Force (USAF) General Frank Gorenc, then commander of US Air Forces in Europe and Africa stated: "The advantage that we had from the air, I can honestly say, is shrinking [...] Those A2/AD capabilities are fundamentally undermining the essence of the American way of war"²⁹.

²⁶ "Warsaw Summit Communiqué". Issued by the Heads of State and Government participating in the meeting of the North Atlantic Council. Warsaw 8-9 July 2016, online at http://www.nato.int/cps/en/natohq/official_texts_133169.htm.

²⁷ *Ibid.*

²⁸ *Ibid.* See the communiqués of Wales and Warsaw for the full array of initiatives and plans.

²⁹ Franz-Stefan Gady, "US Air Force: Russia Has Closed Air Power Gap With NATO", in *The Diplomat*, 16 September 2015, online at <http://thediplomat.com/2015/09/us-air-force-russia-has-closed-air-power-gap-with-nato/>.

This problem is particularly acute along the borders of Europe and in its heart; Kaliningrad³⁰. With its amassed air defence and surface to surface missile capabilities it can deny air operations over large parts of the Baltics and Poland, it can threaten military facilities and transport infrastructure – and thus reinforcement (such as the VJTF) – in eastern Europe and well into Germany and deny the use of sea lines of communications. US capabilities in Europe are not sufficient to tackle this A2AD problem. Russia is increasingly able to create positions of local military advantage in its immediate vicinity, advantages that extend to the ability to seize and hold territory, and then to be able to deploy higher order capabilities, ranging from A2AD systems to nuclear weapons, to block, deter, negate or frighten NATO in its attempts to push these forces back³¹. A RAND study concluded that "As currently postured, NATO cannot successfully defend the territory of its most exposed members"³².

The Meaning of the F-35: Restoring Conventional Deterrence

NATO's array of initiatives since 2014 amount to re-discovering the lost art of conventional and nuclear deterrence, territorial defence and conventional warfare. Air power plays a large role in this. To wit, nine out of 16 NATO capability priority shortfall areas relate to air power. In no small measure the conventional deterrence problem equates with ensuring deterrence credibility by addressing the persistent capability gap in which Air C2, Airborne Electronic Attack (AEA), AAR, long range precision strike, SEAD, ISR, air superiority, and Theatre Ballistic Missile Defence (TBMD) feature prominently. Without improving air defence and strike capabilities, NATO will be hard pressed to effectuate conventional deterrence. The certainty of the air sanctuary has disappeared. Against Russia's SAM systems,

³⁰ Stephan Frühling and Guillaume Lasconjarias, "NATO, A2/AD and the Kaliningrad Challenge", in *Survival*, Volume 58-2, 2016, pp. 95-116.

³¹ Dave Majumdar, "Can America Crush Russia's A2/AD 'Bubbles'?", in *The National Interest*, 29 June 2016, online at <http://nationalinterest.org>.

³² David A. Shlapak and Michael Johnson, "Reinforcing Deterrence on NATO's Eastern Flank: Wargaming the Defense of the Baltics", RAND, Santa Monica, 2016, p. 1.



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Against Russia's SAM systems, NATO air defence and offensive counter air operations will once again become a slugging match. Russia's SSMS form a direct threat to NATO's concentrated few scarce Air C2 facilities and air bases. Joint campaign plans therefore once again need to consider careful allocation of assets and phasing; warfare like Desert Storm and Iraqi Freedom is likely infeasible. Information dominance will not happen as ISR missions may well be impossible.

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Conclusion

While the introduction of the F-35 in Europe certainly does not solve all issues, it ensures interoperability with the US military, it limits the operational dependency on US support in air campaigns and its inherent stealth, EW, SEAD and ISR features address a significant capability gap that threatens to paralyze future European air operations. It will become a critical asset in Europe's air defence and strike capabilities as non-stealth platforms have a very limited chance of survival in the face of Russia's A2AD threat. The F-35 will probably also be called upon as SEAD and sweep escort for 4th Generation fighters which will continue to form the backbone of many European operations. But quantity is a quality. It will be a long time before Europe can boast a substantial number of operational F-35 squadrons and even when these are all-in theatre, the number of F-35s will probably never exceed 500. The F-35 will thus become a critical 'high demand-low density' asset ensuring NATO can conduct long range

³³ (1) Jay Ballard, "What is Past is Prologue – Why the Golden Age of Rapid Air Superiority is at an End", in *Journal of the JAPCC*, Edition 22, Spring/Summer 2016, pp. 56-64. – (2) Timothy Walton, "Securing the Third Offset", in *Joint Forces Quarterly* 82, 3rd Quarter 2016, pp. 6-15.

precision strike missions as well as Defensive or Offensive Counter-Air missions in a contested environment. All this implies that the F-35 will become a crucial foundation for NATO's conventional deterrence and war fighting capability in the new A2AD era. And with the proliferation of modern SAM systems (as well as 5th Generation Chinese and Russian fighter aircraft) to many other states, the introduction of the F-35 is a first necessary step to ensure European air forces remain capable to conduct interventions effectively and with modest risk levels that Europe's politicians and publics have become accustomed to. That is the real significance of the introduction of the F-35.



THE PRESENCE OF THE GREAT GENERAL HEADQUARTERS IN BÂRLAD (NOVEMBER 1916 – MARCH 1917)

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During the withdrawal and the refuge to Moldavia, numerous people, personalities from politics, culture and various institutions took shelter in Bârlad, as well as in other Moldavian localities. For a short period of time (from November 1916 to March 1917) the importance of the town was bigger than its size – it became a military base and a political factor, regarded as a real military capital of the unoccupied part of Romania. Here were to be found the Romanian Great General Headquarters and its Russian counterpart for the troops sent to the Romanian front, as well as the Royal Headquarters (located in Zorleni, at the personal property of King Ferdinand) and the French Military Mission coordinated by General Henri Berthelot. In the Moldavian city of Bârlad there were also other important institutions such as the Russian Fourth Army General Headquarters, the Romanian First Army Command, hospitals, military schools, various services and institutions.

Keywords: military base, political influence, the French Military Mission, military command, overpopulated town.

Introduction

A hundred years after Romania participated in the First World War, in Romanian historiography, the military and political role played by the city of Bârlad in the difficult period of withdrawal has not been studied, being remembered, when not completely ignored or eluded, only the temporary residence of the royal couple¹, the temporary location of the Romanian Great General Headquarters² and of the Russian General Headquarters for the troops in Romania. This aspect can be easily seen in older or more recent papers and articles on the participation of Romania in the First World War, which exclusively refer to the importance of Iași³ in that testing period for the Romanians.

A thorough analysis shows that the Romanian armed forces, despite their heroism, were defeated but not destroyed in 1916, succeeding, following a coordinated withdrawal, in saving lives and goods to employ them, in 1917, after complete regeneration, in the actions at the gates of Moldavia, preventing the enemy from advancing towards the core of the Tsarist Russia. The number of human losses was impressive: 500,000 people (100,000 dead, 150,000 injured and 250,000 prisoners)⁴. The battle for Bucharest, in November 1916, caused the general withdrawal to Moldavia, the front being established on the Siret line. The territory of Moldavia thus became the area

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¹ See Marcel Proca, *Bârladul și Marele Război*, Editura Sfera, Bârlad, 2017, pp. 154-169; *idem*, *Bârladul – capitală militară (noiembrie 1916-martie 1918)*, in "Studii și articole de istorie", vol. LXXXV, 2018, pp. 18-41.

² *Ibidem*, pp. 119-153.

