



## ADAPTATION OF MILITARY CAPABILITIES TO THE REQUIREMENTS OF THE OPERATIONAL ENVIRONMENT – CURRENT AFFAIRS AND PERSPECTIVES

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*The realities of the contemporary operational environment, which, given the nature of the actors, conditions and circumstances, manifest themselves in a well-defined space, directly and fundamentally influence decisions and the use of military capabilities. Identifying the key features of the operational environment, understanding and anticipating the evolutionary trends of these features are essential conditions for military planners to design successful military operations that respect the principle of sufficient use of military force. The continuous changes in the operational environment require a reaction both in terms of concept, but, especially, in terms of action, to adapt the military capabilities and, implicitly, the operational concepts to the new challenges. In this context, shortening the duration of the adaptation of strategies, doctrines, tactics, techniques and procedures used in military actions to the maximum becomes imperative and must be at the same time anticipatory, and employing scientific tools to achieve an appropriate correlation between the structure of forces and missions is an unequivocal necessity.*

*Keywords: operational environment; operational concepts; planning; military operations; military capabilities;*

## INTRODUCTION

The challenges of the current operational environment, particularly complex in terms of the many variables and subvariables that characterise it, generate major conceptual and actional changes in terms of the use of military forces to resolve conflicts. This phenomenon requires a tailored reaction not only in terms of technology but especially in terms of military leadership that must promote the most effective solutions that can counteract even the technological advantage of the opponent.

The international security environment is constantly changing. New threats to the Euro-Atlantic area appear more and more frequently, and the North Atlantic Alliance, the European Union, the United Nations, the Organization for Security and Cooperation for Europe, as well as other organisations whose main responsibility is to defend security and create a stable security environment, are constantly fighting these threats.

Ensuring the success of this fight can be achieved by understanding the increasingly complex operational environment amid profound changes in the political, social, and economic environment of the recent decades and against the background of the advanced technologies that create new challenges for all forces with responsibilities in the field of defence and of national, regional and global security. The current operational environment appears increasingly ambiguous and more complex than ever, and the traditional military methods of training and action require a new approach.

The characteristics of the operational environment, generated by many interconnected variables and subvariables, which also include the relationships and interactions between them, greatly influence the manner of conducting military actions and are therefore a key element of analysis for military planners.

Stemming from the analysis of conflicts in recent decades, the trends in the current operational environment determine a new approach

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to the development of military capabilities, of the process of planning, organising and conducting military actions, and of the ways to achieve victory in the new circumstances imposed by the realities of the battlefield.

This article is intended as a starting point for elucidating the complexity of current and short-term challenges, to enable the development of the skills needed to counter the identified threats and achieve the right combination of capability systems and force training. Such a system must be well adapted to the operational environment in which the forces operate and should respond to their real needs.

The future operational environment requires operational adaptation by the military. Agile and innovative leaders must be trained to lead the full spectrum of military operations. Knowing the characteristics of the future operational environment and understanding how it evolves is the foundation for developing appropriate capabilities and training programmes. Success is guaranteed by the construction and operationalisation of forces capable of acting in any environment, which is very difficult to achieve.

Success is for those who possess the skills to act, react and adapt at high speed and with creativity. Enemies learn quickly and can change, although sometimes accidentally and incompletely, which makes it difficult to fight “new” skills. Opponents will continue to be adapted in terms of using all available power sources at their disposal. This is why it is very important to correctly and deeply understand the challenges generated by the operational environment, to counter new threats. We must find the most effective solutions for the correct design/sizing of military capabilities that will be engaged in conflict or for the maximum exploitation of the available ones, in a unified conception and by adopting an appropriate leadership to cope with the new threats.

Against this backdrop, the training of agile and innovative leaders, able to adapt tactics, techniques and procedures to the requirements of the contemporary operational environment, becomes a priority that will find its essence in appropriate training programs. Success on the battlefield must be consolidated by developing military capabilities in line with the new missions.

For the analysis of the environment in which military actions take place, operational variables best describe the context of operations for the commanders, as they have the opportunity to identify and consider the dynamics of their evolution to create an overview of the situation and act accordingly. By using correctly identified methods to analyse the operational environment, commanders have the opportunity to develop a concept of using military capabilities through which they can ensure their success with minimal effort and high effectiveness.

