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THE EFFECTS OF STRATEGIC SHOCK ON THE MILITARY ENVIRONMENT

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Generally, the projection and the implementation of changes at doctrinal level mainly follow the pointed paradigm shifts generated by sudden and emphasized mutation of operational thinking. The technological capabilities possess double applicability, since they are generated and used mainly by the civil sector, while gaining utility in national security with an obvious influence towards military forces evolution and engagement, and, consequently, the pattern of war. The evolution of the human-technology relationship is due to the increasingly higher level of transfer towards machines of the sensorial features, the variability and the intelligence, together with certain decisional capacities.

Keywords: strategic level; technology; intelligence; evolution; military organisation.

In reply to the public opinion requirements regarding morality, legitimacy and damage constraints, the military specialists require new technological achievements. Accompanying their natural evolution, trends and needs are identified and, further, new concepts for the use of armed force are generated based on complex processes. Due to their obsolescence and large scale availability, other improvement requirements that may be graphically represented as a sharper helix are triggered.

The modern battlefield operations physiognomy is mainly constrained by the shocks associated to the technological impact and to the civil society reaction to military actions developed to attain the political targets. While armed interventions tend to restrain the winners' human casualties to the rate of peace-time accidents, the information clarity, cycle and destination are submitted in real time by the masses that can influence the flow of events. Throughout the transition between physical and intelligence fields, supporting modern and efficient armed forces is harder to achieve by the vast majority of the nations. Those who adapt to needs and situations will lead the volatile security environment.

Brief semantic history

During the two World Wars, the British John Desmond Bernal formulated the phrase "scientific and technological revolution"[1] with respect to the functions that science and technology represent within the society. He stated that science transformed into a "producing force"[2].

In the 80's, the American sociologist Daniel Bell proposed the phrase "post-industrial society"[3], which conducted more to a society that moved from a production-based economy to a service-based one. Gradually, the reality faced a systematized human relation-model and the compression of the time latency from between answer and question, between stages and even between processes as a whole.

Several other authors advanced their opinion regarding the socio-economic evolution. Among them, Zbigniew Brzezinski (1976) introduced the term of "technetronic society" [4], emphasizing the trend of reunification of the support offered to disorganized citizens, with minimal efforts, by means of what is known today as nanotechnology.

The new asymmetric threats determined the occurrence of a military revolution, also known as a technical-military revolution. It supposes "technical inherent non-exclusive transformations of the new war designs" [5] by which the high-tech armies are able to neutralize the enemy in a short period of time and with a minimum exposure, using appropriate intelligence.

The cyber battlefield is subjected to flexibility, robustness and operational viability of the network-based war strategic concept that "will transform intelligence into power, will increase the response capacity and the force engagement precision"[6]. The omni-relation to information may be identified

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not only from a precision or volume perspective, but also from the accessibility or operability perspective.

A modern information system is based on an information system as a primary structural part, whose share is in a perpetual evolution. The computer revolution involves an advanced information system, as a tool for easy access to information, but also involves drafting and circulation of new types of documents, adjusting the classic working procedures.

The society faced successive technological waves that overlapped the technological revolutions. This paper does not intend to deepen their research, especially since specialists did not reach consensus. It is interesting that their dynamics was not uniform for all the states in the world. "Some states experience simultaneously the impact of two or three technological waves (Japan, the US, Germany, England, etc.), while others (from Africa, Asia, Eastern Europe – including Romania) lagged behind, marking an important and deep technological gap between countries"[7].

The strategic shock – defining elements and transcendent consequences

Nowadays, states avoid declaring war and, in case of opposite agenda, tend to use non-armed means in order to force the opponent to adapt its behavior and, eventually, to subordinate its will. An alternative to direct interference is the expectation, together with subversive employing an ethnic, religious and economic character and followed by the intervention under the cover of support, order reinforcement or humanitarian assistance.