³ Virgiliu Z. Teodorescu, *Orașul Iași, capitală a României în anii 1916-1918*, available at: www.monumentul.ro; selectively, Ion Mitican, *Doi ani în refugiu la Iași*, in *Lumina* newspaper, 11 December 2007; *Iași – Memoria unei capitale*, Gh. Iacob (coord.), Editura Universității "Al. I. Cuza", Iași, 2008; I. Scurtu, *Viața cotidiană la Iași în anii 1916-1917*, Editura Banca Națională a României, București, 2011; Cristi Tănase, *Refugiul regelui: România condusă de Iași*, in "7 est", 13 December 2015; Ion Agrigoroaiei (coord.), *Orașul Iași. "Capitala rezistenței până la capăt (1916-1917)"*, Editura Junimea, Iași, 2016; Dorin Stănescu, *Iașul în Marele Război. Crăciunul Reginei Maria în refugiul de la Iași din decembrie 1916* – adevarul.ro blog, 22 December 2016; Sorin Iftimi, Aurica Ichim, *Iași. Capitală a României 1916-1918*, Editura DAR Development Publishing, București, 2017.

⁴ *Istoria Românilor*, Academia Română, vol. VII, tome II, coordinator Acad. Gheorghe Platon, Editura Enciclopedică, București, 2003, p. 434; *România în anii Primului Război Mondial*, vol. I, p. 559; Nicolae Ciobanu, *Pierderile umane ale României în timpul Războiului de Întregire*, p. 5, available at http://www.once.ro/sesiuni/sesiune_2007/3_Pierderi.pdf



where the Romanian resistance continued, numerous operative and administrative measures being necessary, under the conditions of a massive human concentration.

The Military Importance of the City of Bârlad

For a short period of time, between November 1916 and March 1917, the city of Bârlad was extremely important – a military and political centre –, being a genuine military capital of the part of Romania that was not occupied by the enemy. In Bârlad there were not only the Great General Headquarters of the Romanian Armed Forces and the Command of the Russian troops on the front in Romania but also the Royal Headquarters (located in Zorleni, near Bârlad), the French Military Mission, led by General Henri Berthelot⁵, as well as the Russian one, led by General Mihail Aleksandrovici Beliaeff (Beleaev)⁶.

Moreover, the “*Romanian Front Command*”⁷ was operational there, the King having nominally the supreme command on the Romanian front, while the Russian General Vladimir V. Zaharov⁸ was the Chief of Staff of King Ferdinand I for the Russian troops. In the exercise of his duties, the sovereign was assisted by a Russian and a Romanian staff. To achieve the unity of action, an essential problem in a coalition war,

⁵ Henri Mathias Berthelot (b. 7 December 1861, Feurs – d. 28 January 1931, Paris), French General. From 22 September 1916 to 17 May 1918, he was the Chief of the French Military Mission in Romania. After that he was sent to the USA (5 July 1918) and was appointed Commander of the 5th Army (7 October 1918). For further details related to his life and activity see: Constantin Kirişescu, *Istoria războiului pentru întregirea României*, Mircea N. Popa and Lucia Popa (eds.), Editura Ştiinţifică şi Enciclopedică, Bucureşti, 1989, vol. II, pp. 20-21; Valeriu Florin Dobrinescu, *Misiunea Berthelot în documente militare inedite*, in “*Muzeul Naţional*”, X, 1998, pp. 121-124; Gheorghe I. Florescu, *Generalul Henri M. Berthelot între Franţa şi România (1916-1918) I*, in “*Zargidava*”, no. 6/2007, pp. 72-97; Ion Giurcă, *Generalul Henri Berthelot – 150 de ani de la naştere*, in *Gândirea militară românească*, no. 6/2011, pp. 150-157 ş.a.

⁶ General Mihail Aleksandrovici Beliaeff (1863-1918) was, starting on 28 September 1916, the representative of the Russian High Command (Stavka) near the Romanian Great General Headquarters, as General Berthelot peer. In January-February 1917, he was the last Minister of War of the Imperial Russia. He was executed by the Bolsheviks.

⁷ Glenn E. Torrey, *România în Primul Război Mondial*, Editura Meteor Publishing, Bucureşti, 2014, p. 174.

⁸ His name is differently written, Saharov being also used. Vladimir Victorovici Zaharov, a Russian Cavalry General, commanded the allied troops in Dobruja (the Danube Army) starting on 12 October 1916. Starting in December 1916, he commanded the Russian troops on the front in Moldavia, being, in this capacity, the deputy of the Romanian-Russian Front Commander – King Ferdinand I. Starting in May 1917, the King deputy became General Dimitrie Grigorovici Şerbacev, following an interim period of General Lecîtki. See also Constantin Kirişescu, *op. cit.*, p. 18.

the operation plans as well as the procurement and service organisation were ensured by the Russian Great General Headquarters. The orders and decisions in this regard were sent to the Romanian Great General Headquarters, which had to implement them, making them known to the Russian partner. Out of the mentioned regulation it became clear the Romanian Great General Headquarters subordination to the Russian one and, implicitly, King Ferdinand inferior position, especially given the fact that the Romanian Front Chief of Staff, who was the Chief of the Russian Great General Headquarters, had the right to issue orders in the name of the supreme commander⁹.

In Bârlad there were active: the Command of the Romanian First Army, led by Brigadier General Dumitru Stratulescu (13/26 November 1916 – 19 December 1916/1 January 1917), the General Headquarters of the Russian Fourth Army, led by General Alexandr Frantzevici Ragoza, whose command was established in Bârlad¹⁰, field hospitals¹¹, specialised military schools, different services and bodies, units under regeneration, a prisoner camp¹², a military airfield, the subsistence depots of the Romanian First Army¹³, the central ready-made clothes for the army workshop¹⁴ etc.

The presented situation resulted in the city overcrowding, which can be also deduced from a report of Major Constantin Petrovicescu¹⁵ to the Commander of the Great General Headquarters, dating on 9 December 1916, specifying that, “*because of the great number*

⁹ Petre Otu, *150 de ani de la naşterea mareşalului Constantin Prezan*, in *Document*, year XIV, no. 1 (51), 2011, p. 14.

¹⁰ http://www.historia.ro/exclusiv_web/general/articol/batalia-marasesti-unde-nu-se-trece

¹¹ In Bârlad and on the outskirts, there functioned, during the war period, numerous such institutions: the Evacuation Hospital no. 2, the Surgical Evacuation Hospital no. 9, Hospital no. 9, Hospital no. 112, Hospital no. 471, the Dental Prostheses Section in Bârlad, the Hospitals in the barracks in Bârlad (the Contagious Hospital no. 1), the French Campaign Hospital, the Convalescence Hospital – Zorleni (August 1916), the Hospital no. 6 and the Hospital of Mrs Cantacuzino – Tutova etc., *Album serviciu sanitar*, National Military Museum “*Regele Ferdinand I*” – Bucharest.

¹² Romanian Military National Archives (further, AMNR), Collection *Marele Stat Major – secţia prizonieri*, file 3/1916; County Service of National Archives (further, SJAN) Vaslui, Collection *Serviciul sanitar al oraşului Bârlad (1887-1951)*, file 7/1917; The camp in Bârlad was located, starting in 1916, in “*the depots of the 2nd Regiment*”. Dr Bogdan Negoii, *România şi lagărele de prizonieri în Primul Război Mondial*, Editura Tiparg, Craiova, 2011, pp. 76-77.

¹³ AMNR, Collection *Marele Cartier General* (further, MCG.), file 233/1916, f. 18, 32; the 1st Army has subsistence depots in Bârlad, having branches in Bereşti, Tecuci and Lascăr-Catargiu. Major General Ioniţă Botoş, Major General (r.) Matei A. Obrogeanu, *Intendenţa armatei române de-a lungul timpurilor*, Bucureşti, no publisher, 1992, p. 139.

¹⁴ *Ibidem*.

¹⁵ AMNR, Collection MCG, file 142/1916, p. 2.