The current tactical actions highlight the special importance in the relationship field-characteristics-requirements and the need for a continuous adaptation to the challenges of the operational environment of confrontation. Complex missions require the action structures to have real and multiple possibilities for a real action autonomy, continuous improvement aimed at versatility, manoeuvrability, high pace of action, combined or modular capacity, mobility with a status similar to elite units, that can be used both in modern confrontations and in territorial clashes. Increased cohesion of tactical structures and their combat effectiveness are the effects of advanced technologies that support the endowment of small but very mobile troops with all the means necessary to carry out combat missions placed in the reference spectrum of modern operational environment independently and in isolation.

### THE IMPORTANCE OF ANALYSING THE OPERATIONAL ENVIRONMENT IN DESIGNING MILITARY ACTIONS

The international security environment is constantly changing, and the current operational environment presents significantly more dangerous and far-reaching challenges for the military than those encountered in Iraq and Afghanistan. Major regional powers such as Russia, China, Iran and North Korea are actively seeking strategic advantage. These nations and other adversaries can limit US freedom of action in air, land, sea, space and cyberspace and reduce the Americans' influence in critical areas of the world (Grigoraş, 2017, p. 7).

To achieve effective preparedness for military action in response to the challenges of the beginning of the millennium, the fundamental nature of planning and planning needs to be analysed in depth.



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*Operational design is a creative process, during which the basic idea of the commander (vision) is created – how the operation will be carried out, what military conditions must be created in the operational area to achieve strategic objectives, how these activities must be organised over time, space and purpose for achieving these conditions and what military capabilities and resources can be used to create these conditions.*

Therefore, the planner must have a multilateral understanding of the objectives of the operational environment and the characteristics of the planning process, as well as the object and features of the final planning products.

The Allied Joint Publication AJP-5 (Allied Common Doctrine for Operational Planning) defines operational planning as “*Strategic, operational and/or tactical planning of military operations for the design, conduct and support of major campaigns and operations*”. According to the AJP-5, there are eight basic stages of the OPP during which the commander and his staff develop the operational plan for conducting a military operation. Step 1 – Initiate the planning process and step 2 – Sampling and mission analysis is the most common periods in which the ODC is intentionally used. In these two steps, as part of the entire planning process, operational design takes place (NATO Standardization Office, May 2019, p. 63).

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The operational design allows the commander and staff to observe the situation in the operating environment from several perspectives. It allows the creation of a strategy of ideas to operate changes in the current situation in terms of achieving the desired end state. This cannot be done without a deep knowledge of the operational environment of conflict.

The operational environment is the combination of conditions, circumstances and influences that will determine the use of military forces and help the unit commander make decisions.

An operational environment consists of numerous interconnected variables and subvariables that will also include the relationships and interactions between them. Operational variables include not only

the military aspect of an operational environment but also the influence the population has on it.

Commanders at all levels have their operational environments for operations specific to areas of responsibility. An operational environment for any specific operation comprises more than the interacting variables that exist in a given physical area. It also involves interconnected influences from a global or regional perspective (e.g. politics and economy) that affect the conditions under which operations take place there. Thus, each operational environment of a commander is part of the operational environment of a senior commander.

Military planners describe the conditions of an operational environment in terms of operational variables. Operational variables are those aspects of an operational environment, both military and non-military, that may differ from one operational area to another and may affect military operations. Operational variables describe not only the military aspects of an operational environment but also the influence of the population on it.

Today's advanced technologies have a significant impact on the operational environment, as all of the above-mentioned factors are subject to attack by physical, cyber, and electronic means or a combination of any or all. In this context, adaptability is very important, because with the evolution of technology, military capabilities that operate according to an "old model" no longer correspond to the characteristics of the operational environment, which is constantly changing.