The idea is taken from the economic model elaborated by Milton Friedman, a controversial personality with radical beliefs who influenced the economic evolution of numerous states within Latin America and Middle East by the beginning of this century. Former professor at the Chicago University, he established, together with his disciples, "the panacea of contemporary capitalism tactics"[8], also known as the doctrine of shock. The economist's beliefs were based on the discontinuous economic evolution and on the implementation of radical macroeconomic actions by the so-called shock therapy. He observed that "only a real or as-perceived crisis may produce real changes. When the crisis occurs, the adopted actions depend on the available ideas. This, I think, is our main function: to bring alternatives to existing political strategies, to keep them alive and perfectly functional until the moment when what is politically impossible becomes unavoidable from the same point of view"[9].

Without accepting this practice, it can be noticed that it interferes and is in accordance to the thoughts of omnipresent Sun Tzu: "cut their roots, cover their sky, destroy their traditions, divide them, make them ashamed of what they are! Thus, there is no need to fight to conquer them because, as they, who are scared of what they've become, will beg you to come and save them from themselves!"[10]. This paper aims to identify causative and functional relationships that would augment the understanding, anticipation, prevention and countering capabilities necessary to counter the degenerative effects.

While certain researchers use both the terms of surprise and shock, this paper with mainly use the term of shock, based on the Romanian vocabulary, as the Romanian Explanatory Dictionary provides positive outcomes for surprise and unexpected. The paper studies the general, sudden and violent disorder, generated by various external stimuli and manifested by a physical and psychological imbalance related to shock. Furthermore, in comparison with the surprise, the shock occurrence probability is reduced, while its behavioral effects are radical and even violent.

A strategic shock can be explicitly triggered by a military action and, thus, generate a military effect. The shock may also be the result of a non-military action or of certain events that result in a military effect or response. The risks towards the national security can be conceived, but not foretold or completely anticipated. Therefore, such events are difficult to efficiently evaluate and plan.

The strategic shock overwhelms the regular understanding capacity, and the affected organizations are constrained to rescale their plans, their approach and even their main duties. Shocks differ from other sudden events of crucial importance in that they are unpredictable. Shocks are not adequately marked in the military and security strategies. Their genesis arouses a fundamental strategic disorganization for the functioning and even the durability of a national security system.

Sam J. Tangredi treats the strategic shock concept by means of military phenomenology,

naming the events difficult to anticipate as "wild cards"[11].

The first approach of the strategic shock within an institutional framework originates in Great Britain, in the document elaborated by the Joint Structure and Concepts Centre, "Strategic Trends. Methodology, Key Findings and Shocks" (March 2003)[12]. The authors of the paper admit that "a shock represents a major impact of an event with a low occurrence probability"[13], with manifested consequences towards the trust of the citizens in the alleged system.

The American Office of the Secretary of Defence (OSD) coordinated in 2007 the "Strategic Trends and Shocks" project, assimilating and debating the strategic shock issue. The new concept was characterized by "an event that interrupts the evolution of a trend, a discontinuity that either accelerates rapidly the pace, or modifies significantly its trajectory, and, in this regard, undermines the hypotheses under which actual policies are built. By their nature, the shocks are disruptive and are able to shift our way of thinking on security and the role of the armed forces"[14]. It can be noticed that, according to the shock doctrine analyzed by Naomi Klein (2007) and adapted to the present military science, that the directive line outlined by Milton Friedman is maintained.

Strategic shocks have been debated presumptively also by Nathan Freier (2008) in the following manner: "the future disruptive, unconventional shocks are unavoidable. Through the strategic impact and their disruption and violence potential, the unconventional shocks to the relevant defense, despite their non-military nature, require attention focused on the management of defense, together with, in response, a critical decisive engagement of the defense capabilities"[15]. The origin of contradictions between national or interstate interest groups may reside in rugged or hybrid catastrophic threats, analytically approached by the same Nathan Freier as being "of purpose" (generated by hostile intention) or "in context" (without adverse intention). The contextual threat conceals the most unknowns, as a consequence being the most dangerous.