In Bârlad there were active: the Command of the Romanian First Army, led by Brigadier General Dumitru Stratulescu (13/26 November 1916 – 19 December 1916/1 January 1917), the General Headquarters of the Russian Fourth Army, led by General Alexandr Frantzevici Ragoza, whose command was established in Bârlad, field hospitals, specialised military schools, different services and bodies, units under regeneration, a prisoner camp, a military airfield, the subsistence depots of the Romanian First Army, the central ready-made clothes for the army workshop etc.



of officers that have come in the garrison¹⁶, as well as of the refugees, the cantonment capacity of the city of Bârlad has been drastically reduced so that, currently, we can no longer count on any dwelling to house any officer” and, to remedy the situation, it was suggested to “arrange in the Professional School for Girls (that should be evacuated) several rooms to quarter the officers that are to come” and “to maintain in the local railway station (for accommodation needs, A.N.) the Great General Headquarters train”¹⁷.

The problem was also complicated by the fact that several cadres in the military structures were accompanied by their families and, in many cases, the position allowed them to issue claims about specific accommodation conditions. In a report in the autumn of 1917 related to the mentioned aspect in Iași, to the number of 373 cadres, including the members of the foreign missions¹⁸, there were added 230 members of their families¹⁹. Among the important personalities of the Romanian high command body, in December 1916, in Bârlad, there were accommodated: General Dumitru Iliescu²⁰ in the house of Th. Ioan²¹, General Constantin Prezan²² in the Royal Street (the Palade

¹⁶ For the entire structure of the Great General Headquarters in Bârlad, see *Ibidem*, file 449/1916, p. 618-624.

¹⁷ *Ibidem*, file 142/1916.

¹⁸ The British Military Mission included 16 upper grades and 14 lower ranks (drivers and officer servants); the Italian one – six officers, two NCOs and five soldiers; the Russian one – six officers and 15 lower ranks etc. *Ibidem*, file 761/1917-1918, p. 114.

¹⁹ *Ibidem*, p. 159-166.

²⁰ Brigadier General Dumitru Iliescu (1864-1940) was Deputy Chief (de facto leader) of the Great General Headquarters (25 October-5 December 1916). He was part of Ionel Brătianu circle. While Brătianu was the Chairman of the Council of Ministers, in 1914, he appointed Iliescu Secretary General of the Ministry of War and, in 1916, Chief of the Great General Headquarters. For more details regarding his life and activity, see Teofil Oroian, Gheorghe Nicolescu (coord.), *Șefii Statului Major General român (1899-2000)*, Editura Europa Nova, București, 2000, pp. 104-113.

²¹ Toma Dumitrescu, *Războiul național (1916)*, Petre Otu and Maria Georgescu (eds., foreword, notes, index), Editura Academiei de Înalte Studii Militare, București, 1999, p. 166.

²² Constantin Prezan (22 January 1861 Butimanu, Ilfov – 27 August 1943 Schinetea, Vaslui). After Romania entered the war (15 August 1916), he was the Commander of the 4th Army North (August-November 1916), Group of Armies “General Prezan” (12-20 November 1916), the Great General Headquarters (December 1916-April 1918) and the General Staff (October 1918-April 1920). For details, see, selectively, Teofil Oroian, Gheorghe Nicolescu (coord.), *Șefii Statului Major General român (1899-2000)*, op. cit., pp. 114-130; Viorica Zgutta, *Constantin Prezan Mareșal al României*, Muzeul Județean “Ștefan cel Mare” Vaslui, 2005; Petre Otu, *Mareșalul Constantin Prezan. Vocația datoriei*, Editura Militară, București, 2008; Colonel (r.) Ion Giurcă, *Generalul Constantin Prezan, șef al Marelui Cartier General român*, in *Gândirea militară românească* journal, no. 1/2011, pp. 188-202; Teodor Frunzeti (coord.), *Mareșali ai României*, Editura Rao, București, 2013; Dan Botez, *Constantin Prezan. Mareșalul datoriei*, Editura Scrisul Românesc, Craiova, 2014.

Residence), General Constantin Christescu²³ in the Palade Boulevard, Colonel Paul Angelescu, in the M. Kogălniceanu Street (in Dr Cerchez House), Colonel Ioan Rășcanu²⁴ in the same street etc.²⁵.

Periș, Buzău, Bârlad – the Deployment of the Great General Headquarters

At the beginning of the campaign in 1916, the Great General Headquarters was deployed in Periș and, then, during the withdrawal period, in Buzău, being located in the Communal Palace²⁶. The predictable defeat of the Romanian armed forces in the Battle of Bucharest resulted in the decision to move it to a place where there were more adequate conditions to command the ongoing operations²⁷. The Chief of the French Military Mission noted, in a letter sent to his sister-in-law, Louise, on 26 November/9 December 1916, the following: “We also left Periș, which I liked a lot, to come to a city called Buzău, where, anyway, we will not stay for a long period of time because, as soon as the Russians come here, the Romanian troops will start reorganising behind them. We will follow them, of course, to try to rebuild the army as soon as possible and to regain the land of the country, but I consider it will take at least three months to accomplish it”²⁸.

The activity of the Great General Headquarters in the mentioned location was short as, on 23 November/6 December 1916, in the evening, using the same procedure as for the deployment from Periș, the sections and bureaus together with the personnel and the materials were to be transported by train in Bârlad.

²³ General Constantin Christescu (2 December 1866, Catane, Argeș – 8/9 May 1922, Bucharest) was the Commander of the Romanian 1st Army till he was replaced with Eremia Grigorescu, by the King, in his capacity of the Armed Forces Supreme Commander. He was the Chief of the Great General Staff (1913-1914, 1918, 1920-1922). For details, see also Teofil Oroian, Gheorghe Nicolescu (coord.), op. cit., pp. 91-103; Adrian Stroea, Marian Ghinoiu, *Generalul Constantin Christescu. Seniorul artileriei române moderne*, Editura Militară, București, 2016.

²⁴ Ioan Rășcanu (1872-1952), General and politician, Mayor of Bucharest. In the neutrality period, he was the Chief of the Operations Section within the Great General Staff. In December 1916, he was appointed attaché to the French Great General Headquarters. During the war, he distinguished in the Battle of Mărășești, where he commanded a brigade. After the war, he was appointed Secretary General of the Ministry of War (1819-1919) and Minister of War in three governments. He resigned from the armed forces in 1922 for a political career.

²⁵ AMNR, Collection MCG, File 449/1916, p. 618.

²⁶ Constantin I. Stan, *Marele Cartier General la Buzău (noiembrie 1916)*, in “Străjer în calea furtunilor” journal, year X, no. 20, December 2016, p. 34.

²⁷ Ion Giurcă, Maria Georgescu, *Statul Major General Român (1859-1950). Organizare și atribuții funcționale*, Editura Militară, București, 2012, p. 127.

²⁸ General Henri Berthelot, *Memorii și corespondență 1916-1919*, Glenn E. Torrey (ed.), translated by Mona Iosif, Editura Militară, București, 2012, pp. 115-116.

In the context of the military campaign unfavourable evolution and the Triple Entente counteroffensive in the area of the Carpathian Mountains, especially on the Predeal-Bucharest direction, it was decided for two trains to be prepared for the deployment of the Great General Headquarters in another, yet not known, location. For example, the royal train, called *no. 2*, was composed of a safety wagon, a royal wagon, a restaurant wagon, a wagon for the suite, two second class wagons for the personnel, two wagons for the luggage, eight wagons for the automobiles, and three wagons for the troops²⁹.

The new location was considered safer, under the circumstances of the unexpectedly rapid advance of the enemy on the Prahova Valley. Moreover, Bârlad was considered appropriate, for military reasons, because of the convenient distance up to the alignment of the Romanian-Russian troops that were withdrawing, as well as of the possibility to maintain an optimal contact with them.

