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CONDITIONS FOR THE CREATION OF A POLISH AIR DEFENSE SYSTEM

Maj. Gen. pil. Leszek CWOJDZINSKI

Director of the Armament Policy Department,
the Ministry of National Defence

Abstract

A presentation by the Director of the Armament Policy Department, the Ministry of National Defence, given during the National Scientific Conference on 'The Polish Air Defence System.' The role of the Armament Policy Department of the Ministry of National Defence in the process of the modernisation of air defence system was discussed.

Key words – air defence, system, modernisation

Introduction

In recent years, much more than before, in Poland as well as in many other countries more or less technologically developed, the need for creating or upgrading existing air defence systems has been discussed and the appropriate actions in this direction have been taken. The Armament Policy Department of the Ministry of National Defence recognizes its own role to be fulfilled in this area, performing tasks associated with the creation of the state armaments policy. At the beginning, it should be explained what an armaments policy is. Armaments policy is a system of interrelated actions taken by the state in the areas of:

- Security of the state, where the main tools in this area are the National Security Strategies of Poland, which are developed regularly;
- The functioning of the Armed Forces, to an extent relevant to the achievement of certain operational capabilities through the acquisition of military equipment, which is necessary to ensure national security and the inviolability of borders;
- Scientific and industrial potential, as far as the possibilities of research, development, production and technical support for military equipment are concerned.

Regardless of the adopted predictions of the international environment, the development and related assessments of the reality of armed conflicts; the defence

of the state's independence as well as the integrity of its territory and common defence against aggression, remain the permanent constitutional duty of the Polish Armed Forces, and its obligation in line with the North Atlantic Treaty which was ratified by the Republic of Poland. However, we all realise that in order to fulfil this important constitutional duty, each kind of Armed Forces should be equipped with the appropriate tools for the task, in the form of the most modern military equipment. As achieving such a state is not possible in a short period of time, we are forced to take actions connected with prioritising goals to be achieved and to make decisions about which of the goals are more important and of which the implementation can be postponed. The fact that the significance of the task has been confirmed by the highest Polish authorities demonstrates the utmost importance of the project.

The need for the OS system's development

In accordance with the decision of the President of the Republic of Poland dated 8th November 2011 on determining the main directions of the Polish Armed Forces' development and on their preparations for the defence of the country for the years 2013–2022, the priority directions of development in the area of technological innovation were listed. Due to the document, it is the development of the air defence system, encompassing missile defence, which was, among other things, included in the priority group needing technical modernisation. That way, the importance of this area was highlighted, as it is very difficult to imagine conducting defensive activities in a country without an effective air defence.

In all the international conflicts that have taken place all around the world in recent years, air defence played a crucial role, which confirms the opinion that the significance of air defence in the conditions of a modern battlefield cannot be overestimated. Having air superiority prevents the opponent from conducting combat operations on land freely. It is the main task of the air defence, which, in a broader meaning, is an element of the national defence system, designed to ensure safety in the air.

In the case of a border country of the alliance, such as Poland, in order to achieve the goal, it is necessary to have a very modern and effective air defence, including anti-aircraft defence which is one of the three active types of combat, besides fighters and electronic combat units. The role of the particular components of the air defence is equally important. The components perform tasks together as well as independently. The activities of fighters cannot be replaced by ground air defence (i.e. anti-aircraft and missile defence) and vice versa. To carry out this task, ground air defence, apart from the means of destruction in the form of missiles, must be able to detect, track, identify and engage air targets. Early

detection of an air opponent creates the conditions to choose the right means of destruction, in order to prevent an enemy from attacking defended objects.

Each of the elements of the air defence is equally important and should be systematically developed according to the following rule: *the life of a 'chain' is determined by its weakest link*, and therefore the quality and durability of the whole air defence system is determined by its weakest element.

The political and military transformation of Poland in the 1990s, that is the collapse of the Eastern Block as well as the Warsaw Pact, changed the situation of Poland in the international arena dramatically. The military equipment owned by the country became incompatible with the equipment of the NATO member states, the accession to which was Poland's main goal. Thus, the military equipment was supposed to be changed as soon as possible. Since then, there have been a lot of changes in the area of air defence, both in the structure of the Armed Forces as well as the equipment which has been upgraded significantly, among others, through the purchase of many F-16 aircraft. The least visible actions have been taken in the field of a ground means of the destruction of air defence: that is anti-aircraft defence, where the equipment from the 1960s and 70s is still exploited.