In the context of unpredictable changes of the current or prospective security environment, which includes multiple factors conditioned, in turn, by the fragility of the balance of regional authority or the sphere of globalization under its many sides (political, military, economic, demographic, cultural, social, etc.), judging in classical terms towards security and social defense, it is difficult to predict an effective and adequate response to the new dangers and vulnerabilities generated by the velocity and diversity of the processes that individualize this turn of the century.

The strategic impact determined by the international relations dynamics and the use of force by state or non-state actors for imposing a position creates the premises of a disruptive potential. Therefore, a raise is noticed in the interest on an early identification of the disruptive origins and consequences, which can lead to the assignment as strategic shocks.

Nowadays, the nuances of the strategic shock are extensive and comprise the emotional and systemic structural areas, as they generate dramatic degenerative effects. Strategic shocks jolt the traditional conventions and constrain damaged institutions to essentially redirect and reorient their approach on the new fundamental missions or investment policies. Their genesis "suddenly cancels part of or all preexisting hypotheses regarding the environment and those conventions governing human activities"[16]. The national security and the military institution, directly grounded and interrelated to the public society activities, cannot be eluded in the aforementioned context.

The mixture created by the globalization geopolitical context, by the quasi-unhindered movement of people and by the emulation on using informatics systems on all cycles of social life, represents a favorable environment for building the contributory factors of the strategic shocks embodiment.

Also, the strategic shock encounters optimal occurrence conditions when a series of conditions are cumulatively satisfied:

- the occurrence of a dangerous conglomeration of clues unknown to the investigators, often directed by bold judgements;
- the absence of the mental capacity of the authorities and the masses to distinguish between normal and abnormal;
- inflexible institutional organization.

Joint together, these situations may lead to a disposition similar to strategic paralysis and to an insufficient or absent reaction to the triggering of a disaster.

It can be concluded that a strategic shock represents a major event which, by the induced effects, requests a different approach on the way to live or on the social and economic evolution of a nation, by national, regional or global perspectives.

To accurately define the strategic shock parameters implies being close to its evaluation or anticipation, whereas predicting its characteristics and implications would mean that the alleged events will no longer represent shocks. A high impact strategic shock depends on the framework it is triggered and evolves on. The consequences are immediately visible in the case of a national territory aggression, or may be felt after and during a variable period of time, occurring successively in unintended dynamics.

Until last decade, a stringent analysis of strategic shocks was not included by the West-European and North-American states within the documents governing defense and national security, as the probability of such indirect phenomena that can alter their existence as independent states was eluded. Instead, different vulnerabilities, risks and threats that may disturb national security as territorial integrity or social-economic and cultural impact were briefly described. General statements imposed themselves over direct and concrete formulations. In this regard, it is appropriate to trigger the prediction efforts in a multidisciplinary investigation of the shock's features, taking into account the possibility that strategic shocks may occur. Therefore, courses of action and force to follow are necessary to be indicated for a correct and efficient response so that the risk generated by such events against the community is minimized.

The approach of the strategic shock problematics is personally appreciated as a niche within the current knowledge stage of inland military sciences. Thus, there could be identified the need of an anticipative and rigorous summative presentation of the evolution path followed by the military phenomenon in order to underpin the forecasts of multiannual security strategies.

The influence of the strategic shock on the contemporary military operations development

The more and more expressive polyvalence of the present world and the solicitude towards its metamorphosis reclaims a reconsideration of the statistical, individual or closed group action methods within the society assembly. The current global conjuncture is built so that an important event happening in a part of the world may generate cascading effects worldwide, within smaller and smaller latency gaps, all over the world, the virtual area having a meaning related to the real one. In the current global environment, the non-state vectors get similar in importance to the state vectors. Precisely from this relation, which may sometimes be conflictual, there may result disputes and differences, technological leaps, philosophical, ideological and cultural disputes that may generate major effects on the behavior of individuals and of the society; as a consequence, paradigm shifts in various domains, mainly induced by the informational society, by the strive between modern and traditional or by other elements based more on revolution than on evolution will become major sources for the future strategic shocks.

The Italian general Giulio Douhet (1869-1930), actively involved in the First World War, manifesting a genuine futuristic impudence, appreciated that "victory smiles upon those who anticipate changes in the characteristics of war and not to those who wait to adapt after these changes occur" [17].