Operational environments include considerations at the strategic, operational, and tactical levels of warfare. At *the strategic level*, leaders develop an idea or set of ideas for using the tools of national power (diplomatic, informational, military and economic) in a synchronized and integrated way to achieve national goals. *The operational level* links the tactical deployment of forces at national and international level and military-strategic objectives, with an emphasis on the design, planning and execution of operations using operational art. *The tactical level* of war involves the orderly engagement of forces concerning the adversary. These three levels help commanders to make a logical arrangement of forces, allocate resources and assign tasks based



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on strategic objectives and coherent information about the conditions in their operational environment.

Broad trends such as globalisation, urbanisation, technological progress and underdeveloped countries are factors influencing the operational environment. These trends can create instability and nurture an environment of persistent conflict.

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Understanding how threats in different areas of state power manifest themselves helps commanders to identify (or create), seize, and exploit their opportunities during a military operation. Modern information technology makes the informational environment, which includes cyberspace and the electromagnetic spectrum, indispensable for military operations. The information environment is used by people, organisations and systems that collect, process, disseminate or act on information. It is an essential part of any operational environment and will be disputed and challenged during operations. All actors in the information environment – enemies, friends, hostile or neutral - are vulnerable to physical, psychological, cyber or electronic attacks.

There are no two identical operational environments. An operational environment consists of several relationships and interactions between interdependent variables. How entities and conditions interact in an operational environment is often difficult to understand and requires an ongoing analysis.

An operational environment is constantly evolving due to the complexity of human interaction and the way people learn and adapt. People's actions alter that environment. Some changes are anticipated, while others are not. Some changes are immediate and obvious, while other changes evolve or are extremely difficult to detect.

The complex and dynamic nature of an operational environment makes it difficult to determine the cause-and-effect relationship

and contributes to friction and uncertainty that are inherent in military operations. Commanders must constantly evaluate their operational environments and re-evaluate their assumptions.

The operational environment evolves as each operation progresses. Army leaders use operational variables to analyse and understand a specific operational environment and use mission variables to focus on specific elements during mission analysis.

For each operation, threats are a fundamental part of the operational environment. A threat is any combination of actors, entities or forces that have the capacity and intention to negatively influence military forces or national interests. Threats may include individuals, organised or unorganised) groups of people, paramilitary or military forces, nation-states or national alliances. Commanders and personnel must understand how current and potential threats affect their organization, equipment, and training and engagement of forces. They need to constantly identify, monitor and assess threats as they adapt and change over time.

Generally, different actors in any operational area can be qualified as enemies, adversaries, neutrals or friends. An enemy is an entity identified as hostile against which the use of force is authorised. An enemy is also called a combatant and is treated as such under the law of war. Enemies will use advanced technologies (cyber attacks), as well as simple, dual-use technologies (such as improvised explosive devices). An adversary is an entity recognised as potentially hostile and against which the use of force may be foreseen. In combat operations, a neutral is an identity applied to an entity whose characteristics, behaviour, origin, or nationality indicate that it is neither a friendly nor an opposing force. Finally, a friend is a contact positively identified as a friend to support their efforts. Field operations often prove complex because an enemy, an adversary, a neutral or friendly mix is difficult to identify and distinguish from each other.

The term hybrid threat encompasses the complexity of operational environments, the multitude of actors involved, and the ambiguity between traditional elements of conflict. A hybrid threat is a diverse and dynamic combination of regular forces, irregular forces, terrorist forces or unified criminal elements to achieve mutually beneficial effects. Hybrid threats combine traditional forces governed by law,



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*The operational environment is an arena in which operational objectives are achieved not only by force but also by how quickly and effectively the military force can establish and maintain a stable condition. All actors, allies or enemies, state or non-state, regardless of their technological or military capabilities, will probably use all the political, economic, informational and/or military tools at their disposal to achieve the desired objectives.*

military tradition and the habit of unregulated forces acting without constraint on the use of violence. These may involve nation-states or non-state actors, such as criminal and terrorist organisations that use sophisticated capabilities traditionally associated with states. Hybrid threats are most effective when exploiting legislative constraints, lack of capacity and lack of situational awareness.

*Peer* threats can use resources in many areas to create lethal and non-lethal effects of operational significance throughout the operational environment. Peer-to-peer effects attempt to delay the deployment of forces and cause significant damage at multiple levels in a short time to achieve their objectives before the forces reach full operational capability.