Alongside the Great General Headquarters was also General Berthelot, who wrote, in his memoirs, on 24 November/7 December 1916, that *“our train for Bârlad will leave at eight o’clock in the evening under the supervision illuminated by a flashlight of Colonel [Eracle] Nicolescu”*³⁰ and continued, the next day: *‘Arrival in Bârlad at seven o’clock. Installation during the morning in the high school building. Saharov was appointed the King deputy for the command of the Russian troops on the Romanian front. He has to install here too (and furthermore)’*³¹. The Russian General Zaharov did not seem to be in a hurry, arriving on 4/17 December³².

On 24 November/7 December 1916, in the evening, the Great General Headquarters was already installed in the building of the Normal

²⁹ Ion Giurcă, *Prezența Armatei Române la Iași în 1916-1917*, in *Orașul Iași. “Capitala rezistenței până la capăt (1916-1917)”*, op. cit., pp. 187-188.

³⁰ General Eracle Nicolescu (7 September 1872, Iași – 1940?) was the Chief of the Intelligence Bureau in the Great General Staff (April 1915 – August 1916) and the Chief of the Intelligence Bureau in the Great General Headquarters (August – December 1916). He was promoted to General in 1917. For further details, see also Florin Șinca, *File din trecutul poliției capitalei. Prefectura Poliției Capitalei în primul deceniu interbelic (1918-1930)*, in *“Poliția Capitalei”*, year XXIII, no. 439, March 2015, pp. 16-17.

³¹ General Henri Berthelot, op. cit., p. 114.

³² *Ibidem*, p. 121.

School³³, while Ferdinand I established his Royal Headquarters in Zorleni, in the building of *“Ferdinand”* Agricultural Orphanage (23 November/8 December 1916 – 25 March/7 April 1917³⁴).



Photo 1: King Ferdinand I attending a military parade in Bârlad, 6/19 December 1916, in Piața Domnească. From left to right: Colonel Eracle Nicolescu, General Siskievici, General Henri Berthelot, General Al.M. Beleaev, Prince Carol, King Ferdinand I³⁵.

The orphanage was far from the crowded and noisy city of Iași as well as from the thrill of the provincial town that became, almost overnight, the military centre of the remains of the Old Kingdom. The fact that King Ferdinand I established his residence in the village near Bârlad resulted in numerous political and military personalities gravitating towards the location³⁶.

³³ The building had ten classrooms of own training school, eight bedrooms, two laboratories, an amphitheatre, an auditorium, and two libraries, on a surface of about 6,500 m². In the location, there was the Hospital no. 112, and then the Great General Headquarters of the Romanian Armed Forces, subsequently the General Headquarters of the Russian Fourth Army, and then two more hospitals. The last vestiges were destroyed during the period of the communist regime, between 1957 and 1965-1967.

³⁴ Eugeniu A. Buhman, *Patru decenii în serviciul Casei Regale a României 1898-1940*, Cristian Scarlat (ed.), Editura Sigma, București, 2006, p. 189.

³⁵ From the collection of *“Vasile Pârvan”* Museum in Bârlad, Acta Musei Tutovens. *Memorialistică*, vol. III, 2018.

³⁶ Maria, Queen of Romania, *Jurnal de război (1916-1917)*, vol. I, Lucian Boia (ed. and forward), Editura Humanitas, București, 2014, pp. 250-256.



The Romanians were confronted with the problems generated by the difficult Romanian-Russian cooperation. Russia successively requested, through its representatives, the dissolution of the Romanian Great General Headquarters and its inclusion in the Russian one, the takeover of railway administration, and the withdrawal of the Romanian troops to be recovered on the territory of the Tsarist Empire.

The political dimension added to the military one as far as Bârlad was concerned. The stringent situations on the agenda of the King related to the rule of the country found their resolution there. An example in this regard was the crisis in relation to the Great General Headquarters command, which got manifest on two planes. One of them, which escalated, was the constant contestation of General Dumitru Iliescu, the Deputy Chief of the Great General Headquarters, authorised to lead it, following the suicide committed by General Vasile Zottu, and the second was related to the Romanian front command³⁷. In Bârlad it was decided to appoint General Constantin Prezan as Chief of the Romanian Armed Forces Great General Headquarters. The Romanians were confronted with the problems generated by the difficult Romanian-Russian cooperation. Russia successively requested, through its representatives, the dissolution of the Romanian Great General Headquarters and its inclusion in the Russian one, the takeover of railway administration, and the withdrawal of the Romanian troops to be recovered on the territory of the Tsarist Empire³⁸.

The important role played by Bârlad was also emphasised by I.G. Duca in his political memoirs as follows: *“The difficulties were so great (especially in the relations with the Russian Great General Headquarters, A.N.) so that the King rightly considered his presence indispensable at the Great Headquarters and, immediately after the Parliament was closed³⁹, came back to Bârlad or, more exactly to Zorleni, where he lived on his own estate, a few kilometres far from Bârlad. Brătianu himself was forced not only to stay in permanent contact with Bârlad but also to often go to the Great Headquarters”*⁴⁰.

The political and military decision-makers did not travel in only one direction, from Iași to Bârlad, but also from Bârlad to Iași, in different circumstances. The King, the Queen, as well as other categories

³⁷ Alin Spânu, *Serviciul de Informații al României în Războiul de Întregire Națională (1916-1920)*, Editura Militară, București, 2012, p. 81.

³⁸ For further details, see Ion Giurcă, *1916-1917. Un plan rusesc de evacuare ratat*, in *Document*, no. 1-4/2006, pp. 21-30; *idem*, *Armata română de la București la Mărășești 1916-1917*, Editura Militară, București, 2017, pp. 46-58.

³⁹ The Parliament session was opened on 9 December 1916, in the building of the National Theatre, and ended on 16 December. I.G. Duca, *Amintiri politice*, vol. II, Editura Jon Dumitru-Verlag, München, 1981, p. 103.

⁴⁰ *Ibidem*, p. 104.

of people went from one city to another. General Ion Rașcu met the Chief of the Great General Headquarters, his comrade, at the beginning of January 1917, in Iași⁴¹. The presence of General Prezan had been asked for – in *“the Capital of resistance to the end”* – by the government to align the positions, as it was agreed, on evacuating in Russia, more precisely in Bessarabia, a part of the authorities and the population. I.G. Duca stated: *“insisting, we had to call him in Iași and, in a council of ministers held in Greceanu’s house, to present, in detail, the arguments on which our decision was based”*⁴².

After such an agitated period, the political atmosphere became more relaxed and certain calmness was apparent in the first months of 1917. Regarding the mentioned period I.G. Duca stated: *“We did not have news from the Great Headquarters. Being still in Bârlad, we only knew that the armed forces were being reorganised, there was a cordial collaboration with General Berthelot and the relations with General Zaharov, the Russian troops Commander, although better, did not meet the expectations”*⁴³. Moreover, the fact that Barbu Știrbey was with the King, in Zorleni, resulted in the government *peace in Iași*⁴⁴, and General *“Prezan also renounced any hostile attitude, and the relations with us became not only correct but also cordial”*⁴⁵.

Also in Bârlad there was the Commander of the Russian army in Romania, Queen Maria noting discontentedly in her diary that: *“I still think that the placement of the Romanian General Headquarters and the Russian one in an already crowded city has not but made the situation more difficult”* (A.E.)⁴⁶. Not only the Queen was discontented but the majority of the ministers, because of the inherent difficulties related to the existence of two decision-making poles. On the one hand, the military decision-makers and the King were in Bârlad and in Zorleni respectively, while the Government, the Parliament

⁴¹ Alin Spânu, *Portretul generalului Constantin Prezan în jurnalul unui “Camarad de generație” – generalul Ion Rașcu*, in *Document*, year XIV, no. 4 (54), 2011, p. 10.

⁴² I.G. Duca, *Amintiri...*, *op. cit.*, p. 110.

⁴³ *Ibidem*, p. 129.