Nowadays, the limits of the strategic shocks are relative to intensity and magnitude. The same unforeseen event may leave some indifferent or may radically shake others, due to plenty of variables necessary to be identified and dealt with.

As Colin S. Gray emphasized, "the challenge to defense strategists and planners is not to avoid being surprised, but is to plan strategic actions in order to efficiently respond to some of the most serious effects of surprise" [18].

Within the range of all-time strategic shocks, certain military analysts[19] anticipate that the most plausible and, also, the most dangerous ones will be atypically structured, meaning that they will not emanate from the enemies technological differences, but comprising features and procedures that will overshadow conventional military thinking. Future conflicts will come from non-military germs and will reverberate into contradictions between states or interest groups. Their ascendance resides in irregular, disastrous or "of scope" and "of context"[20] hybrid threats, which occur when targets

or countering reverse actions, are missing. Out of these, Nathan Freier assesses that the "contextual" threat is the most serious and complicated, raising great challenges with respect to its decoding.

Contemporary military actions, probably with isolated exceptions for the totalitarian regimes, cannot be triggered only by the simple will of the supreme leader. The politic decision must be supported by the civil society. Any decisional slippage for declaring wars is penalized, sooner or later, by street movements, by popular voting or by the international organizations. Today, more than ever, the civil society, that becomes more and more aware of its participation in the budgetary and ideological support, keeps being interested in the evolution from the theaters of operation and becomes sensitive especially in comparison with human expenses.

While during the Soviet ballistic missile offensive in Cuba in 1962, transistor radio allowed the ordinary Westerner to sequentially connect with overseas events, during the Vietnam War of 1965-1973 the televised image became predominant. Gradually, a strange phenomenon that occurred, known as the "CNN effect", emerged during the First Gulf War in 1991 and was amplified by the Balkan conflicts during 1991 and 1995.

Therefore, the whole informational spectrum became exploited by the directly involved states mainly through the political class and, secondly, by the specialized military structures, according to the current agenda. Even mass-media took advantage of the emotional state of the masses and depicted the events in a spectacular and marketable manner, in order to increase the audience and, consequently, the income. The outcome of mass communications keeps raising controversies from the standpoints of objectiveness, opportunity and actor-director dichotomy within the phenomenon. The obsessive idea that justice stands on the side of the many and the independent becomes preeminent based on their exhaustive information.

Basically, the actors presenting transparent theories, with established precepts within the limits and the spirit of international humanitarian law, are opposite to the ones that apparently lack in doctrines but address fanaticism fed arguments and excesses manifesting ethnical, cultural and religious etc. connotations. Therefore, a new important actor of the military operations is outlined: the civil population. Paradoxically, in the belligerent zone, civil population tends to become a potential victim of the violence generated by combatants that lack a transparent doctrine, while the humanitarian support and physical protection get to be provided by the adverse military structures. Also, in the scenario of a lasting conflict, the civil population transforms in a combatants' regenerative well, sometimes with the unusual participation of women, children or elder population. Any error, slippage or force excess towards the civilians is blamed by the opposite side and is exploited as a motivational factor within further operations, as a catalyst agent having critical support in approaching the posterity over-issues.

One may say that the main challenge of war actors as political or military decision-makers is to hold control over the popular masses, to gain their sympathy, will and support. While, after the Vietnam War, the American public opinion rejected anything related to armed conflict, soon after the 9/11 terrorist attacks it strongly supported, at least in the beginning, any means for punishing and eradicating the terrorist phenomenon. An exaggerated emotional attitude was reached so that even the possible American military casualties were seen as fully legitimate. A shift in the sensations, perceptions and representations was noticed within the civil society in relation to the military phenomenon, shift that generated "the transformation of the public attitude towards the armed forces and war itself, a transformation as a less permissive perspective towards the use of force"[21].

