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REMODELING OF MILITARY STRUCTURES – A STRINGENT REQUIREMENT FOR INCREASING MOBILITY AND COUNTERMOBILITY

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Abstract: *Modern military conflicts have proved that military actions are characterized by very rapid situational changes. Commanders and staffs must know how to react promptly to these changes and order, according to the situation, the measures to be taken, knowing that their decisions will coordinate the combat actions of the forces according to the missions received. The tendency of modern armies to increase the mobility of their troops by technological up-grades in short time, which incorporated the latest developments in science at that time, has been constantly backed up by the tendency to find the most economical and effective ways to reduce the maneuverability of opposing troops. These trends generated by the high dynamics of the current confrontation environment have practically imposed the need for the permanent remodeling of the military structures having as final goal the obtaining of the victory in the military operations/actions.*

Keywords: *mobility; countermobility; military actions; the environment of confrontation; crossing obstacles.*

Implications generated by laws and principles of fight on the mobility and countermobility of military structures

Characterized by the emergence at an unprecedented pace of a wide range of military missions or actions, the age in which we live highlights the fact that the military is the most appropriate institution for their fulfillment, although they do not always mean war. These are actions aimed at promoting peace and ensuring stability, firstly through the supervision of treaties or agreements concluded between former belligerent parties, but also other actions, from the subsequent deterrence of force to the imposition of peace by force and the humanitarian support of the suffering and deprived civilian population to meet basic needs.

Modern fight is a human action with a nomological determination, on which its effectiveness depends, as its main specific is the action with opponents, who seek to destroy each other, in a process that T. Kotarbinsky called "negative cooperation". It moves large masses of people, who use large amounts of diverse and complex technical means, while employing massive economic, scientific, technological and financial resources.

Military specialists have come to the conclusion that the outcome of the conflict, as a human action, can be decided only to a small extent by accidental or subjective factors. "There are objective laws of fight, and their knowledge and observance, as well as the principles, rules and norms that result from them, is one of the indispensable conditions for success in military action."[1] In this regard, I consider that mobility and countermobility are essential factors that decisively influence the application of the requirements of the laws and principles of the fight.

In the treaties that study armed conflicts, the concepts of *mobility* and *countermobility* have occupied a special well-deserved place given by their importance in the confrontations that have taken place throughout military history. Most of the time, these concepts have been studied together and this has certainly not been done by chance.

Military theorists have noticed that *mobility* and *countermobility* have been permanently interconnected and only a unitary approach of them has generated a significant increase in the success rate of military actions.

The mobility must be approached in two ways:

[1] Gh. Toma, L. Stăncilă, *The operative art between opposites - actuality and perspectives*, AISM Publishing House, Bucharest, 2001, p. 158.

- as a combat function,
- as a characteristic of the military system or structure.

Mobility as a combat function belongs to a set of tools along with information, maneuvering, fire support, ground-based air defense, command, control and logistics, these being at the disposal of the commander and the staff who, if well-integrated and properly coordinated, enhance the military action and contributes to success. At the same time, mobility is a characteristic of the military system or structures and has as areas of manifestation the mobility of leadership, technical mobility, mobility of the strike system and mobility of the logistics system.

According to the specialists in the field of Romanian military theory, the following laws of combat are currently being operated:

- the law of concordance between goals, forces and means;
- the law of balance of forces;
- the law of dependence of the doctrine of operations, tactics, techniques and procedures on the level of development of weaponry and combat techniques;
- the law of unity of actions;
- the law of the increasing scope of operations specific to fight;
- the law of the necessity of the offensive for obtaining the final victory "[2].

The general principles of war derive from its laws, they represent the fundamental ideas, the guiding norms written in the regulations that are the basis for planning and carrying out military actions. Thus, they constitute a general guide for carrying out operations at all levels, for their development and their use and application with skillfulness is a fundamental premise of success in the whole range of actions.

Without making a list of these principles, I would just like to mention that they are included in the literature of our country, do not differ fundamentally from those in the doctrines of other states and largely respond to the physiognomy of military actions carried out in modern confrontations.

Increasing the fighting power of military structures can be achieved through both *mobility* and *countermobility.*

Countermobility influences two of the elements of the fighting power of a group of forces: maneuvering and force protection.

Countermobility can produce effects similar to those generated by mobility, and the effect is to increase the fighting power. This can result from *countermobility* when generating actions causing the opponent to fall into a disadvantageous position.