In the case of the lack of the modernisation of ground air defence and the approaching end-of-life of the existing equipment, the issue of obtaining modern anti-aircraft and anti-missile systems becomes crucial as it has a direct impact on the level of national security.

In order to complete the task which was given to the Armed Forces of the Republic of Poland, the approach to the process of the technological modernisation of the Armed Forces has been changed in the recent years. At the moment, the process is mainly carried out on the basis of the identified operational needs, with Operational Programmes being developed on the basis of them, which assumes achieving the required operational capabilities, obtaining new military equipment, as well as the modernisation of the military technology exploited in the Armed Forces.

External factors influencing the OS system creation process

Among the 14 Operational Programmes established for that reason, there is an operational Air Defence Systems programme, whose aim is to obtain the operational capability to provide protection to facilities, administrative and economic centres, military troops in the regions of operational development and during joint defence operations in the national, allied and coalition systems. The required capability will be achieved, in among others ways, through acquiring modern anti-aircraft and anti-missile systems, artillery-missile systems and anti-aircraft portable sets attached to vehicles, with radar stations providing the systems with the necessary information about the targets. As a result of these activities, the effectiveness of air

defence will increase and the ability to combat present and future means of air attack will be gained.

The scale of the projects connected with the implementation of the air defence system development programme means that it will have an impact not only on defence abilities and finance, but also on economic aspects, the development of science and technology, and also on international relations for many years. These factors make the issue of ground air defence modernisation go beyond the standard framework for acquiring military equipment and therefore it needs a broader and more comprehensive approach to the problem.

All the conditions listed below have an impact on the process of the Polish air defence system's creation:

1. political,
2. financial,
3. economic,
4. technological.

First, the political conditions will be discussed as, taking into account the geopolitical situation of Poland, they are of great importance. According to the National Security Strategy, a document in which the requirements of modern country management have been included, the main pillar of Poland's security is its membership in NATO and the resulting state obligations, which are an element of European security. To meet these obligations, Polish Armed Forces should have their own contribution to the formation of the system, also in the form of a modern air defence system, including anti-missile defence. The participation of Poland in the creation of the future architecture of the anti-missile defence system of the alliance could be divided into two parts:

- cooperation with the USA as far as the construction of the US anti-missile system (MD) is concerned. In the third stage, a part of the US anti-missile defence system in Europe (European Phased Adaptive Approach – EPAA) is planned to be deployed in Poland. This system is to be included into the NATO anti-missile defence (NATO BMD).

- participation of Poland in the development of Active Layered Theatre Ballistic Missile Defence – ALTBMD, and the building of its own capabilities in this area.

The programmes of air defence system development, especially anti-aircraft and anti-missile ones, have great potential in the area of 'Smart Defence' and 'Pooling and Sharing' initiatives. The cause of these initiatives lies, among others reasons, in the economic difficulties of the major states of NATO and the EU, as well as the reduction of defence budgets in most European countries. It had a decisive influence on the amount of expenses dedicated to the development and modernisation of military equipment and the ability to achieve new capabilities. In the European countries, even more attention was paid to searching ways to implement joint international projects and to taking actions which could maintain

the level of growth in modern military equipment, and in that way reduce the expenses of particular countries.

Decisions about participation in international projects must be preceded by a thorough analysis of Poland's needs, as well as abilities to achieve the desired operational capabilities, including a risk assessment in the case of a project's failure. It should also be considered that these actions will not always take the full range of our national economic interest into account. Some of these programmes are at a high stage of implementation and the future of some of them is unknown.

Large programmes, whose aim is the creation of modern anti-aircraft and anti-missile defence systems, e.g. MEADS and SAMP/T, are being implemented on the basis of international cooperation and they are at different levels of completion. In the case of some of the programmes, there are no possibilities to join them at a certain stage of development any longer, and a purchase of them can only involve their adaptation to Polish requirements (standard: vehicles and communications), and, as a result of negotiations, the participation of Polish industry in the production of some of the components. It should be noted that all countries struggle to protect their vested economic interest. In the modern world, the right planning of a project cannot take place without an adequate basis in the form of secured funds which enable the smooth implementation of the project. These activities must be correlated completely with each other.

The undeniable fact is that technical modernisation, and in particular gaining the most complex and modern air defence systems which are currently available in the world, depends largely on the financial capabilities of a country. The financing can take place in two ways, i.e. with the use of the funds guaranteed in the Technical Modernisation Plan, from the budget of the National Defence Ministry, and with the use of the funds dedicated to the research and development projects, from the National Research and Development Centre.