The main scope is the capitalization of the strategic shocks' potentiality to channel the thinking of the masses in a way favorable to the one who intervene. It is not based on violent measures enhancement and on imposing the will, but speculating or making an unbalancing conjuncture and then raising false solutions. Therefore, the action takes place prior to the classical war paradigm. If, within its frame, the justice was on the side of the most powerful, the winner's, it looks like, within the contemporary frame, the legitimacy of actions belongs to the one that benefits from the masses adherence, though prior the effect. Controlling the consciousness of the masses, the tactical and operational supremacy is maintained.

Nowadays, real military operations are made so that military intervention features a surgical

accuracy, it is fast and, essentially, it brings solutions with an immediate impact in order to enhance the living of the domestic nation. Classical military operations come together with concrete measures for regenerating the affected society as part of certain rigorous planning.

According to the model conceived by Milton Friedman, developed societies tend to create scenarios in their own interest that can be promptly applied to the targeted societies. The weakness signals will be channeled and amplified so that they pose a benefit for future strategic approaches. Each disaster will be artificially amplified and charged in a propagandistic manner so that the reaction of the masses serves the concurring element's interests. In case that the events do not follow the desired path, immoral solutions of veiled interference can be applied. If these false issues cannot be discovered, informational techniques are being imagined and applied, that will generate reactions which should also be treated as inacceptable. War becomes an unfair approach of a counterfeit and bombastic theme hidden under the mask of humanitarian support.

Military structures act in order to accomplish certain clear and publicly-stated strategic objectives, which condition both the timeframe and the intensity of an operation, and also the post-conflict tasks from the field, the tensions mitigation strategy and how to restore the institutions of major interest. Opposite to the previous, the fundamental objectives aimed by non-state actors will be elusive, unconfessed, materialized by fanatic instigations, directed towards the instauration of disorder, of continuous resistance and the thwarting of applying the potential stabilizing regulations. The objectives to which combatants aspire are polarized. The belligerents are heterogeneous numerically, in training or equipment and their motivation is ambiguous to their own communities. That is why military operations become vulnerable in the frame of international legislation or traditions.

Albeit precisely defining strategic shocks is difficult, certain analysts[22] noticed that, sometimes, strategic shocks are like repetitive models shaped as a revolutionary wave. Studying the social dynamics from the North-African countries, J.N. Nielsen observed that the shock produced by the worries in Tunisia degenerated in the neighboring states, propagating like a tsunami wave to the Middle East security space and with consequences still up to date. A singular strategic shock aroused a shock wave that affects the fragile arrangements, acting like a pressure force towards them. States subjected to the shock wave are sentenced to react, under the pressure of the international community, leading most of the times to collapse, as demonstrated in Tunisia, Egypt and Libya and during reissue in Syria.

The assertion of LTG Robert Fry, the former deputy commander of the Iraq coalition, is remarked with respect to the future strategic shocks: "I have no idea which would be the next strategic shock. It may be the collapse of the European currency, or something connected to the human genome research, or an attack of Israel against Iran, 'supported' or 'encouraged' by Saudi Arabia or by the Gulf states (author's note Persian Gulf), or it may be something related to North Korea. I have no clue about what it will be. The only thing I am convinced of is that another strategic shock will definitely occur"[23]. It may also be mentioned a possible natural cataclysm, indicated by the tectonic activities and by the reactivation of certain volcanoes, or even a possible armed conflict within the South China Sea, pointed by the recent edification of the artificial islands surrounding Taiwan and its risk of isolation by China. As a consequence of their technological capacities for producing and deploying such arsenal, Iran and North Korea's nuclear related issues will be treated subsequently throughout further research.

In the economy of the analysis of future strategic shocks, it is important to emphasize that modern society benefits from a substantial technological advance focused on information systems, found in various products and services such as communications, autonomous systems, transport or data manipulation. A relevant part of the new technological conquests also finds applicability in the military area, an aspect that gives rise to a series of conceptual, normative and operational problems regarding the possibility of determining clear limits of their use and development frameworks and, inductively, in terms of the eligibility and consistency of current strategies in proportionally assessing their ability to generate new strategic shocks. Consequently, the preponderance of information systems in public infrastructure and their complexity determine an increased attention to the impact they can exert on the configuration of

modern warfare and, implicitly, of shock, from the perspective of humanitarian and strategic risks that may arise.