⁴⁴ Considering the fact that Știrbey supported Brătianu (his brother-in-law) and the government led by him. *Ibidem*, p. 116.

⁴⁵ *Ibidem*, p. 117.

⁴⁶ Maria, Queen of Romania, *Jurnal ...*, *op. cit.*, vol. I, p. 316.



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The winter of 1916/1917 was difficult from many perspectives: the extremely low temperature, the epidemic typhus, the number of refugees, the sustenance of about one million Russian troops and the low morale following the military defeats were some of the problems the Romanian authorities had to face. However, the main objective was the regeneration of the armed forces, from organisation and equipment to training and combat motivation. It was also possible due to the support of the French Military Mission that ensured the procurement of new types of weapons as well as the training in using them.

and the main institutions of the state were in Iași. During a consultation with the Queen, on 14/27 January 1917, *“the ministers declared that, as long as the General Headquarters is in Bârlad and no communication can be established, things are expected to go wrong, because of the lack in unity of action”*⁴⁷.

The Main Objectives of the Great General Headquarters Activity

The winter of 1916/1917 was difficult from many perspectives: the extremely low temperature, the epidemic typhus, the number of refugees, the sustenance of about one million Russian troops and the low morale following the military defeats were some of the problems the Romanian authorities had to face. However, the main objective was the regeneration of the armed forces, from organisation and equipment to training and combat motivation. It was also possible due to the support of the French Military Mission that ensured the procurement of new types of weapons as well as the training in using them.

The measures adopted by General Constantin Prezan in the first weeks after taking the command of the Great General Headquarters were aimed at enhancing the working style in the sections and bureaus to promptly meet the operational requirements at the beginning of December 1916, when the main task of the Great General Headquarters was to establish the areas of concentration for the army corps and divisions, grouping their troops, assets and materials. The beginning was represented by the changes in the personnel belonging to the Great General Headquarters, being appointed capable and honest people who distinguished during the recently ended campaign. One of the first appointments was that of Major

⁴⁷ *Ibidem*.



Ion Antonescu⁴⁸ as Chief of the Operations Bureau within the Great General Headquarters, position filled by him up to 1 April 1918. Another change affected the command of the military intelligence structure, where Colonel Eracle Nicolescu was replaced with his deputy, Lieutenant Colonel Nicolae Condeescu⁴⁹.

In that context, there were issued orders such as the one on 6 December 1916⁵⁰ and 22 December, called *Secret instructions regarding the armed forces reorganisation*⁵¹. The main objectives of the activity conducted by the Great General Headquarters up to March 1917 were to plan, organise, manage and coordinate the activities related to the armed forces reorganisation, and to outline the operational plan for the campaign in 1917⁵².

The British Captain J.D. Scale presented the situation, describing the atmosphere in the armed forces in a not exactly positive light, as follows: *“The cities as Iași and Bârlad are currently full of Romanian officers pompously dressed (...), who do nothing; some of them, undoubtedly, are on furlough, but the majority of them are absent from their units. Having such an example, simple soldiers can hardly be blamed if doing the same thing, and the villages are full of Romanian*

The main objectives of the activity conducted by the Great General Headquarters up to March 1917 were to plan, organise, manage and coordinate the activities related to the armed forces reorganisation, and to outline the operational plan for the campaign in 1917.

⁴⁸ Ion Antonescu (2/14 June 1882, Pitești – 1 June 1946, Jilava), General, Chief of the Operations Bureau within the Great General Headquarters of the Armed Forces during the First World War, Commander of the Superior War School (1931-1933), Deputy Chief of the Great General Staff delegated to manage that body (1933-1934), Minister of National Defence (1937-1938), and between 5 September 1940 and 23 August 1944, Chairman of the Council of Ministers and ruler of the state. He became Marshal in 1941. At the beginning of the Reunification War, he was Chief of the Operations Bureau within the 4th Army (North) and, following the appointment of Prezan as Chief of the Great General Headquarters, he became Chief of the Operations Bureau (5 December 1916 – 1 April 1918), taking the position over from Major Radu R. Rosetti. He was judged by the People’s Tribunal (April 1946) and sentenced to death for war crimes. For details regarding the role played in the First World War, see also Valeriu Florin Dobrinescu – Horia Dumitrescu, *Ion Antonescu și războiul reîntregirii neamului*, in *“Vrancea”*. Studii și comunicări, XI, 1997, pp. 91-92; Constantin Focșa, *Ion Antonescu și războiul de întregire a României (1916-1919)*, in *“Acta Moldaviae Meridionalis”*, tome XXXV, 2014, pp. 290-294; Teodor Frunzeti (coord.), *op. cit.*, pp. 298-356.

⁴⁹ General Nicolae Condeescu (17 February 1876, Coșereni, Ialomița – 11 July 1936, Urlați, Prahova) was the Minister of War between 14 April 1930 and 18 April 1931. For details, see: Alin Spănu, *Nicolae Condeescu, șeful Secției Informații din Marele Cartier General în Primul Război Mondial*, in *“Infosfera”*, year II, no. 4/2010, pp. 56-60; *idem*, *Serviciul...*, pp. 171-176.

⁵⁰ Order 3815, AMNR, Collection MCG, file, 253/1916, p. 19.

⁵¹ *Ibidem*, f. 49.

⁵² Ion Giurcă, *Generalul Constantin Prezan și realizarea obiectivelor războiului de reîntregire a României*, in the journal *“Studii și Comunicări”* of the Romanian Committee for the History and Philosophy of Science and Technology, the Romanian Academy, vol. IV, 2011, p. 254.



The Great General Headquarters coordinated not only the military operations but also the activities specific to obtaining information as well as to counterintelligence. During the Romanian armed forces regeneration and reorganisation, special attention was paid to a field in which the armed forces proved weak – intelligence and counterintelligence. The campaign in 1916 revealed the shortcomings in this field, which made possible Colonel Alexandru Sturdza treason.

soldiers who do nothing. I think that an order has been recently issued requiring all the Romanian soldiers and officers to immediately join their units, cancelling their furloughs and asking all those who are on medical leave, irrespective of the rank, to undergo an examination”⁵³.

The presented situation was a real one considering that, as far as the armed forces command was concerned, (21 December/ 3 January 1917), it was found that, in spite of the numerous orders and dispositions, “there are still many officers and soldiers who wander in cities and villages, in stations and in the streets”. In this regard, strict orders were issued requiring all officers and soldiers to be present in their posts within a five-day period. Furthermore, the document emphasised that “only those lacking in consciousness, heart and will can still wander through the country. Only those who did not want to know did not know where the body (the military unit, A.N.) was”⁵⁴.

In the context of the mentioned problems, General Constantin Prezan, in his capacity of Chief of the Great General Headquarters, following the Battle of Neajlov-Argeș, took the first measures to reinstate discipline, requesting for a group of officers to be sued for inappropriate behaviour. Colonel Constantin Caracaș and General Alexandru Socec were part of the group. As I.G. Duca appreciated, an example was necessary, and Prezan “did a great service to the army, its discipline and morale, by the particular condemnation”⁵⁵. Through such actions, the Commander of the Great General Headquarters established order in an army affected by the withdrawal and the hardships of the refuge in Moldavia, and the victories in the summer of 1917 generated respect and eulogistic appreciations among our allies and worldwide.

The Great General Headquarters coordinated not only the military operations but also the activities specific to obtaining information as well as to counterintelligence. During the Romanian armed forces regeneration and reorganisation, special attention was paid to a field in which the armed forces proved weak – intelligence and

⁵³ Gh. Clapa, *Bărlădenii în războiul pentru întregirea neamului, în Bărladul odinioară și astăzi. Miscelaneu*, vol. I, București, 1980, pp. 134-135.

⁵⁴ AMNR, Collection MCG, file 469/1916, p. 9.

