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TRANSFORMATIONS DETERMINED BY THE EMERGENCE OF NEW TECHNOLOGIES IN THE MILITARY FIELD

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Abstract: *Rivalries between the great powers of the world have always been the main cause of the outbreak of world wars. Industrial-technological revolutions have constantly influenced the life of society and implicitly the military power of each nation. The emergence of new military technologies determines radical and complex changes in the structure, principles and fighting methods used in the Romanian Army. New technologies have been, are and will be the key to maintaining the Romanian Army in international military structures as well as the basis for the gradual development of its own military industry. The investments in high technologies, national infrastructure but also in National Defense domain can be the engine of economical growth of our country and by consequence, increasing global credibility upon Romania`s capabilities. The evolution of the informational domain convinced us that always the operational environment is constantly changing, which determines the adaptation of military technologies based on scientific discoveries and everyday realities. Technological superiority represented by artificial intelligence, quantum physics, 5 G technology, can be used as a Trojan horse to act violently on a military power that does not keep up with the development of technology. Technological progress means life improvement, but it can also bring new challenges or problems. Therefore, political goals must support the country`s national defense strategy to limit and overcome potential enemies.*

Keywords: *state-of-the-art technologies; technological and industrial revolution; information; robotics; operational environment.*

Introduction

The topic is debated in various books, magazines, publications, doctoral theses, representing a challenge for the new generation of soldiers who question the very existence of a revolutionary technological process in the contemporary era.

The research objectives are represented by identifying and highlighting the ways in which new technologies make their mark on the specific activities of the Roumanian National Defense System, on doctrines, manuals, operating procedures and last but not least on the field of military scientific research in the perspective of the development and endowment of military structures with more and more advanced equipment but also why not, on the development of its own military industry. In this regard, the article aims is to present, in a synthetic and integrated way, the problem of technological revolutions and the impact they have had and have in the National Defense System and in society, as well as aspects regarding the importance or significance of the development processes of technologies in the field of computer science, defense, artificial intelligence and emotional.

The historiographical research of weapons and military technologies from the earliest times to the present day, together with the skill of the people who use them, are means by which the Romanian people remained in the Carpatho-Danubian-Pontic space for more than two millennia and gave birth to a series of questions such as: What did the industrial or technological revolutions represent for the Romanian military system? Is there a rapid and

profound change in technology in the age we live in? What are the effects of cutting-edge technology on the development of the military system? Is it possible to revitalize the Romanian military industry and is it worth the effort?

The answers to these questions focus the research effort on studying the theoretical and practical implications they have and which could lead to some changes in the direction of investing funds for the acquisition of military equipment and last but not least, investment in human resources, which must use sophisticated equipment skillfully and use it to achieve the proposed goals faster and smarter.

The transformations brought about by the emergence of technologies in the military field are radical and complex, adapted to the ever-changing security environment. The political factor decisively influences the acquisitions of combat equipment, superior weapons and what results from this fact: changes in the forms and procedures of combat, structural changes in the armed forces, the elaboration of new military doctrines and theories. At the same time, the transformations of the military field determined by technological development, make science one of the most important factors for holding military power in a coalition and for the development and outcome of military conflicts.

The Romanian Army transformation is carried out with the evolution of society and concerns all the component elements of the military system: command, organizational structure, use of forces, endowment with technique, materials and equipment. Given the issues presented, we will try to answer the question: What are the relations between politics and military strategy in the current conditions and how does technological development influence the military system?

Conceptual approaches to technological-industrial revolutions and their impact on the military field

Living in such a turbulent and explosive age, in a life of permanent and profound change in all areas of life, it is necessary to clarify many enigmas and burning issues, without caring for humanity will not be able to step on a path that to carry at the desired end. Starting from the idea that "industrial and computer technology revolutions have had profoundly disruptive and creative effects at the same time" (Ullman 2021) we will analyze the main known events and their implications for humanity.

Until the eighteenth century, inventors were not scientists but people who worked directly in the production process and discovered ways to make work more efficient. We can say that this is how the first ships or siege weapons were built, which were not based on engineering calculations.

The first technological-industrial revolution could be considered the one of the end of the 18th century, the beginning of the 19th century, period in which the man's hand was replaced with the machine-tool, his power with the steam-based machine, when cities and industry were born, implicitly the armies of the world benefited from more and more advanced weapons (Orange 2022). The development of modern society has led to a considerable increase in military power, both through the formation of thought and especially through the development of the combative military capability of combat weapons. Thus appeared the first military specialties such as infantry, cavalry, artillery and combat engineers, endowed with combat techniques specific to the times: bullets, pistols, cannons, etc.