The data presented on *mobility* and *countermobility* so far lead us to say that planning and ensuring the *mobility* of own forces must be designed in close correlation with the reduction/annihilation of *countermobility* realized by the enemy, and vice versa in defense operations, respectively achieving *countermobility* while reducing enemy's *mobility.*

Essential characteristics of the modern confrontation environment with impact on the evolution of military structures

After the brief introduction above in the area of contemporary military thinking that defines *mobility and countermobility,* I would like to briefly present the most relevant indicators of the current *confrontation environment,* both those specific to symmetrical and asymmetric conflicts.

According to military specialists, "the dynamics of wars and armed conflicts after the Cold War is a special, chaotic one, which poses very special problems to all states and international organizations. The range of this issue is very wide and particularly fluid, and its

[2] Costică Țenu, L. Stăncilă, *Nomological bases of military actions in the modern war*, Course of operative art, AISM Publishing House, Bucharest, 2003, p. 71.

main features are haste, frustration, intensity, rapid and untimely changes, tight regrouping, insecurity, anxiety and, above all, the unpredictable nature of processes and events[3].

In the symmetrical modern conflicts, for example in the Persian Gulf, we notice that the *military actions* had a pronounced expeditionary, joint, multicomponent character and was carried out in unsafe circumstances, on a ground not prepared in advance and without benefiting from all infrastructure facilities.

Given the trend of the latest modern confrontations, it can be stated that joint, multicomponent and multinational operations will be the most common solution in resolving symmetrical conflicts. The land and air components, and in the actions carried out on the coast, in the delta and on the river and the naval component, will become interdependent. This type of armed conflict will take place according to the laws and principles of fight, but the great battle will be fought for information supremacy.

The confrontation environment will be characterized by: the contraction of time - the period of time that elapses between the onset of an event, its perception and the application of an appropriate reaction has been considerably reduced; three-dimensionality - operations will be carried out on the entire depth of the theater of military operations, at high speed, especially near the ground with the use of air force, aircraft and airborne, air reconnaissance with and without pilot and detection and impact systems, totally or partially autonomous; transparency - due to the extension of the possibilities of knowing the situation and of the fast detection of the objectives; dynamism - the engaged parties will strive to concentrate their efforts at the right moment and in the established place in order to give the decisive hit to the opponent, or to counteract it; nonlinearity - military operations will be carried out simultaneously, both in contact and in depth, on directions and places; insular aspect and multidirectionality - the forces will be put in the situation to act simultaneously on several objectives located at intervals and on great depths, with the exposed flanks, or to lead the fight in isolation; automation – robotics will make possible the intensive use of automated systems for simple but very dangerous and exhausting missions, and artificial intelligence, expert and simulation systems will be used effectively as auxiliary means at all levels of control; digitization – the areas of action will be covered with digital interception – impact systems, interoperable and controlled by radio data transmissions.

The ability of the armed forces to cope with the demands of the modern *confrontational environment* will depend on achieving and maintaining supremacy through maneuvering and *mobility*, suppressing and saturating research and misleading the adversary and misleading it by enforcing active protection against detection, penetration and transmission, of false information in his managerial system.

The set of these characteristics described briefly emphasizes the fact that on the future battlefield will face weapons systems with a high degree of maneuverability and mobility, dispersed in small autonomous entities, which determines us to look for the exact location of the land fighter.

The asymmetric conflict, highlighted by the violent manifestation of risk factors of ethnic – religious, political, economic, etc., will become, according to military analysts, the dominant form of armed conflict that will oppose regular armies irregular forces, terrorist organizations, criminal associations, drug cartels, religious groups and pressure groups of all shades, belonging to states or not, that use unconventional methods of fighting to defend group or national interests, on their own territory or anywhere in the world.

Irregular forces will be armed and equipped with an inventory that will include top quality weapons in terms of accuracy, destructive power, range and maneuverability.

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[3] LTC instr.av. drd. Cristian-Octavian Stanciu, *The implications of modern systems and technologies in redefining new doctrinal concepts*, Bulletin of the National Defense University ”Carol I” no.1, 2015, „Carol I” National Defence Uniersity Publishing House, Bucharest, 2015.

With such an endowment, irregular forces will be able to carry out a long war, striking suddenly, briefly and unpredictably.

In opposition, the regular forces will require capabilities and availability for actions to neutralize or destroy illegally formed groups, while protecting the population, defending the elements of infrastructure and their own objectives exposed to their action, using specific forms and procedures.