⁵⁵ I.G. Duca, *Memorii*, op. cit., p. 163.

counterintelligence. The campaign in 1916 revealed the shortcomings⁵⁶ in this field, which made possible Colonel Alexandru Sturdza treason⁵⁷.

To counter the effects of the shortages, actions were conducted to consolidate and enhance the performance in the field of intelligence and counterintelligence. In relation to Bărlad, on 20 February 1917, General Prezan approved the “Instructions on the Organisation and Functioning of the Intelligence Service”⁵⁸, developed and issued by the Great General Headquarters – the 1st Section – the Intelligence Bureau, which represented the first regulation in the field in the Romanian Armed Forces. In the regulation there were stipulations regarding the organisation of such a service from the level of the Great General Headquarters to the one of regiment, as well as the responsibilities, methods and means of obtaining information⁵⁹.

Another element of novelty was represented by the establishment of a new structure, called the “Secret Service”, having intelligence and counterintelligence responsibilities, directly subordinated to the Great General Headquarters⁶⁰. At the end of 1916, it was established the Romanian-Russian Special Security Service, having counterintelligence

⁵⁶ Alin Spănu, *Serviciul...*, op. cit., p. 94.

⁵⁷ Colonel Alexandru Sturdza (23 May 1869 – 28 September 1939, Zurich) attended the Military School in Germany, coming back to the country on 18 April 1892. Military attaché in Paris (1907-1910), Professor and Director of the Military Officer Candidate School, capacity in which he authored several manuals. Promoted to the rank of Colonel on 1 December 1914, when Romania entered the war, he was appointed Commander of the 7th Mixed Brigade. Following treason, he remained in Bucharest, in the Germans service, and left for Germany on 19 March 1918. He remained there up to 1938, when he settled in Switzerland, working as a clerk in a bank and as a teacher in a private school. Alin Spănu, *Serviciul...*, note 258, pp. 94-95. For details regarding his case, see: Paul Ștefănescu, *Istoria serviciilor secrete românești*, Editura Divers Press, București, 1994, pp. 54-57; Cornel Ilie, *Trădarea colonelului Sturdza*, in “*Historia*”, no. 4 (64)/2007, pp. 3-7; Petre Otu, *Mareșalul Constantin Prezan. Vocația datoriei*, Editura Militară, București, 2008, pp. 121-128; Petre Otu, Maria Georgescu, *Radiografia unei trădări. Cazul colonelului Alexandru D. Sturdza*, Editura Militară, București, 2017.

⁵⁸ The document actually sketched, for the first time, the doctrine for obtaining information having a military character. For details, see *Marele Cartier General, Secția I, Biroul Informații, Instrucțiuni asupra organizării și funcționării Serviciului de Informații*, Iași, 1917.

⁵⁹ Other details regarding the instructions referred to: the conduct of the intelligence activity and the information manipulation; the responsibilities of the personnel working in the field of intelligence; the more exact establishment of the aviation reconnaissance missions; the coordination of the secret agents activity, http://www.historia.ro/exclusiv_web/general/articol/spionajul-rom-nesc-n-primul-r-zboi-mondial

⁶⁰ Alin Spănu, *Generalul Constantin Prezan – Organizatorul serviciului de informații al armatei în războiul de întregire*, in *Document*, year XIV, no. 1 (51)/2011, p. 18.



Prezan had also the great idea to found, in December 1916, a daily newspaper of the Great General Staff, to be sent not only to the combat troops on the battlefields but also to the population in Moldavia that was affected by the war deficiencies and sufferings. It was intended to counter the German propaganda and "to increase the troops and the civilian population morale, seeking to dispel the venomous infiltrations of the spies and newsmongers". Lieutenant Mihail Sadoveanu, being detached in December 1916 to the Great General Headquarters, was given the task of editing it (Editor-in-Chief – Octavian Goga).

responsibilities⁶¹ in the field of operations and behind the front, considering that, on the territory of Romania, there were four Russian armies, therefore the intelligence and counterintelligence collaboration became mandatory⁶².

The Police and General Security Directorate also established some special brigades in Roman, Bârlad, Tecuci, Piatra-Neamț, Vaslui. There were 73 agents in the field of intelligence only in the central security bureaus in Iași. It was a difficult activity, as it was first suspected and then confirmed that the number of those who worked for the enemy was already large⁶³, a proof being also a list containing the names of 33 spies sentenced to death, published on 31 May 1917⁶⁴.

Prezan had also the great idea⁶⁵ to found, in December 1916, a daily newspaper of the Great General Staff, to be sent not only to the combat troops on the battlefields but also to the population in Moldavia that was affected by the war deficiencies and sufferings. It was intended to counter the German propaganda and "to increase the troops and the civilian population morale, seeking to dispel the venomous infiltrations

⁶¹ In Article 1 of the Regulation of functioning it was stipulated the necessity for collaboration between the Romanian counterintelligence bodies and the Russian ones, not only to counter the enemy espionage actions but also to discover any crimes committed against the two countries armed forces. Information related to the organisation and functioning of the structure can be also found in: Horia Brestoiu, Vasile Bobocescu, *Momente din activitatea organelor de ordine, informații și contrainformații românești în perioada 1878-1918*, Ministerul de Interne, Serviciul Editorial și Cinematografic, București, 1979, pp. 220-226; Cristian Troncotă, *Istoria serviciilor secrete românești. De la Cuza la Ceaușescu*, Editura "Ion Cristoiu" S.A., București, 1999, pp. 66-69; *idem*, *Istoria Serviciilor de Informații*, fascicule I (1850-1918), Editura ANI, București, 2002, pp. 51-53; Pavel Moraru, *File din memoriile unui ofițer de informații român din timpul Primului Război Mondial*, in "Revista Transilvania", no. 2009, pp. 65-74.

⁶² Alin Spânu, *Serviciul...*, op. cit., p. 101.

⁶³ Constantin Gheorghe, Milina Șerban, *Ministerul de interne (1862-2007). Mică enciclopedie*, Editura Ministerului Internelor și Reformei Administrației, București, 2007, pp. 180-181.

⁶⁴ Alin Spânu, *Serviciul...*, op. cit., p. 97.

⁶⁵ Traian Nicola, *Valori spirituale vasluiene. Biobibliografii*, vol. II, County Museum "Ștefan cel Mare", Vaslui, 2001, p. 176.

of the spies and newsmongers"⁶⁶. Lieutenant Mihail Sadoveanu⁶⁷, being detached in December 1916 to the Great General Headquarters, was given the task of editing it (Editor-in-Chief – Octavian Goga⁶⁸). The newspaper appeared in Iași, in the spring of 1917, under the name "România – organ al apărării naționale"⁶⁹.

Many of the various military institutions temporarily or permanently moved to Bârlad. Alongside the Great General Headquarters, it functioned, between 21 December 1916 and 1 April 1917, a T.F.F. station⁷⁰ to ensure the communications with the military units, commanded by Captain Nicolae T. Petrescu. In Bârlad, the French Military Mission (25 November/8 December 1916 – 26 February/11 March 1917) had its own T.F.F. Service (including a radio-goniometry station), as well as

⁶⁶ Ionel Bostan, *Căpitanul Sadoveanu și Marele Cartier General*, in "Curierul armatei", no. 36 on 27 June 2016.

⁶⁷ Mihail Sadoveanu (5 November 1880, Pașcani – 19 October 1961, Vânători-Neamț), Romanian writer, academician and politician. Mobilised, on 15 August 1916, as lieutenant – once Romania entered the war –, he worked on censorship, in Bucharest, until winter holidays, when he was called to the 16th Infantry Regiment, Suceava, in order to be sent to the front. However, another order sent him to the Great General Headquarters, in Bârlad, where his duty was to found and manage the newspaper "România", official publication of national defence. For details, see: Virginia Mușat, *Mihail Sadoveanu, povestitor și corespondent de război*, Editura Militară, București, 1978; *Prezențe militare în știința și cultura românească*, Editura Militară, București, 1982, pp. 248-250; Mr. (r.) Gheorghe Diaconescu, *Locotenentul Mihail Sadoveanu – corespondent de război*, in *Armata română și patrimoniul național*, Editura Centrului Tehnic-Editorial al Armatei, București, 2010, pp. 507-512.