The essence of the second revolution at the end of the 19th century consisted in the scientific and technical development, in the appearance of electronics, informatics, in the conditions of increasing the number of the population and the correlations between them (Orange 2022).

The scientific, technical and electronic development made it possible to create electricity which led to the advent of the telegraph, the telephone, and later the discovery of the automobile. The computer revolution took a special place, in a priority way, in that period, because information became a power, as well as physical force or weapons. The technique of faster transmission of an increasing amount of information has given the society an indisputable superiority. Information has played an extremely important role in the development of society, which has been amplified throughout historical evolution.

Population growth has had and still has an overwhelming role in the development of all fields of activity, both through the larger workforce and through the increase in the number of those endowed with a scientific capacity channeled to the development of social life.

The multitude of these revolutionary processes determined major changes regarding the relationship between man and nature, the military field being implicitly experiencing a great development through the appearance of cars equipped with internal combustion engines, tanks, planes at the beginning of the twentieth century. The advent of electricity led to the creation of the means of transmission and electronic technology made it possible to automate troop management and troop supply activities. Thus the army developed an organizational framework with distinct units and large units, with well-defined functions and objectives, the endowment of the troops being brought to a modern level, which inevitably led to the greatest world conflagrations: the First and Second World Wars.

In the second half of the twentieth century, a third revolutionary wave culminated in the emergence of a new source of energy, namely nuclear (Orange 2022). Electronic products appeared with the invention of transistors and then the microprocessor (1970) and, last but not least, the development of the telecommunications and computer industry. The development of new technologies has given rise to new areas of research, especially space and biotechnology domain. A new era has emerged that has led to the automation of production processes and the emergence of industrial robots. The population continued to play a leading role in the manufacture and development of all goods and found the solution to quality assurance by achieving cutting-edge technologies in the field of electronics, computer science, robotics and bionics. Thus physical force gradually began to be replaced by an increasing number of intellectual operations.

The armies of the whole world have developed tremendously through the judicious organization of military categories and specialties, through the use of modern forms and procedures of combat, through the provision of automated materials, weapons and technologies, but also through the creation of an exceptional military education system. The atomonuclear technique determines the taking of strict national defense measures and the informatics one knows a great development during this period and constitutes the means through which the troops are led, performing the navigation, observing the battlefield, keeping in touch by means of transmissions and last but not least armament accuracy.

Thus the electronic means have led to the increase of the efficiency of the classical armament and to the change of the physiognomy of the military technique. Information technology and electronic components have gradually led to the development of complex automation systems that have increasingly developed the combat capability of armies. The quality and performance obtained have uses in ensuring the accuracy of missiles, radio-electronic combat systems, warning and control, troop leadership, etc.

The fourth revolution considered to have appeared with the invention of the Internet, at the beginning of the 3rd millennium, is based on the latest technological phenomenon – digitalization (Orange 2022). We are currently talking about autonomous vehicles and drones, virtual assistants, which has made possible new products and services that support our daily work. The military is invaded by sophisticated technologies that require significant human and material resources to keep up with industrial development.

So, we believe that the technological-industrial revolutions that led to automation based on electronics and microelectronics, later digitalization, are undoubtedly a new stage in human history and bring with its important changes in the use of human resources. At present, human does nothing but communicate to modern machines, by means of all kinds of computer means, what exactly they are to perform. An increasing number of people can become manipulators of information in various forms. The intellectualization of social activities leads to the gradual disappearance of the differences between physical and intellectual work. It is a true information culture that causes a radical change in our previous relationships with the natural environment, material and social, creating new values, a new style of approach to actions, new human relationships, a new way of seeing society and the world.

Information is becoming more and more an important factor of power than material resources and energy, and its lack decisively influences social development. Digital computer tools are used in economics, education, communications, public administration, culture, research, army, in everyday life. It is very clear that the leap of the transition to the information age, to artificial intelligence programs, is important and even fundamental for the entire population of the planet.

The current technological development is truly extraordinary, but it can be seen that the conventional war has not ended, with a present conflict such as that between Ukraine and Russia. Although there are technologies such as drones, computer-controlled weapons, near-instantaneous transmissions, turnkey combat techniques and a permanently known geographical positioning, today Russia – one of the most powerful armies in the world, uses in combat, the conventional tank and cannon, the usual firearms and combat procedures that no longer seem to be in line with the expected modern visions. Probably the transition of all armies from conventional to modern, digital technology will take place in a much longer period than we would have imagined. In view of historical developments, in its analysis and decision-making, society must take into account new realities, and decision-makers and scientists must pave the way for the development of society.