The need to defend a multitude of target goals against unpredictable attacks of any kind ("kamikaze" type, biological agents, etc.) implies the existence of a strong, but dispersed defensive element, which should also be a solid basis for triggering further actions on the purpose of conquering and maintaining the initiative.

In order to deal with such an armed conflict, the armed forces will have to be made up of modular structures, equipped with effective weaponry and *mobile* and multifunctional combat equipment that will ensure them high flexibility, reversibility and *mobility*.

As in symmetrical conflicts, in the asymmetrical ones, obtaining information about the opponent is a decisive factor for success.

From the perspective of asymmetric conflict, the physiognomy of the *confrontation environment* acquires some particularities. Thus, it will be transparent to irregular forces and opaque or less transparent to regular forces. The actions will have a sequential, dynamic, non-linear character and will take place on the whole depth of the combat devices, with a variable intensity and duration depending on the quantity and nature of the forces engaged.

The diversity of the targeted objectives and the wide space of action of the irregular forces will give to the actions a pronounced multidirectional character.

The simultaneous development of the two types of conflict, symmetrical and asymmetrical, will impose on the modern *confrontation environment* their specific features, corresponding to the actions carried out.

Brief assessment of the current state of engineer structures and existing trends in the engineer branch

In order to understand why it is necessary to remodel the current military structures in order to increase the mobility and countermobility of troops, I will further make a brief assessment of the current stage of development of the engineer branch given its major contribution to achieving the mobility of its troops and obtaining the countermobility effect for opposing troops.

The diversity of the categories of weaponry, combat technique and materials from the endowment of engineer structures, their technical condition and quality, require to analyze differently from the perspective of *mobility and countermobility.*

From the perspective of achieving *mobility* we can talk about *crossing obstacles* where we can notice the existence of a wide range of equipment designed to address different types of obstacles and we can also notice major differences in equipment for combat engineer support compared to those for general support of the force and/or logistical support, between the last two there are obvious common features.

For *crossing watercourses*, the engineer structures usually have pontoon kits that can be configured in crossing points on rafts and depending on the evolutions of the battle, they can be transformed into crossing points on pontoon bridge. The most advanced models of such equipment are those that have autonomous movement in the tactical field (does not require a transport vehicle and auxiliary means of embarkation/disembarkation) and can act independently to ensure the crossing of a tank exceeding 60Tf. All these equipments are able to make a floating bridge by keeping them interconnected and to keep it operative without the need to place anchoring systems. But perhaps the most important aspects of this modern equipment are that they can be transported and launched by air, require very little personnel and

have a relatively small logistical footprint compared to similar older generation equipment. Also in the range of means of *crossing watercourses,* especially of major watercourses that allow navigation, can be found in the endowment of engineer troops river boats type CEAM or BAC, their characteristics varying depending on the model.

For *crossing small obstacles,* engineer structures usually have mobile assault bridges of different types and crossing capacities, on tank chassis, which offers a high degree of protection. Regarding the current trend of this equipment, we can notice that technical solutions for crossing obstacles (which are based on different types of bridges - scissors type, telescopic, etc.) are developed more and more often, allowing temporary connection (as needed) to tanks, armored personnel carriers and other types of tactical vehicles.

To *cross minefields,* specialists have developed different types of dredgers (bucket dredgers, plows, chains or explosive systems that can be launched in the minefield and cause mine detonation) that can be especially attached to tanks that meet the necessary requirements for survival in the tactical field when the dredger detonates a mine. For more safety, self-propelled demining equipment has been made that is operated remotely and the latest generation autonomous ones are part of the advanced robotization programs for military use.

For crossing canals, large ditches, ravines and dry valleys, the engineer structures have different types of metal bridges, the most advanced being the modular ones, based on materials of a special quality as well as technical solutions that allow handling with reduced force and very few means. Last but not least, it should be noted that these modular bridges can be transported by air, this being considered a substantial advantage over the older generation equipment. The most advanced systems for crossing large ditches developed at this time allow the transport on a tactical vehicle chassis and automated assembly with a special vehicle that connects and launches *the bridge elements*.