⁶⁸ Regarding the newspaper, a great cultural personality of the time, Onisifor Ghibu, remembered the words of Octavian Goga: "You must know that the thought to leave with you in Bessarabia cannot materialise. The day before yesterday General Prezan, who is the supreme commander of the armed forces, a well-intentioned man as well as an enlightened one, called me (in Bârlad, A.N.) as he decided, under I do not know what circumstances, to establish, at the Great General Headquarters, whose leader he is, a daily newspaper, to be sent to the front, in the first line, and to also meet the needs of the Romanian souls behind the front. I was appointed as director of this newspaper, which will have the name România". Onisifor Ghibu, *Amintiri despre oameni pe care i-am cunoscut*, Editura Dacia, Cluj-Napoca, 1974, pp. 130-131.

⁶⁹ Ionel Bostan, op. cit., in loc. cit.

⁷⁰ <http://www.bucurestivechisinoi.ro/2014/09/deci-unde-era-statia-t-f-f-baneasa/>

a Meteorological Service⁷¹, led by engineer Ferraud⁷²; moreover, it was a French campaign hospital.

There were also other military structures in the city as follows: the Railway Regiment⁷³, the 3rd Pioneer Battalion/3rd Army Corps⁷⁴, the Volunteer Motorist Corps⁷⁵, the Automobile Regiment – having cars as well as a repair section⁷⁶, the Cavalry School Bârlad⁷⁷, the Artillery

⁷¹ As for the meteorological service in Bârlad, important information is offered by a text written in August 1917, by the one who was to become a well-known physicist, Ștefan Procopiu: *The French Mission in Bârlad, during the war, had as services wireless telegraphy, meteorology and aviation aerology. In Bârlad, the French Mission had two own services:*

1. *Wireless telegraphy and a radio-goniometric station. The station was installed on the estate of Madame Davidoglu. The station consisted of a 25-metre high pole, with wires and an antenna, and an indoor installation, a French-Italian invention, serving to receive the allied and enemy telegrams, and especially to know the direction the telegram came from; that is why the name goniometric.*

2. *The aviation meteorological and aerologic service was aimed at:*

a) *forecasting the weather, especially the direction of the wind for the next day.*

b) *measuring the direction and speed of the wind for the superior strata of the atmosphere up to 10,000 metres.*

*They served the aviators to know when to lift, to avoid whirlwinds etc. Moreover, they served the heavy artillery to correct the variables when launching cannonballs. The service was installed in Mrs Davidoglu's house, in a former kitchen. Part of the devices were brought from Bucharest and part of them from France: barometers, thermometers, hygrometers, weathervanes, as well as air probes: balloons, compressed hydrogen tubes for inflating balloons, and a theodolite (the telescope with which the air balloon is being studied, and from which wind speed and direction are calculated); The service meant to send meteorological telegrams to the aviation corps in Tecuci, Calmățui etc. Meteorology in Bârlad and the French meteorological service were the first of the type in Romania and, after the war they served as model for similar services in other cities in the country. I. Antonovici, *Documente bărlădene*, vol. V, *Diverse*, Atelierele Zanet Corlăteanu, Huși, 1926, pp. 301-302.*

⁷² *Ibidem*, p. 301.

⁷³ Mihai-Costache Humă, *Mărirea și decăderea armeei căi ferate*, in *Document*, 1(47)/2010, p. 36; see also: <http://hercaud.free.fr/acmcfp/istoric.htm>

⁷⁴ <https://republica.ro/acum-100-de-ani-intram-in-primul-razboi-mondial-un-razboi-pe-care-l-am-pierdut-zdrobitor>

⁷⁵ *"All car owners were mobilised with their cars, receiving the order to be present at the Great General Headquarters, located in Bârlad".* Matila Ghyka, *Curcubeie*, 2nd ed., Editura Polirom, Iași, 2014, p. 311. The different military structures reorganisations did not result in relocating the Command Centre of the Voluntary Motorists Corps from Bârlad, as, in an order issued by the GGH on 11/24 December, it was specified: *"The VMC and its Command will remain in Bârlad"*. AMNR, Collection M.C.G., file 233/1916, p. 27.

⁷⁶ In Bârlad it also functioned the 1st Repair Park of the Automobile Regiment, SJAN Vaslui, Collection *Primăria orașului Bârlad*, file 2/1917, p. 32.

⁷⁷ AMNR, Collection MCG, file 759/1917, p. 291-292.

Training Schools (1917)⁷⁸, the Military Artillery and Engineer School⁷⁹ and military depots⁸⁰ etc.

Between 3/16 October 1916 and March 1917, General H.M. Berthelot was permanently alongside the Romanian Great General Headquarters, in Periș and Buzău, then in Bârlad. Knowing the preparations that were made in Bârlad for the deployment of the Great General Headquarters in Iași, on 24 February/9 March 1917, H.M. Berthelot noted: *"Yesterday, Saharov told me that, given the fact that the King had to often go to Iași, he considered deploying the general headquarters there. Prezan agreed with it. Under such circumstances, I will be installed there too"*⁸¹.

Although, up to the beginning of 1917, the presence of the Great General Headquarters in Bârlad and Zorleni was not an impediment to conducting the activities related to the armed forces reorganisation, the preparations for the campaign in the summer of 1917 required its deployment near the area where the military large units were concentrated. Moreover, the split between the two poles of political and military leadership generated difficulties in communication. To the mentioned aspects, security aspects were added, Bârlad being situated in an area where the large units of the Russian 6th Army were deployed⁸².

Under such circumstances, it was decided, since December 1916, to move the Great General Headquarters in Iași. On 11/24 December, Berthelot noted: *"It is spoken about deploying the Great General Headquarters in Iași, the King having to daily monitor the activity*

⁷⁸ Oltea Rășcanu-Gramaticu, *Bărlădeni în Războiul de Reîntregire a Neamului (1916-1918)*, in *"Acta Musei Tutovensius"*, IX-X, 2014, p. 276.

⁷⁹ For a short period of time, at the end of 1916, where it was regrouped. *"Manuscriptum"*, vol. 14, 1983, p. 93; Mircea Coloșenco, *Ion Barbu-Dan Barbilian. Biografie documentară (1864-1925)*, Editura Minerva, București, 1989, p. 166; Theodor Codreanu, *Ion Barbu la Huși, în Batalionul 202 apărare C.B.R.N. (Intervenții la dezastră din Huși). 60 de ani de la înființare*, volume coordinated by Costin Clit and Mihai Gheorghiu, Editura Pim, Iași, 2010, p. 93.

⁸⁰ V. Costan, *Istoricul garnizoanei Bârlad, in mss.*; Marcel Proca, *op. cit.*, pp. 149-150.

⁸¹ General Henri Berthelot, *op. cit.*, p. 155. previously, Berthelot wrote to his nephew, Georges: *"Maybe I will not stay here for a long time. The General Headquarters will be surely moved to Iași within the next week. The King is already there; Saharov is installing there on Saturday; as for me, I will leave this place on 11 March, in the afternoon, but I will stay in Vaslui for three days to see the divisions belonging to the 5th Army Corps, which are regenerating there alongside the Romanian artillery"*, *ibidem*, pp. 154-155.

⁸² Ion Giurcă, Maria Georgescu, *op. cit.*, p. 138.

of the ministers and the political decisions”⁸³. In a telegram on 7/20 February 1917, Dr Ioan Cantacuzino⁸⁴ emphasised that it was impossible to evacuate the School Sf. Sava and the Military High School to make room for the Great General Headquarters⁸⁵, the situation being delayed for the beginning of March.