For less developed countries, the problem of introducing new technologies is not possible and there is a gap that causes a certain military inferiority. Analyzing the structural changes due to the transition to new technologies, we conclude that it is necessary to ensure that technological development does not lead to disruptions and undesirable consequences on the harmonious development of economic, technological, social-human, ecological and last but not least military power. The decisive character of science and technology in relation to the development of military power is imprinted, first of all, by their role in increasing the country's defense capacity. Given this role, the modernization of military technology by introducing microprocessors, robots, cyber leadership involves major transformations in the military field.

At the same time, "developments generate a diversified and increased complexity of the security risks and threats, such as cyber-attacks, information-related activities (hostile/influence actions carried out in the public space, disinformation, spread of fake or false news, etc.), as well as potential harmful and destabilising effects triggered by bringing in some civilian used technologies within asymmetric and hybrid actions, thus entailing new security challenges" (Strategia Naţională de Apărare a Ţării pentru perioada 2020-2024 2020).

The historical analysis of technological revolutions shows us the speed with which science and technology are advancing, shows us that human evolution is irreversible and leads us to think that in the not too distant future the artificial intelligence used in everyday life is not a dream.

We believe that the analysis of technological revolutions is directly related to the evolution of the security operational environment, which is constantly changing, so it is interesting to analyze how cutting-edge technologies have positive or negative consequences on the military environment and society in general. The application of quality high technologies and the new doctrines implicitly adapted, determines a revolution in military affairs. The physiognomy of future armed conflicts includes generations of smart weapons, C4I systems, electronic reconnaissance, surveillance and strike systems, information and psychological warfare techniques.

Analysis of the current operational environment from the perspective of introducing cutting-edge technologies in the military field

The evolution of the COVID-19 pandemic, the reconfiguration of Europe's security architecture, instability and strategic shocks, show that "technological trends related to the new weapons design are influenced by the evolving nature of threats but also to evolutions of dual-use technologies within civilian sector which could be used in asymmetric and hybrid actions" (Strategia Națională de Apărare a Țării pentru perioada 2020-2024 2020).

The modern joint operating environment is constantly changing and now includes the ground, sea, physical / air, information, cybernetic and cosmic space from the point of view of the opponent, neutral or other actors. It is interesting to address how certain factors such as infrastructure elements, weather, terrain, electromagnetic spectrum, chemical, biological, radiological and nuclear threats and dangers, politics, local culture and resources in the area, influence the operational environment and determine new technologies to adapt to these challenges.

In the future, "terrestrial, air, sea, and space will use the most relevant security technologies such as hypersonic vectors, 5G technology, quantum communications infrastructure, laser and electromagnetic applications, air and submarine space monitoring equipment, artificial intelligence, autonomous platforms" (Strategia Națională de Apărare a Țării pentru perioada 2020-2024 2020). The command-control component of the military system has established clear directions of action to understand the truly overwhelming importance of the new technological revolution, the great and profound changes taking place before our eyes in the development of science, technology, human resources and implicitly the military.

The opponent and the neutral or other actors influence the development of their own technologies through the necessary composition and the required characteristics. Different reservations about the new are always expressed, observed in the training fields when new technologies fail, or in theaters of operations where the operational environment is full of unprecedented challenges. However, these findings should not discourage those who use the technology, nor should they stop production and procurement procedures that have begun.

The infrastructure elements, weather, terrain are very important in defining the operational environment and have a decisive influence in establishing the characteristics of manufacturing and use of military equipment and technologies.

The relationship between politics and military strategy greatly influences the technology of weapons systems by making decisions to launch research, design and experimentation programs. In today's security environment, politics, strategy and technology are interpreted in terms of the complex relationships between them. Politics always has different orientations and trends, the strategy must take into account the characteristics of new technologies, and they must be constantly evolving. If in the past armament influenced fighting tactics and not strategy, nowadays it is the art of having the best possible means.

Thus we can say that the strategy will remain subordinate to politics and will have the role of scientific discipline and field of practice.