The aim of the main projects implemented according to the Technical Modernisation Plan within the framework for the Operational Air Defence System Programme is to obtain:

- 1) short-range surface-to-air missile (NAREW) and medium-range surface-to-air missile (WISŁA) systems (with the possibility to combat ballistic missiles);
- 2) very short-range gun-rocket systems (PILICA) and self-propelled anti-aircraft missile systems (POPRAD);
- 3) anti-aircraft artillery systems (NOTEĆ);
- 4) man-portable air defence systems (GROM) (MANPADS);
- 5) 3-D deployable radar stations (BYSTRA and SOŁA).

In the case of work done under the framework of the National Research and Development Centre, in favour of the development of the anti-aircraft and anti-missile defence, it should be emphasised that these projects are an important element initiating the fulfilment of the required operational capabilities.

Among the recently launched projects in the field of air defence in NRDC, there are, among others, the ones which are related to the development of:

- a multifunctional weapon-control radar for ground systems of short-range air defence;
- a multifunctional weapon-control radar for ground systems of middle-range air defence;
- early warning, 1 meter band radar;
- a passive localisation system in PLC and PET technologies;
- long-range, S band radar.

Another extremely important factor affecting the creation of the air defence system in Poland is the economic aspect. In recent years, there has been some information about economic problems afflicting some countries and the restrictions on funds dedicated to defence in those states. The countries are looking for various ways to handle the crisis, and the reduction of the size of the armed forces and the giving up of spending large funds on technical modernisation are some of the solutions. During the current economic crisis, in the case of very large expenses planned for the modernisation of the air defence, including the acquisition of modern anti-aircraft and anti-missile systems, it is important to address the basic issues:

- whether the armament industry is an important sector of the economy that should be supported by the redistribution of the financial resources in the national economy, that means allocating orders to Polish companies in order to facilitate the development of competitiveness and to increase the participation in the international work sharing?

- whether it is a priority to gain the best and the most modern weapon systems and to minimise running expenses and operating costs, and to build the economic facilities of the country in other areas of the economy?

The answer to these questions can only be one: the Polish armament industry is an important part of the national economy and it must be kept in good condition. The activities related to the modernisation of the Armed Forces are intended to ensure broad opportunities for the Polish armament industry to participate in achieving the capabilities, which is strongly related to the other question about making a decision on how to acquire operational capabilities as far as the air defence system is concerned:

- which technological areas are the ambitions of the national armament industry invested in, and whether we have the ambitions to be involved in selected areas of technology used in ground air defence systems, and whether we intend to develop our own constructions?

It should be stated that it is not possible to create and maintain the level of technological development of the home armament industry in all areas at an equally high level. The decision about the choice of the direction of technological

development should mean an investment in research work, ensuring the continuity of development as well as providing an outlet on the domestic market in the future.

To increase the effectiveness of the actions taken, it is important to be prepared organisationally and technologically to carry out the weight of such a big and significant project, which is the implementation of a programme of an integrated air defence system.

Assuming that the Polish armament industry will take a significant part in the system's construction, we should strive to focus our efforts on cooperation between the major actors of the national defence industry in order to ensure the closest possible cooperation between them, especially through the use of the maximum of their capabilities in the areas of research and development, technology, production and service. It would be the consolidation of a task character, providing links between the armament industries which perform a task for the Armed Forces as far as the acquisition of new military equipment is concerned, and also providing service, maintenance and modernisation of the equipment until the end of its life and its subsequent disposal.

The benefits resulting from the right preparation for the project would enable, among others things, the implementation of the projects, whose realisation would be technically, economically and organisationally impossible by a single actor, and it would ensure the better competitiveness of the domestic industry on foreign markets.

The benefits from the new approach to cooperation could be as follows:

- the ensuring of the consolidation of the industrial potential on the internal munition products market will provide for the better external competitiveness of the domestic industry.
- the enabling of the implementation of projects, whose realisation would be technically, economically and organisationally impossible by a single actor.
- the harmonisation of the actors' activities on the investment, research and development work policies.
- the increasing of the ability to obtain new technologies.

These are the benefits which are related to both the programme of air defence system creation and to any other programme in the framework of the Polish Armed Forces' development.

Due to the limitations facing the Polish armament industry as far as the production of missiles is concerned, it is necessary to look for a strategic partner to implement the project, which already has the technologies and experience essential in ground air defence systems production. Such cooperation could include the following areas:

- industrial, i.e. missiles and missile systems production to the extent not implemented in Poland yet.