## METHODS OF ANALYSIS OF THE OPERATIONAL ENVIRONMENT

For a coherent analysis of the operational environment, we should start from the statement that conflicting actors are included in a wide range, starting from the regular configuration of the force, belonging to a state and reaching non-state actors, governmental or non-governmental organisations that act to meet their objectives. By adding different terrorist organisations and/or organised crime, we get a comprehensive picture of the military action environment. Thus, it can be considered that the operational environment is an arena in which operational objectives are achieved not only by force but also by how quickly and effectively the military force can establish and maintain a stable condition. All actors, allies or enemies, state or non-state, regardless of their technological or military capabilities, will probably use all the political, economic, informational and/or military tools at their disposal to achieve the desired objectives.

Given all these factors, the most important issue that sparks the interest of military specialists is generated by finding effective solutions to achieve success in such a context.

The analysis of recent conflicts has led to a reality that is not to the liking of many: technological superiority over the enemy no longer creates the decisive advantage and, as such, victory cannot be achieved remotely by simply pressing the buttons.

This reality has been well known for almost two decades. A current problem, however, is the persistence of the same situations in which we are still looking for solutions to materialise effective actions against a formless enemy, which acts without respecting the rules, principles or methods written in any manual, against an enemy that gives a new dimension to the VUCA quartet that describes the characteristics of the current operational environment. Returning to the previous picture, among other issues, it was concluded that force, through its most valuable component – human resources – must be rebuilt to provide at least a consistent response and not a proactive action. Hence the need to develop methods that place in the boots of a fighter a human resource whose training meets the requirements that ensure success. The first activity carried out in such an approach is the analysis of the operational environment. The last is the full training of the force to be launched into action. Between these, there is a whole process of operational planning, with all the necessary sequences that ensure the efficient use of the resources.

All are important, all require effort, and all converge towards one point: achieving the goal with minimal effort. In terms of operational environment analysis and force training, probably the most effective method is to build models that, the closer to reality, the more useful the platform that is offered to the user, and the better the framework that allows users to carry both actions with remarkable results.

The analysis of the operational environment and the strategies of the participating actors includes a series of specific problems determined by the nature of their characteristics.

An important issue is the control over the determination of results and the identification of conclusions. It can be said that identifying the conclusions of the analysis of a system characterised by the above-mentioned nonlinearities can be done by intuitive methods. Nonetheless, a simple presentation of the amount of the processed information to cover all possibilities for the future system configurations invalidates any attempt to base intuitive analysis. This creates the need to develop a method based on a mechanism capable of functioning efficiently despite uncertain and unquantifiable data and to provide concrete results, usable in the later stages of the study. The solution is provided by the method of morphological analysis.



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*“In essence, GMA (General Morphological Analysis) is a method for identifying and investigating the total set of possible relationships or ‘configurations’ contained in a complex of problems” (Zwicky, 1969).* The method of morphological analysis was invented in the 1940s by the Swiss astrophysicist Fritz Zwicky for the US Army and developed in the 1960s at the California Institute of Technology as a method of structuring and investigating a complete set of relationships that are established within the complex, multidimensional and non-quantifiable problems. He used the method in various subfields, such as classification in astrophysics, the development of rocket propulsion systems, or aspects of the movement and colonisation of outer space (this method is said to have been the basis for the design of the Polaris mission). Once again, GMA was developed in the 1990s by Tom Ritchey of the Swedish Defence Investigation Agency to be implemented in studies on long-term defence planning and civil protection.

The method of morphological analysis is a participatory and iterative process, which involves a series of consultations carried out between groups of experts in the field or fields that include all the problems of the analysed system. As indicated by the name (morphology – morphos – form) the method is based on the decomposition of the analysed system into subsystems, as independent components, and on the analysis of all relations between them, based on the logical processes that determine internal compatibility.

The method begins by formulating the problem to analyse and identify the relevant elements. In this first stage, the main areas or operational variables (size, dimensions, etc.) that outline the operational environment are identified and defined. Operational variables are general characteristics of the operational environment, both military and civilian, which may differ from one area to another and decisively affect military operations. They describe not only the military aspects of the operational environment but also the impact of other factors on it. Typically, military planners analyse the operational environment using six interrelated operational variables (PMESII): political, military, economic, social, informational, and infrastructure. Two more can be added here: the physical environment and time.