New problems can only be solved with ingenious methods, through cutting-edge technologies, moving in the right direction and at a steady pace. The new technological revolution, digital informatics, is taking place at a time when we already have a high degree of development of science and technology. "Quantum computers could, for example, make networks impossible for hackers to penetrate, making cyber and social media more secure" (H. K. Ullman 2021). It is possible that this development will lead to finding solutions to overcoming diseases and pandemics without a cure today, bringing the possibility of living in space or solving problems related to borders, ethnic and religious differences.

The military system was, is and will be the field that ensures security, sovereignty and understanding among the world's civilizations. The state-of-the-art technologies developed by science are somewhat oriented towards the defense of national interests, and research by military engineers develops extremely important defense systems in extreme situations during the current military conflicts.

According to the objectives of the military strategy, the army is the instrument that, in order to win the battle "is based on technological progress and its inclusion in the development of capabilities" (Strategia Militară a României 2021). Although, in the Romanian Army, most of the military infrastructure and technology remains at the conventional level, we can appreciate the interest of the leading factors for the rapid implementation of modern acquisition programs, for the elaboration of action concepts based on present realities and for participation in international conferences for knowledge of smart technologies that ensure the elimination of physical effort and ensure the quality and accuracy of objectives. In this moment we are bent for to discover how we can produce intelligent technologies, how we can create our new softwares, all-importants in order to simplify the making decision military process and how to have the best programmes of maintaining and assuming tasks which means more intellectual effort.

Although it is easier to make direct acquisitions of advanced technologies, we have the advantage of human resources highly trained and focused on knowledge, self-development and interest to create on their own. Robotics and artificial intelligence are already areas of national interest that are intended to be studied since the training period of young military personnel.

It is expected that military leaders and the new generation of military personnel will show a greater interest in the development of the field of robotics starting from "playing" on the computer and developing as the results and positive assessments are obtained. Artificial intelligence is not a sufficiently addressed field in Romania, but through the conferences and working groups we participate in with military and civilian personnel, we have begun to realize the need to replace the human factor in certain areas of military activity and we can hope that robotics will reduce the number of casualties on the battlefield.

In the context of contemporary reality, the information, if we think about the ever-evolving technology, the artificial intelligence based on algorithms, already applied in countries like the USA and China, military conflicts seem to become a nightmare for those without political and economic power.

In any case, human intelligence is one of the most important factors in winning wars and technological advances in the military field. Commanders play an extremely important role in making decisions. These are taken both on the basis of previous experience and knowledge and especially on the basis of intelligence and momentary brilliance. Romania's integration into almost all existing security structures in the world, NATO, EU, UN, OSCE was possible primarily due to the ability of the military to adopt its own procedures, working principles used around the world and to adapt quickly to the use of new technologies. The

Romanian intelligence and military skill perfected by participating with the first confrontation in Bosnia and Herzegovina, at IFOR missions (Implementation Force), SFOR (Security Force), ALTHEA, later the war in Iraq and Afghanistan, under NATO command, lead us quickly towards development in order to remain in the select club of the countries that decide the fate of the world.

So, the new technologies gradually introduced in the military field and the quality personnel who use them bring fast and profound changes in the planning and decision-making process, in the way of conducting military conflicts and extraordinary benefits to the life we live in peace and quiet. A rapid and effective solution could even be the development of the Romanian military research-scientific sector, which can become the key to the success of the assertion on the world market.

Implementation of state-of-the-art technologies through the development of the military scientific research sector

In the context of the terrorist threat or factors of political, economic, scientific, ethnic, geographical, military, geopolitical and other origins, the great powers of the world reserve the right to intervene militarily in any country in the world, ensuring, among other things, and access to strategic energy resources, drivers of increasing the capacity to impose new global power cores. In this regard, NATO's latest strategic concept states that "the conventional threat cannot be ignored. Many regions and countries around the world have embarked on the acquisition of important modern military capabilities, with unpredictable consequences for international stability and Euro-Atlantic security" (Conceptul strategic al NATO n.d.). Even if the natural evolution of the society implies the development on the economic, informatics, social levels, both at state, regional and global level, it would be a mistake to neglect the historical reality of total exclusion of the possibility of outbreak of interstate military confrontations, both in the near future as well as in the distant one.

The unpredictability of the operational environment characterized by a series of political, economic, geopolitical factors directs our attention to new technologies that will make a difference over time. Keeping up with NATO member countries is possible by ,,planning and conducting scientific research in accordance with the needs of conceptual and technological development of the Romanian Army structures" (Carta albă a apărării 2021).