The information system

As any other organization, the military organization consists of a logical structure with a functional and pyramidal hierarchy which is set based on a coherent ground, as a network and in symbiosis. In the current environment, the network-level organization is essential, due to its high flexibility. Therefore, an information system may be defined as a systematized gathering of people, programs, equipment, communication networks and data funds which collect, modify and distribute information within an organization.

The overall systemic activities flow from the conjugated action of the command (decision-making), operational (executive) and informational (liaison) subsystems. Organizations "treat streams of materials and streams of information in order to achieve the goals imposed by their activity" [24]. All subsystems may be decomposed, in turn, in other subsystems that work together in order to assure and maintain the global functioning of the organization.

The information system provides elements for acknowledging the way phenomena and socio-economic processes develop within an organization. This helps to the evaluation of certain situations and to the identification of their causes, representing a support for the deciders placed at each hierarchical level. Also, it provides an operative and proficient step in structuring and channeling the activities and in the appropriate execution of the control function when applying decisions.

Informatics systems contribute to the increasing degree of operationalization in acknowledging the board and all-levels decision making, to diminishing the amount of documents, of written correspondence and to the efficient use of highly qualified human resource by unchaining it from routine tasks.

Automatic data processing is essential at all hierarchical levels and in all executive steps, with the capacity to provide the simplification of tasks and the improvement of informational procedures, to assist and support the command act and, also, the decisional process.

Whereas the decision belongs to human beings, the information system is empowered to provide all useful elements and to allow for an optimum resolution based on clear and complete information. Also, it may be used scholastically, as an instrument for simulation, providing a swift evaluation of the decision's consequences and the adoption of the most effective one. Therefore, "informatization may objectively comprise only those parts from the information system that are formalized by defining transformation functions of inputs into outputs" [25].

The physical integration of information is made by a computer network that provides the repartition of the stored data into subordinated entities. As a result, the integration directs to architectures of hierarchical informatics systems, where real time interactive processing and their allocated storage become more and more important.

Digitalization and technological dependence

An increasingly common phenomenon in high-tech confrontations, as an effect of technological evolution, with an impact on the course of military actions, is digitalization.

The integration of the entire equipment, of the means of communication and systems for the forces, along with the exponentially increasing volume of information and also the need to process them generated difficulties in interoperability. The first major such problems were reported by the US military as a result of the campaigns in Panama and Grenada in the 1980s. Following the identified vulnerabilities, the concept of joint action was debated and developed.

The implementation of digital technology in the military phenomenon occurred as it interfered with the entire social environment, as an adaptive reaction of the system towards streamlining the activity, increasing transmission accuracy and archiving capacity, but also increasing performance as costs decreased. The quality of internal processes in the Major Staffs led to the registration of qualitative changes, especially in terms of information and operational superiority.

Access levels can be given to the database. Access authorizations are managed in such a way that they can be debated, updated or consulted with the allocation of minimum resources. The main beneficiary of the synthesis of information, the staff officer, may express a greater freedom

of action. Automated assistance gives the staff officer the opportunity to channel his energy and attention to the really relevant things. Access to explicit information in the tactical field allows the creation of a significant time advantage, as the user has the opportunity to quickly, coherently and completely assess the tactical situation, to debate on the conclusions and transmit them quickly even in graphic, explicit form.

Practice has shown that a considerable part of digital information in the electronic environment is not of considerable relevance, so a key requirement is its synthesis prior to the submission of the commander's decision. The swift solution is all the prerogative of digital technology, as information at the limit of relevance can be easily attached or removed. Conversely, the commander's intention, in letter or graphic form, may be transmitted digitally within the secure internal network so that reception by authorized personnel is instantaneous and unaltered. In other words, "the digitization (computerization) of the fight will not deprive the commander of responsibility and the need to ensure freedom of action"[26].