Each of these operational variables (PMESII-MT) has a set of operational sub-variables.

In addition to the fact that they are criteria for the analysis of the operational environment, the operational variables describe to commanders the context in which military operations take place. Understanding these variables helps commanders assess how the military instrument of national power complements other instruments. A comprehensive analysis of variables usually takes place at the level of joint operations. In the analysis of the operational environment, commanders constantly consider the dynamics of these variables to have an articulated picture of the operational situation.

The political variable describes the distribution of political responsibility and power at all levels of government and takes into account the factors that define a society's identity (culture, history, demography and religion). The population attributes different degrees of legitimacy to local and international political structures and processes. Political authorities and powers, formed formally (officials or officials of the political party) or informally (tribes, ethnic groups or other centres of power) or hidden political powers strongly influence the situation in the operational environment.

There are many sources of motivation in politics. These may include the charismatic leadership style or actions of internal security institutions and even of religious, ethnic or economic communities. Political parties or opposition groups can also influence the situation.

Understanding the political implications requires the analysis of all relevant, political, economic, military, religious, cultural partnerships, etc. This analysis preserves the presence and importance of external organisations and other groups, including groups united by a common cause. Examples include private security organisations, transnational corporations and NGOs providing humanitarian assistance.

The political sphere also addresses the effect of the will as an intangible primary factor. This factor motivates participants to sacrifice themselves to achieve their goals. Understanding what motivates key groups (political, military, insurgents, etc.) helps commanders to understand their goals and their desire to sacrifice to achieve their goals. Another benefit of understanding the mechanisms that strengthen existing individuals and groups in the operational environment



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*The economic variable includes individual and group behaviours related to production, distribution, and resource consumption. The specific factors that contribute to the definition of the economic variable take into account the influence of industry, trade, level of development (including external support), financial management, monetary policy, economic institutional capacities and legal constraints (or lack thereof) in the economy.*

is the ability to generate credible scenarios to deal with the hypothetical threats anticipated by commanders.

The military variable is directly influenced by the actions of all the elements of the security system of a state or non-state actor. In this sense, the army is the military force primarily responsible for maintaining internal and external security. In a variable operational environment, it scans the military capabilities of all military forces. In this context, military forces on both sides can be substantially influenced by paramilitary and guerrilla forces. Military action in the area of operation may also be affected by soldiers from other countries who are not directly involved in a conflict. Therefore, the analysis in the military field, together with the political factors, should include the relationship between the forces present in the area and the actors listed above.

In essence, the analysis of military variables focuses on identifying the capabilities of enemy military organisations, the host country and multinationals. The analysed capabilities cover the following areas: equipment and weapon systems; personnel; doctrine, tactics, techniques and procedures; strength training; resource constraints; military leadership and its relationship with political decision-makers; organisational culture; military history and traditions; the nature of civil-military relations. Understanding these factors helps commanders estimate the real possibilities for action for each armed forces structure. The analysis determines the possibilities of each organisational entity in the area to use its skills not only internally, but also regionally and even globally.

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An important aspect in this field addresses the fact that, in the international context, the economic development of state actors sometimes differs substantially. These differences significantly influence policy options, including decisions by individual or indigenous

groups to support or undermine the existing order. Many factors can stimulate or discourage individuals and groups from changing the economic status quo, such as technical knowledge and education; capital flow; investment; price fluctuations; debt; financial instruments; protection of property rights; the existence of the black market and the underground economy.

Thus, it can be emphasised that the economic variable defines the economic system in the area of operations as a whole, the degree of economic development and the distribution of the living standard of the population. Indicators for measuring the potential benefits and costs of influencing the political and economic order in the area could intensify how commanders understand the dynamics of the social and behavioural situation of allies, enemy, neutral and local entities.

The social variable describes aspects such as the structuring of society, the judicial and legislative system, social and humanitarian policies, religion, etc. Society is defined as the population of members who are subject to the same political authority, occupy a common territory and share a common culture and a sense of belonging to the same group. Society is not monolithic but includes different social structures that involve relationships, often extremely complex, established between institutions, organisations and groups of people in a cluster system.