- scientific – involving Polish research centres working on the further development of missiles and missile systems with the use of advanced technologies.

Currently in Poland, we have only the technology to produce a very short-range missile called GROM. In the next few years, we will not be able to obtain the technology to produce short-range and middle-range missiles, thus we will be made to buy them from foreign suppliers.

Poland has had significant achievements in the area of radar, although it still does not have radars with an active wall antenna. It is assumed that in the next few years, there will be great achievements in this area. At the moment we lack the experience as far as interoperability is concerned.

Nowadays, there are some national solutions in the command posts, which ensure the functioning of anti-aircraft systems in the Polish air defence system. Nevertheless, they fall behind the world's advanced solutions, especially in terms of interoperability.

Currently, we have the means of communication, which are able to meet the requirements of new systems and, undoubtedly, this area should be based on the domestic industry. We should realise that the world's leading manufacturers of ground air defence systems protect strongly their own technological achievements and even if we can assume that Polish industry will take part in the work on obtaining air defence systems, then this will be unlikely to allow Poland to import technologies and develop them, e.g. missiles - in the light of previous experience, this seems difficult to achieve because of:

- the desire of the producers and the state to keep control over the advanced technologies (weapons) and their further development in order to ensure appropriate income and revenue;
- prevention of competition in foreign markets.

It is necessary to look for the opportunities (new solutions) to build non-standard systems, which conceptually go beyond the same patterns, and respond to a real threat. Moreover, it can be assumed, that in the near future, the tasks performed by POs systems will be affected by the wide range usage of new solutions, such as:

- unmanned reconnaissance and strike systems with parameters enabling their use in the conditions of regular armed conflict;
- on-aerostat radars;
- energetic weapon;
- systems impeding target guidance device;
- passive radar systems.

The dynamic development of technologies in recent years enables the redefining of many standards and the avoidance of unnecessary stages of development as well as the reduction of operating expenses.

The rapid development of technology in the field of radars is noticeable. It results from progress in the theory of science as well as from achievements in the field of science, allowing not only the miniaturisation of devices but, first of all, a new qualitative level of their functionality. To meet the challenges, Poland takes part in the NATO programme of software-defined radar development. We can also observe an intensive development of passive radar enabling the survival of air defence systems in the modern battlefield and the ability to detect and track airborne targets with decreased RCS.

Leaving the present understanding of air defence standards in the near future will enable the use of unmanned reconnaissance and strike systems with parameters allowing their use in conditions of regular armed conflict. The systems being designed should be characterised by the right speed and range, the ability to be used from the distributed sites, the use of special techniques of camouflage and having Polish navigation systems.

Another solution bringing in a new quality would be an application of an on-aerostat radar. It would enable the overcoming of the problem of the curvature of the Earth and the masking properties of the terrain in the form of terrain obstacles in combating low altitude targets.

Another important area in the search for unconventional methods of combating air-launched missiles could be, for example the development of an energy weapon, or systems interfering with targeting devices and passive radar systems.

Summary

To sum up, the Armed Forces are currently at the stage of technically modernising their military equipment, this in turn leads to the acquisition of new systems to a large extent, and consequently, to the development of concepts and procedures for their use. In this process, which will last for many years and will result in significant expenditures, it is important, at this stage of its design, to bear in mind that:

- the geopolitical situation of Poland forces the owning of a very modern and effective air defence, in particular, appropriate to the level of potential threats – anti-aircraft and anti-missile defence;
- the geographical terrain of the country leads to the search for non-standard solutions, especially in the area of reconnaissance, enabling the early warning of the enemy's munitions, despite obstacles in the form of the Earth curvature and terrain masking properties, including middle-range ballistic missiles and cruise missile, e.g. through the use of an on-aerostat radar;
- the modernisation of the air defence system, in addition to its basic task of defending the country, will also be a significant contribution of Poland to the European defence system.

– The Polish armament system should have a significant role in the construction of the air defence system, and we should tend to focus the declared efforts on such a cooperation of the main actors of the national armament industry as would enable the closest possible cooperation between them.

– to increase the effectiveness of the actions taken, it is necessary to be prepared organisationally and technologically to the implementation of a programme of integrated air defence system creation.

The implementation of such an important programme, with all the assumptions above taken into account, will undoubtedly provide us with the possession of modern air defence system, adequate to the threats of modern battlefield, which can become our contribution to the European security system in the near future.