A major concern at NATO level regarding digitalization is proved by the existence of the declared function of the Digitalized Battlefield within NAAG[27]. In this framework, technical protocols and procedures are calibrated under the tutelage of the interoperability of terrestrial systems. However, the applicability of this desideratum is at least debatable, as it counters the interests of commercial giants struggling to maintain their intellectual property protection and supremacy on the market.

Scientific and technological development is, indisputably, not only influenced, but also controlled by the political factor. On the other hand, the physiognomy of war is regulated by technology. Researchers in the field estimate that "approximately 400 technologies have a dual use, in the civilian and military fields [...] especially in the aerospace area"[28]. The new technology is a technical and moral advantage to the detriment of classical technologies. Given that the major confrontations over the last two decades have taken place between disproportionate forces in terms of technological capabilities, it is difficult to imagine a physical conflict between similar opponents in terms of endowment.

The natural question is whether the computer network is not too exposed to an attack on electricity supply, given that its overall energy autonomy is relatively low. When a force has an overwhelming technological advantage, it is difficult to close the development gap. Under such conditions, concerns will be directed at cancelling superiority by speculations on vulnerability. Thus, the channeled interest towards the improvement of new destructive means, such as those that generate the electromagnetic impulse, which could neutralize the advantage of strongly or fully cybernetic armies, becomes logical.

The role of information technology in military actions

In the past, the fate of the classical war, in empirical form, required intuition and experience from the commander in the perception of the conflict field, the interpretation of the situation, the issuance of the decision and the transmission of orders to the fighters. Technological progress has left its mark on the military organization, directly influencing all the processes of the commander's prerogative and, consequently, challenges the outcome of the conflict.

The implementation of information technology in the military system is a gradual, unstoppable process. This does not imply, in any case, the complete elimination of the need for the physical presence of the military in the battlefield.

The command-control process is improved by interconnecting the means of communication, storage and interpretation of data, it facilitates the decision and reduces the time of transmission of orders. The accuracy and amplitude of the information provide an objective overview of the tactical situation. The advent of the electronic computer has allowed the automation of procedures in the field of command and control system.

Connections between computers gave rise to networking and later to computer systems, which in turn were integrated into communications and computer systems. The latter facilitate the conduct of military actions, by assembling human intelligence with artificial intelligence.

The decision-making process gets automated technical support through easy and precise relationship, both horizontally and vertically. Thus, the objective and detailed information of

the commander and the staff under his command allow:

- elaboration of the optimal decision and knowledge of the implications in full;
- channeling the tasks and energy of the engaged personnel, from the field of routine in that of data interpretation or parameters and in that of conception;
- objective management of military structures, based on accurate, complete and timely information;
- simplification of document drafting;
- systematization and standardization of operational documents;
- increasing the speed of data processing, analysis and interpretation, inversely proportional to the required response time of the command and control system;
- emanating the algorithms of the usual activities;
- elimination of latency times in the information circuit, facilitating reasonable decision-making times.

Information technology in the information age creates opportunities for optimization in terms of organization and endowment of forces. Equipment for interception, storage, alerting and prompt dissemination of information has self-improvement capabilities. High-precision weapons, connected to the computer, determine the increase of combat power, which was proven in theaters of operations. The connections between the sensors on the military and surveillance equipment helped to reveal the broad spectrum of the combat space and to secure communications between the elements of the force.

Under the impact of new technological capabilities, the content of command and control processes is not expected to change substantially, "since it is directly related to the nature and structure of human thinking"[29], but the speed of processes will increase as communications and computing systems develop. It is estimated the evolution of a range of "human-machine interaction technologies (along with the necessary physical devices) that increase the speed and efficiency of user-computer interaction"[30]. This involves computer programs for recognizing handwriting, voice, and physiognomic characteristics with the help of unobservable receivers, 3D graphics or virtual reality.