Culture includes common beliefs, values, behaviours, customs, and traditions that individuals and groups adhere in order to integrate into society. Different societies may have similar cultures, but social attributes change over time. Changes can occur in any of the following areas: demographic; religious; population movements; urbanisation; standard living; education; cohesion of ethnic, cultural and religious groups.

The basic elements to be analysed are social networks, social status and the functions and social norms that support and encourage the members of the society and their leaders. This analysis should also address companies outside the operating environment whose actions, opinions or political influence may affect the mission.

People base their actions on perceptions, assumptions, habits and values. Knowing the culture of the actors present in the operational environment helps to identify friction points, establish relationships



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and reduce misunderstandings. It can improve the commander's perspective on individual and group intentions and increase the effectiveness of military action.

The information variable quantifies the information field that is defined as the group of individuals, organisations, and systems (information, communication, and media) that collect, process, disseminate, and/or use information. The information environment gives participating actors access to information systems and the ability to use data and information to achieve their goals. Commanders use information activities to understand and shape the operational environment.

The media significantly influence the information that shapes the operational environment. Television and the Internet can broadcast real-time images of military action around the world. Media coverage can influence political decisions, as well as public opinion (domestic and international). Opponents often use media to facilitate the achievement of goals by controlling and manipulating how audiences perceive the content of a situation and/or its context. They often try to create partisan views that are antagonistic to a particular cause, offering a twisted interpretation of events.

The infrastructure variable refers to the facilities, services and installations the society requires to operate. These facilities and services include communication systems, water and electricity distribution facilities, transport infrastructure, irrigation and land reclamation, hospitals, schools, logistics station facilities, etc. Degraded infrastructure affects the entire operational environment. At the highest level, the infrastructure includes sophisticated technological capabilities that make it possible to carry out research and development activities, with the additional application of the results for civilian and military purposes.

It is important to note that not all segments of society perceive infrastructure changes in the same way. Improvements seen by some as beneficial can be perceived as a threat by others. For example, the introduction of mobile networks and the Internet can help a local economy, but it can offend influential and conservative local leaders who believe it allows access to indecent material. Therefore, actions affecting infrastructure require a detailed analysis of possible effects, especially in the social field.

To conclude, upon receiving a mission, military leaders analyze information about mission operational variables during mission analysis. They use mission variables to improve their understanding of the situation. Mission variables consist of the following factors: mission, enemy, terrain and weather, available troops and support, available time, and civilian considerations (METT-TC). The incorporation of the analysis of operational variables with METT-TC ensures that military planners take into account the best available information about the mission.

### MODELLING THE PROCESS OF SELECTING MILITARY CAPABILITIES

Nowadays, we notice that the word “capabilities” appears very often in the discourse of politicians when they discuss defence issues, in the summaries of military analysts when they refer to the military commitments that our country has assumed or in the language of the military, where it tends to replace the term “capacities” more and more often, even if a clear definition of the term, which would explain its entire dimension, has not yet appeared in the Explanatory Dictionary of the Romanian language. This means that the word “capabilities” is often used without a clear understanding of the content it expresses.

Elements related to capability were addressed at the Washington and Prague Summits. In these contexts, military capability represents “the ability to achieve a specific objective in time of war” and includes the structure of forces, equipment, response level, and training and sustainability.

In the American military thinking, the concept of capability is defined as “The ability to achieve a specified wartime objective (win a war or battle, destroy a target set)”. From here we understand that through abilities we obtain effects, respectively the fulfilment of the mission, the winning of the battle/war. Achieving success is determined by the efficient and unitary use of four components that underpin military capability: the organisational structure of the armed forces; means of combat; force training; sustainability – the ability to support by own forces (Grigore, Grecu, 2015, p. 9).



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*The priority of the units nominated for missions outside the national territory is the development of military capabilities in close correlation with the particularities of the mission which involves: technology; structure; technical tactics and procedures appropriate to the operational requirements and the realization of the instruction according to the specific standards of these missions in the theatres of operations, focused mainly on the increase of the capacity of action.*

As mentioned in the previous sections, the characteristics of the operational environment greatly influence the conception of military actions and implicitly the level of development and the use of military capabilities to achieve success. In this context, the continuous adaptation of military capabilities to changes in the operational environment is an essential requirement that military planners must take into account.