In order to *remove/reduce the obstacles on the communication routes*, the engineering structures are equipped with earthmoving hydraulic equipment and/or for breaking/cutting stone or concrete and asphalt blocks installed on tank chassis (blades, buckets, etc.). The advantage of these engineer multifunctional tanks is the protection they offer, but it is counterbalanced by two disadvantages: the lack of obstacle detection/scanning equipment and a relatively low productivity in the execution of specific earthworks. Modern engineering structures have equipment that allows scanning the terrain and identifying all types of obstacles located on roads. The success in maintaining freedom of movement on routes depends on these means of scanning as well as an appropriate approach to each type of obstacle.

Perhaps it would be good to mention in this context the existence of E.O.D. relatively recent structures that have complex equipment: E.O.D. special vehicles, mini-robots, explosive detectors, X-ray machines, remote jamming systems for the remote initiation of improvised explosive devices, etc. these facilitating the intervention of E.O.D. operators for putting the improvised explosive devices in safe condition.

As we know, in principle it is tried to avoid the obstacle or cross it in motion if this is possible and, in the event of impossibility, to apply the two procedures, it is recommended to organize the obstacle crossing operation, this implying a consumption of additional forces and means.

From the perspective of accomplishing the *countermobility* tasks, we can talk about systems of genetic obstacles of different degrees of complexity and development and/or controlled destruction of some objectives that could be useful to the opponent.

In order to carry out the above-mentioned actions, the engineer structures are equipped with mechanized means that allow the planting of mine systems or the construction of places for the placement of explosive charges. Here we can notice that over the time, mines have evolved a lot, currently having the possibility to be located in the field with artillery, dedicated mobile launch systems or the launch to be done using aerial platforms. The degree of sophistication of the mines has increased a lot today, being in trend the smart mines that can be

deactivated or relocated as needed depending on the situation. For the future we can be sure that the mine systems will continue their evolution considering the increased efficiency as well as their relatively low costs.

I am sure that there would be a lot more to say about the engineer branch as it is today as well as the existing trends, but the objective of this study is to highlight the state of the engineer equipment according to age, corroborated with the technical-tactical characteristics of the respective means and function of the requirements of the modern battlefield, leads to a considerable diminution of the possibilities of fulfilling the missions by the engineer forces and implicitly, of the support and protection that the engineer structures can grant to the fighting forces, remodeling of engineering structures by creating new capabilities or developing/modernizing existing ones in order to successfully address the tasks specific to engineering support missions performed in order to ensure/maintain/increase the mobility of own troops or those executed in order to obtain the countermobility effect on opposing troops.

Conclusions

In the system of nomological determinations of modern fight, the laws of war represent the objective basis, they are valid for both conflicting parties due to their universal character. Their requirements are reflected more concretely in the general principles of the preparation and conduct of war, and among the factors on which the application of the requirements of the laws and principles of modern combat depends are both mobility and countermobility.

Their influence on acquiring and maintaining the initiative in order to ensure freedom of action, their importance for carrying out an effective and timely maneuver in order to achieve the surprise, determinations on the possibilities of military structures to achieve security of action and protection of forces or concentrating effort in the decisive place, on the directions or in the areas and quantities that ensure success – are just some of the aspects that support the statement that both *mobility* and *countermobility*, as combat functions and characteristics of military structures are particularly important in enforcing the requirements of the laws and principles of modern combat.

From what has been presented in this article, we can notice that this *mobility-countermobility* correlation ensures a higher level of combat capability and directly influences the combat power of a group of joint forces. The actions and measures of *mobility - countermobility* used judiciously and efficiently in a unitary conception during the development of military actions, can determine the achievement of success in combat and operation.

The trend of permanent modernization existing in the NATO armies is obvious, considering the fact that the proper organization and endowment manifests itself as a solid foundation on which the success of military operations can be successfully built.

As an important conclusion, the forces in the NATO member state armies highlight the permanent trend of modularization and standardization of the structural elements of the engineer branch, having as main objectives: direct support of troops engaged in combat, full satisfaction of engineer support needs, of the employed troops, the reorganization of the specific combat missions, but also the restricted specialization of the engineer structures.

From the analysis made the engineer branch, results that the optimization of the mobility-countermobility correlation is imposed as a major task to be solved by the headquarters and staffs in the immediate future and the engineer structures have a major role in this equation.

In conclusion, it can be said that *mobility* and *countermobility* are two very important concepts that military planners and experts in the field must take into account, and the laws and principles of fight as well as the characteristics of the modern confrontational environment require the permanent remodeling of military structures in order to be able to respond, in the best way and with the resources available to the challenges related to maintaining the *mobility* of troops or to those specific to creating the *countermobility* effect in future armed confrontations.

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