The political decisions, accompanied by large-scale organizational measures and supported by the necessary financial funds, materialized in the field of scientific research in the Romanian Army by setting up new scientific research institutions or by developing existing ones, which had and have as main objective research, design and participation in the realization of the military equipment of Romanian origin. At the moment, the Military Equipment and Technologies Research Agency coordinates research and innovation centers, equipped with modern equipment, well-equipped workshops, pilot stations, special warehouses that ensure the best conditions for innovation, modernization, extremely useful in the field of information and communication technologies, NRBC defense and ecology, military technology and technology, weapons systems, flight and naval forces.

In order to modernize the technique of fighting through innovation, it is necessary the collaboration between the scientific research institutions from the army and the special structures from the Ministry of National Economy, the profile economic units and the institutions of higher technical education from all over the country. The analysis of the solutions obtained in the laboratories of the research centers, the contacting of the companies or factories of profile for the transposition in practice of the military inventions are important steps that are currently being carried out for the development of the country's defense capacity.

Romanian military researchers are part of the process of assimilating new prototypes of military equipment and materials by consulting them by those who make acquisitions. The diversity of research areas, the number of projects funded and developed in stages based on existing legislation, as well as the large number of specific equipment included in the endowment place us at a high level in the hierarchy of European countries that invest and obtain research products.

Leading the research activity is a growing theoretical interest in leading the National Defense System, which is why symposia, planning conferences and scientific evaluation are organized at national and international level. The activity of military research must lead to the superior capitalization of the available resources, to the technological development based on the new conquests of science and technology. In particular, scientific research must thoroughly study the structure of materials, physicochemical, biochemical, genetic processes and develop materials, equipment and technology with superior properties, new technologies that meet the requirements of the modern battlefield.

The Romanian Army has obtained excellent results as a result of the titanic work in the field of scientific research, a fact materialized by the realization in the national economy, with the exception of some imported minor components, of the whole range of equipment and chemical materials. Research Center for Ecology and CBRN subordinated to the Research Agency for Military Technology and Technologies has teams of leading scientific researchers, chemists, physicists, electronicians, pharmacists, doctors, biologists, biochemists, mechanics, armaments, motorists, military and civilians, together with assistants, technicians, laboratory workers, specialized personnel, logistically supported by the staff from the administrative sector, they made specific equipment with a high degree of originality, a situation that positively influenced the prestige of Romanians nationally and internationally. Bilateral technical collaborations with scientific research institutions from other armies or on the Warsaw Pact line have also played an important role in evaluating the performance of developed equipment.

Given the need for brief presentation of ideas, it is interesting to approach the field of military chemistry research which has remarkable achievements that have lasted for a long time and are excellent even today in the field of personal protective equipment: gas mask (1974) and gas mask with liquid supply device and sound amplifier device (1985).

From the field of military dosimetry and nuclear control equipment were realized: thermoluminescent dosimetric equipment AD-23 (1978), roentgenometer with display of the numbers R.B.A.C. (1985), the thermoluminescent dosimetric equipment AD-24 (1985) and the R.A.B. alpha-beta radiometer (1986).

For the execution of radioactive and chemical decontamination, engineers and technicians have designed, made and proposed for approval a wide range of prototypes: the unique liquid in the decontamination package, P.A.I.-80 (1980), ADTT-3M and ADTT-44 decontamination trucks, ATT-1 heat treatment truck and ADE-84 (1981) decontamination equipment truck. The chemical control equipment patented as inventions was: the automatic warning device for organophosphorus compounds ASTN-1 (1980), the automatic warning device for toxic neuroparalytic substances ASTN-2 (1986), as well as other types of indicator tubes.

Also, the performance of nuclear and chemical control equipment on aircraft and on river and sea vessels has been improved. The decontamination packages have been modernized and their multifunctionality has been achieved (decontamination of equipment, weapons, land, personnel and transfer of liquids), being also equipped with water heating units and decontamination liquid and multi-purpose liquid for chemical and radioactive decontamination have been developed.

It can be seen that after 1990, there is a decline in military chemistry due to lower budget allocations and lower forecasts for the use of chemical weapons. However, the following were made: protection suit for all branches, single-use protective cape, individual dosimeter with DIAC digital display and DET-2 family of dosimeters. Other notable achievements were: the first ballistic protection vest level III-A, the ballistic helmet, the 99 mm. caliber grenade launcher, the cumulative load for fast metal cutting, the kinetic bolt of disintegrant material for the breaker.