The content of the transformation of capabilities, specific to the military institution, aims to move from one status to another, and differs qualitatively and/or quantitatively in areas such as the basis of establishment and organisation of the institution, the architecture of training programs and tasks (missions), the system of fighting means, structures, philosophy and leadership processes, organisational culture, resource policy and especially human resources – with emphasis on quality, competence, attitudes, motivations, behaviour and action efficiency, an image that the institution intends to promote nationally and internationally (Grigoraș, 2011, p. 137).

In order to evaluate the capabilities of an armament system, military strategists used various assessment models, models that sometimes reached special complexities, evaluating up to 200 parameters for an armament category. With the increase in complexity, the costs for maintaining the database up to date have increased and the number of somewhat subjective parameters has inherently augmented, such as those parameters that appreciate the military in relation to the doctrine of the country that uses it, with the operating capacity of personnel (physical abilities, the degree of professional training, the capacity of endurance to effort and stress, etc.) or with the particularities of the season and the landscape of the probable area of action (Ibid, p. 130).

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Analysing the operational environment and determining its essential characteristics correlated with the specific features of the mission, results in obtaining a force structure that will be able to respond effectively to the challenges for which it was built.

The process of establishing the force structure is closely related to the type of mission. As a process planning represents the shaping of a reference model that will later become a standardised model in terms of future structures.

Planning the structure of the military force for a certain type of mission is a laborious process that must follow an algorithm aimed at obtaining a structure of the force that can respond effectively to the needs for which it was created. Therefore, the final result of the process of establishing the force structure will have to meet some previously identified requirements.

The specialised literature highlights the fact that, within the process of establishing the force structure, the following stages must be undergone (figure 1) (Ibid, p. 77):

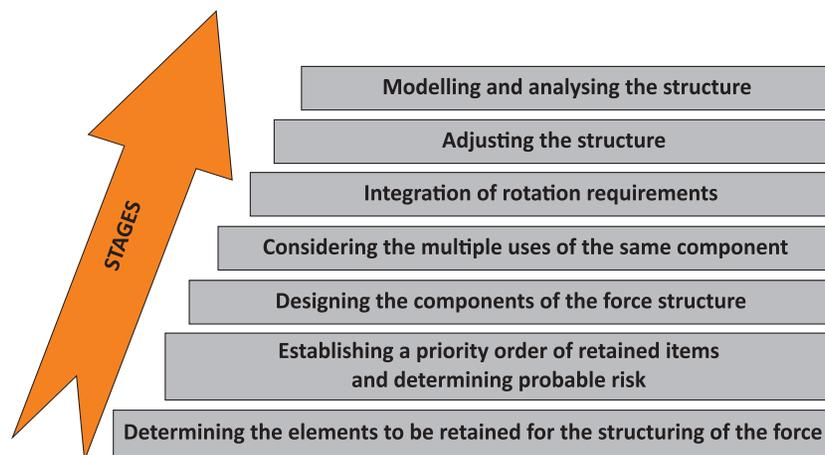


Figure 1: Stages of the process of establishing force structures

As it can be seen, the last step is to model and analyse the force structure as a result of the previous steps, to determine if it is correctly sized, if it meets the operational requirements of the confrontation environment and missions that can be performed at an acceptable level, framed in the strategic and doctrinal framework adopted by each state and according to the statute of each in a multinational context.



Operational research uses different models, depending on the complexity of the problem being studied, the data available and the goals set for the research. Among the methods used must be listed: statistical methods, methods of modelling through strategic games and experimental methods. All these methods can be used both independently and in combination (Grad, Stoian, Kovacs, Dumitru, 2000, p. 8).

In broad terms, modelling designates *the representation of a system or process through another system, called a model*, which preserves the relevant characteristics of the original and is easier to study (Bălăceanu, 2005, p. 7). The fundamental element of modelling theory is the *model*, which is defined as a theoretical or material system that enables the indirect study of the properties and transformations of another, more complex system, with which the first system presents an analogy (According to DEX, 1996, p. 644). The purpose of modelling is to obtain relevant conclusions about the original, based on the study of the model, which can be done analytically and experimentally.