Around the period of deployment to Iași, on 10 March 1917, the Great General Headquarters Command requested the Bârlad Garrison to intervene to persuade *“one of the hospitals in the garrison to receive, if necessary, troops belonging to the 1st Echelon of the Great General Headquarters, out of those that remained with the horses in the garrison, in the event they got ill”*⁸⁶.

For the deployment of the Great General Headquarters four trains were used, having 148 wagons, for passengers and materials, as well as platforms. The wagons were loaded and the passengers were embarked during daytime, but the transport from Bârlad to Iași was executed during the night, between 19.00 and 5.00. In an address to the Police in Bârlad, on 11 March 1917, it was requested: *“tomorrow, 12 March, at 7.00 o’clock, 30 carts should be sent to the Great General Headquarters to transport the baggage to the railway station. The carts will be as solid as possible, being accompanied by men to load and unload them. People will have the necessary food for a day and they will come regularly till the entire general headquarters leave. Moreover, a hansom will be sent, having two horses that will be regularly changed every six hours”*⁸⁷.

In the documents related to the operation preparation, developed under the coordination of General Constantin Christescu, it was

⁸³ Generalul Henri Berthelot, *op. cit.*, p. 126.

⁸⁴ Ion Cantacuzino (1863-1934), renowned doctor and bacteriologist. He led the military and civilian services during the First World War.

⁸⁵ *“The situation of the ill people in Iași is getting increasingly frightening. Hospitals are overcrowded and it is no room for any ill person. Evacuating “Sf. Sava” School and the Military High School for the Great General Headquarters means leaving 1,800 dying people in the street from one day to another. On my own responsibility I have prevented the evacuation. There are hundreds of ill and hungry people arriving daily. For the immediate construction of the barracks in Iași, please give very serious orders for sending here at least two trains composed exclusively of wooden material, guarded by gendarmes. If it is not urgently executed, the situation can become desperate”*. AMNR, Collection MCG, file 759/1917, p. 278.

⁸⁶ *Ibidem*, p. 374.

⁸⁷ *Ibidem*, p. 383.

specified: *“The transport of the materials and the baggage to the Railway Station Bârlad will be executed with the trucks and carts requisitioned for this purpose”*⁸⁸.

The insufficient number of means of transport resulted in staging the process, in the period between 12/25 and 15/28 March 1917, the 1st echelon occupying the building of the Military High School, where the bureaus of the sections were installed and part of the officers were accommodated. The 2nd echelon of the Great General Headquarters remained in Bârlad, despite the disadvantages in military terms⁸⁹.

The location of the Royal Headquarters in Zorleni and of the Great General Headquarters in Bârlad in the months of great trials of the Romanian nation at the end of 1916 and the beginning of 1917 resulted in the importance played by Bârlad for a short period of time, greater than its size, as a military and political decision-making centre, it acquiring, by force of circumstances, the status of the *military capital* of Romania that was not occupied by the enemy.

Moreover, the aspect is also underlined in a document of Bârlad Hall, on 26 July 1918, in which the town contribution to the war was analysed, it being appreciated as *“the second capital of Moldavia, following Iași”*⁹⁰ (A.E.): *“it was fully demonstrated in the most difficult moments, when our town became and managed to be the most important liaison point, transition point, to and fro the battlefield, depot for ammunition, food and feed, shelter for refugees, headquarters of the most important Romanian and Russian military administrative bodies, as well as the headquarters of the numerous Russian troops”*⁹¹.

Conclusions

Between November 1916 and March 1917, Bârlad became a military base and a political factor, regarded as a real military capital of the unoccupied part of Romania. Here there were the Romanian Great General Headquarters and its Russian counterpart for the troops sent on the Romanian front, as well as the Great Royal Headquarters, situated in Zorleni, at the personal property of King Ferdinand.

⁸⁸ *Ibidem*, file 756/1917, p. 256.

⁸⁹ Ion Giurcă, *Prezența...*, *op. cit.*, p. 191.

⁹⁰ SJAN Vaslui, Collection *Primăria orașului Bârlad*, file 2/1919, p. 6.

⁹¹ *Ibidem*, p. 1.

Throughout that period, the city of Bârlad had to face some limit situations, becoming an important shelter not only for the military institutions and the royal family but also for the civilians, the population of Bârlad suddenly getting two or three times larger, namely from 26,500 to over 60,000 inhabitants⁹², the hospitality of the local population being put to a hard test.

Therefore, I appreciate that Bârlad, although it did not have the first rank position of Iași, deserves being celebrated for its contribution to building the national history. Undoubtedly, there would be much to write about Bârlad, as a city that played an important role during the Reunification War. Mention should be made that it was the place where King Ferdinand I found temporary shelter, where the most important military institutions were deployed, where the armed forces were partially reorganised⁹³, and where the preparations for the great victories in 1917 were made!

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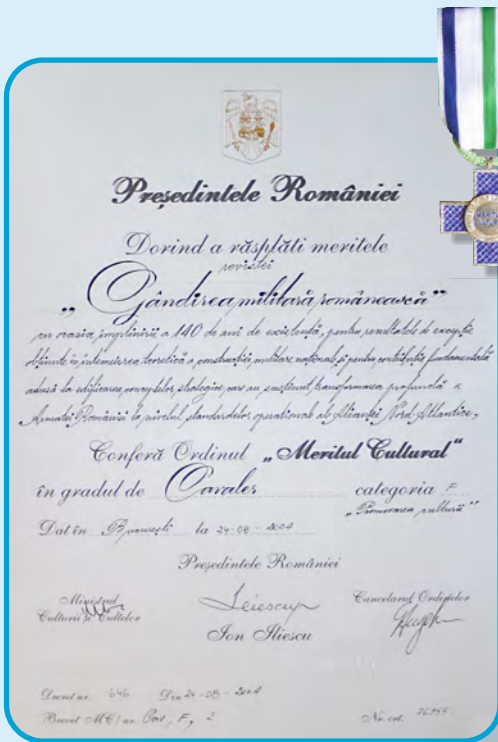
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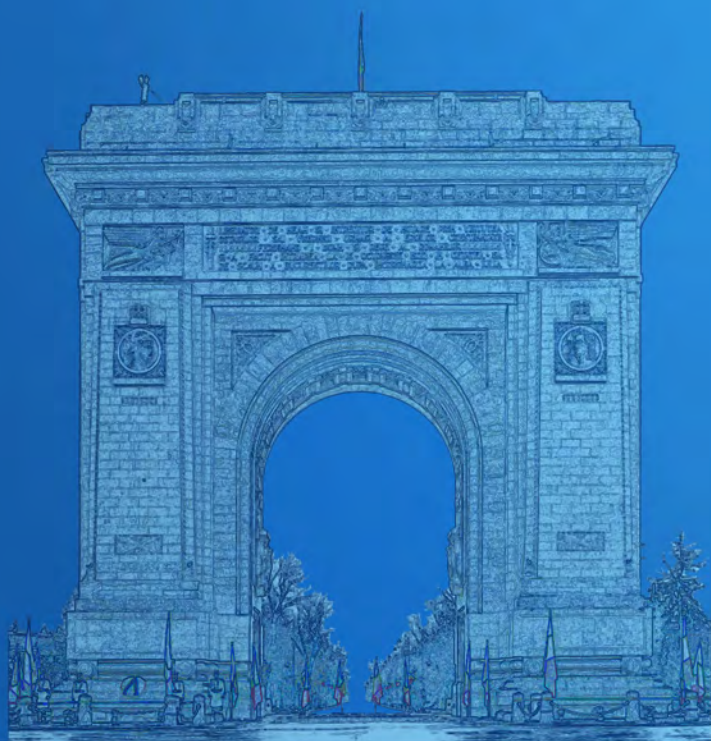




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