Therefore, all these remarkable achievements are appreciated as the label of the Romanian military institutions of scientific research and the more and more frequent visits of the foreign delegations show us the special interest and the uniqueness of the accomplished things. Also, the participation in the national research, development and innovation programs by winning the competition and awarding some very interesting projects, having as beneficiary the army and other organization with attributions in the field of national security prove the importance of science in the military environment and not only.

Conclusions

The current state of knowledge of world and national cutting-edge technologies is constantly increasing due to the participation with elite personnel from the military system in the working groups organized at the level of the alliances we are part of as well as nationally through knowledgeable military engineers and eager to create new things nationally. Continuous research in this regard will implicitly determine the finding of solutions to simplify the planning process, reduce the time allocated to each phase and make an optimal decision in order to carry out a military operation.

From our point of view, the current technological revolution, which involves artificial intelligence, digitization, cannot replace human reason, the feelings and experience of military personnel, so it is necessary that the development of technology and its use in armed conflict be done with great thrift.

At present, the groups for planning, conducting, executing and evaluating military operations are made up of experienced military personnel with advanced knowledge in the fields of operations, human and material resources, communications and informatics, which leads us to the planned objectives quickly, depending on material resources and allocated financial funds.

In the future, it is expected that regardless of costs, the introduction of artificial intelligence algorithms will lead to the resizing of military structures, the training of personnel in real conflict conditions through intelligent technologies and equipment to minimize human losses. It is necessary to pay special attention to human resources, which must be selected, prepared and trained in conditions that will later allow the use of high technology. The introduction of extremely complex technical categories in the military endowment determines the corps of military instructors and professors to find methods of research and learning of the new generation of soldiers for measuring short time intervals, establishing the coordinates of targets he cannot see with the naked eye, acquiring abstract knowledge on the basis of which laser equipment or smart weapons operate.

Given the fast development of technology, it is necessary for military leaders to be elected so that they understand the modernization phenomenon and lead the human force not to exhaust it physically but to develop it intellectually.

A first direction to follow is the obligation of commanders at all levels to study the need and importance that artificial intelligence has had and has in modern technology used in the planning of peace and war operations, on the process of decision-making as well as on the technology used directly in conducting military operations.

A second direction to be pursued is to influence decision-making power, on the need to maintain the balance of forces and means, by giving scientists confidence in the development of technologies, to bring Romanian military structures to NATO standards and requirements.

The third direction of analysis proposed would be the exponential increase of the scientific character of the research by enrolling a larger number of students in the Military Technical Academy, by increasing the quality of materials and equipment necessary for the creation of inventions, by establishing clear objectives to be achieved for the beneficiaries of the resulting products and by planning the research activity according to the resources of possible enemies. It is possible that the pace of technical and scientific development will become slower due to the huge volume of information that has invaded the world, but the elimination of limiting factors such as: reduced human and material resources, the impossibility of having the entire flow of technical-scientific information, the increase of schooling periods due to the necessary volume of knowledge, can lead to progress.

Technological-industrial revolutions demonstrate that technology changes mindsets, creates the possibility for human resources to surround themselves with high-quality people, and provides time for intellectual development outside of the service that provides them with a livelihood. Undoubtedly, their impact on the military is felt especially in the production of weapons and ammunition, which produces important changes in leadership, organization, methods and procedures.

Each of us is aware that modern technology involves exorbitant costs, but step by step, over time, it can create unexpected benefits for the entire society in which we live.

By promoting modern ideas and the ability to influence the direction of funds towards technical-scientific research for the development of military equipment and techniques, by using the human military and civilian elites, as well as the material resources existing in the Romanian institutions, we could discover the key to the success of the modern Romanian industrial revolution.

Simultaneously with the development of the means of fighting, the correlation between the types of weapons and the categories of armed forces changes. As the armor troops and automobiles developed a lot after the Second World War, the number of infantry was reduced, the artillery was resized, new research units appeared, battlefield observation, combat engineers, special forces, ensuring the maintenance of modern technology. Thus, the Romanian Army, under the impulse of the technical-scientific progress, first of all of informatics, cybernetics, electronics, has become a modern structure with a smaller number of direct fighters, but able to handle the present technique, with extremely effective effects in contemporary combat. The military structures develop over time according to the social-historical context, registering shortcomings, re-evaluations and successive improvements.

Analyzing the evolution of the military structures as a result of the development process of the society, a continuous reconfiguration of them is necessary due to the acquisitions of high-performance equipment. The transformation process is not an easy one and involves sacrifices from both human resources and substantial material and financial resources.

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