The influence of information technology on the structures of the Armed Forces

Modern technologies, aggregated with the efficient use of information, provide individual as well as collective benefits, whether subunits, units or large units are concerned. Own forces are able to detect danger in advance and will easily access the real operational environment, including the allies' or the opponent's. They offer the potential to emit a considerably wider range of effects, focusing on the means of combat necessary for the concrete situation. Thus, the own forces will have specific reactions in agreement with the objectives of the mission and the circumstances of the combat space. Technological benefits are also reflected psychologically, influencing the level of confidence of combatants through connectivity between individuals, subunits, support elements or hierarchical commanders.

From this point of view, technologies increase the organizational advantages based on initiative, adaptability, teamwork and morale.

In order to capitalize on the amplified potential of new technologies, it is necessary to bring the own forces and means closer to the future characteristics of military operations, by examining the diversity and complexity of recent history, of the present and of evolutionary trends. The consequences will indicate the limitation of the probability of sustaining operations of a single type. Combinations of means, procedures, tactics or even strategies will be found. It is considered that, as the situation in the tactical field evolves, an initial operation of a certain type will metamorphose or combine with others. Hypothetically exemplifying, a conventional response operation will turn into asymmetric actions, using specific counterinsurgency or counter-guerrilla procedures, simultaneously with evacuation, stabilization, transition or reconstruction operations. The conjectural complexity reaches its peak in the case of hybrid warfare, when several types of operations are highlighted throughout the conflict.

The approach of the plural-valence of military actions executed in a complex operational climate conditions the presence of force structures corresponding to the entrusted missions and objectives. Tadeusz Kotarbinski's concept of efficiency, which he called "effective an action that leads to an intentional effect as a goal" [31], is back in vogue.

The information technology gives the military structure the action efficiency according to the parameters at which the proposed goals were expected to be achieved. It requires, first of all, the acquisition of the operational advantage through its performing constituents. The kinetic (physical) component loses its main role in achieving the objectives. The non-kinetic components, represented by psychological, media, informational or cybernetic operations, are placing their mark on the efficiency of military action.

Future military actions imperatively require the design of an organizational and functional balance between the physical components (maneuver, support, impact, protection) and the non-kinetic ones.

But the kinetic component also tends towards super-technology, for the same fundamental purposes of preventing the destruction and own losses, and more recently that of limiting the civil ones of the opponents. In the same context, the non-kinetic component aims to acquire information superiority that would confer operational benefits of physical abilities. The optimal ratio between the holistically analyzed components must contain the ISR module (information, surveillance, research).

Efficiency is based on the accuracy of the operation of complex systems of discovery, research, identification, selection and engagement of the essential targets of the opponent. The accuracy of the armament systems is analyzed in relation to the desired effect on its centers of gravity.

Combat and logistical support, interpreted as multilateral force support, is dependent on efficient computerized technology during military actions.

Final considerations

This paper, the results of which were obtained through the competition of methods that include the stages of documentation and analysis of primary sources of information, as well as the phases of induction and deduction, outlines the potential implications of triggering strategic shocks, whose probability of occurrence is amplified by technological advancement specific to the contemporary period, on the military environment, seen as the set of decision-makers and execution with the role of ensuring state security. From this point of view, the evaluation of the implications of the new technological conquests with applicability in the military system constitutes a challenge of global interest, as a result of the radical changes that emerging technologies with development potential may have on the doctrine, on the combat tactics, on the international human law, and, last but not least, on the society as a whole.

The pillars required for the development of the military structure and for the transformation of the configuration of the armed combat are: the expeditionary character of the forces, the high-tech capabilities, the integration possibilities and the interconnection potential of all components that contribute to ensuring national defense and security. The implementation of hardware and software resources in the human resources of the forces is a natural phenomenon in the current situation, with successive effects on the strict specialization of the military and eloquent information products.

It may be concluded that, as a rule, doctrines, concepts or educational processes are adapted following the technological revolution, as they are based on the conquests of the latter, but evolutionary estimates acquire special significance, as they reduce the response time to what causes the reaction. Current strategies to ensure, maintain and strengthen national, regional and international security, built on the paradigm of conventional conflicts, need to be improved in order to be effective in preparing for resilience against shock in the context of development and use, with increasing input, of new, unconventional emerging technologies, the nature of which inherently places them in the category of dual-use items.

NOTES:

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