*The fundamental element of modelling theory is the model, which is defined as a theoretical or material system that enables the indirect study of the properties and transformations of another, more complex system, with which the first system presents an analogy.*

The definition of the model used by NATO (NATO, August 1998, p. 89) was inspired by that used by the US military according to which the model is, *“a representation of a system, entity, phenomenon or process. The software models of the specific entities are composed of algorithms and data”*. The algorithm is an established set of well-defined and unambiguous rules and processes for solving a problem in a finite number of steps while the data are properties of an entity that are expressed by parameterised, discrete values that describe its attributes.

In order to model a certain system (process), the aim is to find relationships that meet certain conditions:

- to have a sufficiently accurate approximation of the real system by the adopted model;
- to have a full concordance between the elements of the process and those of the model;
- the possibility of decomposing the complex system into subsystems, which in turn are associated with their models;
- the time variation domain should be the same in the analysed process and its model.

The experimental study of a model is also called *simulation* and is preferred in situations where a study by the analytical method is impossible or too laborious. The model of the system or process thus studied is called the *simulation model*. However, all models offer the advantage of providing an evaluation method that can be integrated into decision-making algorithms, both politically, in terms of military leadership and technology. In these conditions, it is essential to know in detail both the modelled system and the model used, as well as the fact that the model must be seen within the limits of what it offers factually (numerical values) and intuitively (interpretation of values).

The main result of the analytical study of the model thus simplified consists in the optimisation of the operation plans. However, it must be completed with the re-evaluation of the optimal solution, by simulating it with the help of the initial detailed model of the operation. Last but not least, the increase in the degree of generality of the model imposed the introduction of some coefficients that would ensure the compatibility of some models that have as subject different categories of military technique.

## CONCLUSIONS

I believe that the analysis of the operational environment is one of the basic activities in the process of planning military actions. The growing degree of global interactions will strongly influence future threats. Access to advanced technologies, together with the possibility of owning and using weapons of mass destruction, will increase the number of “actors” with sufficient military potential to change regional power balances.

The evolution of changes in the operational environment is complex and dynamic. That is why the future can no longer be very well anticipated based on experiences, as the future will no longer be an extension of the present. The changes take place exponentially and recursively, which attracts rapid and profound changes, to which military capabilities must be adapted.

It is essential to understand these general trends, as they help the decision-maker to implement coordinated actions at the national level in response to these changes. Global trends could lead to tensions, instability and even conflict. Regardless of the objective pursued,



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*In the future, national military forces or Alliance forces will continue to work in an increasingly complex environment, which will present progressively more diverse and unexpected challenges. Therefore, it is necessary to formulate forecasts and opinions about the configuration of the operational environment of the future and regarding the threats that may arise in this context.*

the opponent in the future operational environment will be highly adaptable, being able to use a wide range of technological means, equipment and procedures, combined with conventional weapons and improvised means.

In the future, national military forces or Alliance forces will continue to work in an increasingly complex environment, which will present progressively more diverse and unexpected challenges. Therefore, it is necessary to formulate forecasts and opinions about the configuration of the operational environment of the future and regarding the threats that may arise in this context. These projections of future conflicts allow military planners to better understand the context in which the forces will operate and establish clear directions and concepts for the development of the military capabilities of the armed forces of the future.

Modelling is a universal process, applicable in virtually any field of knowledge. Creating a model of an object or event is not very difficult, but creating a model of the whole world in which all objects and events are consistently represented requires special mental and creative effort. Most people began modelling by creating representations of systems that were inconsistent or inefficient. Through learning procedures from their own mistakes, they mastered techniques superior to those they had previously used.

The main purpose of modelling is to come up with easy-to-use representations to describe the systems they embody in a manner with great mathematical consistency. One explanation for this would be that coming up with easy-to-use representations ensures a high degree of user perception.

The decision-maker bases their actions or decisions on the conclusions drawn from the analysis of the problem. If the deduction of the conclusions were contested and if the important variables were abstracted, then the solution of the model would serve as an effective solution to the problem.

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