ORGANIZATION OF A MANAGERS' (COMMANDER'S) ACTIVITIES

Col. Prof. Jarosław WOŁEJSZO, Ph.D.

Abstract

Organization of a manager's workday has certain impact on numerous issues. No one needs to be convinced that the thesis is right. It is not only creation of own image but affecting many affairs connected with the functioning of a company or its element. A manager, due to his or her position in an enterprise, is able to significantly influence the activities of subordinates.

One should also consider the fact that there is a correlation between a nature of work, specific character of a company and personality of a commander (manager). He or she is the one who choosing style of leadership is many a time determined by nature of work and issues to be decided. Remarkable feedback activity takes place between subculture of the managed and certain personal features and habits of a manager. Practice indicates that it would be good if a boss selected his or her style of leadership with respect to the subculture that can be initially found in an enterprise. There are many considerations affecting organization of a manager's activity, his vertical and horizontal relations. It is not justifiable for a new boss occupying his or her position to destroy everything established by predecessors.

In numerous literature analyses treating of management and the functioning of organization there is no direct reference to a specific company (firm, enterprise). As a rule general issues are presented and the function of a manager is defined in different ways. The subject matter that have briefly been elaborated on above show unambiguously that efficient organization of a manager's activities is an important factor of an enterprise's functioning efficiency. Such a statement is a result of, above all, the fact that a manager who irrationally organizes own activities may make many factual errors and have a disorganizing impact on work of direct subordinates and the whole company. A manager's bad model may lead to a complete breakdown of institution efficiency. Even a traditional proverb, being a generalization of experience centuries old, draws one's attention to this phenomenon by the following saying: "like master, like man".

Key words –commander, organization of work, improvement of manager's activities

The organization of a manager's workday has a certain impact on numerous issues. No one needs to be convinced that this thesis is right. This does not only involve the creation of their own *image* but affects many affairs connected with the functioning of a company or its element. A manager, due to his or her position in an enterprise, is able to significantly influence the activities of subordinates.

One should also consider the fact that there is a correlation between the nature of work, the specific character of a company and the personality of a commander (manager). They are the one who chooses the style of leadership and much of the time this is determined by the nature of the work and issues to be decided. A remarkable feedback activity takes place between the subculture of the managed and certain personal features and habits of the manager. Practice indicates that it would be good if a boss selected their style of leadership with respect to the subculture that can be initially found in an enterprise. There are many considerations affecting the organization of a manager's activity, such as his vertical and horizontal relations. It is not justifiable for a new boss occupying their position to destroy everything established by predecessors.

In numerous literature analysis concerning the treating of management and the functioning of organization there is no direct reference to a specific company (firm, enterprise). As a rule general issues are presented and the function of a manager is defined in different ways. The subject matter that have briefly been elaborated on above show unambiguously that the efficient organization of a manager's activities is an important factor of an enterprise's functioning efficiency. Such a statement is a result of, above all, the fact that a manager who irrationally organizes their own activities may make many factual errors and have a disorganizing impact on the work of direct subordinates and the whole company. A manager's bad model may lead to a complete breakdown of the institution's efficiency. Even a traditional proverb, being a generalization of centuries old experience, draws one's attention to this phenomenon: "like master, like man".

The issue of efficient organization has been a subject of organizational research for many years. Recently numerous research activities of that kind have been carried out in Poland. The research has been done in the area of directors' activities. They have included not only industrial enterprises, commercial enterprises and utilities, ministerial departments, bank branches, and administrative divisions of a territorial structure as well. The results of the research indicates that certain typical regularities occur regardless of the management level and the nature of the organizational unit. The regularities authorize the presentation of an "average manager" characterized by uniform tendencies in the area of the way they organize their own activities.

Critical analysis of an average manager's and commander's activity organization creates a basis for drawing a number of conclusions. They may be reduced to the following:

There are many similar elements in the workday balance arrangement of particular Polish directors. An average manager works longer than it is determined by his or her nominal workday requirement. An average manager's day at work is divided into several different undertakings. A significant amount of the time is spent on meetings and conferences. As a result they have little time for calm conceptual work. Managers spend not more than 7% of their total time on their own activities. Therefore they are "men of action" working in a way that is not systematized. They continuously change activities from one to another, do not have enough time to thoroughly think over various issues and calmly make decisions. This indicates occurrences of an "impulsiveness" phenomenon in a manager's activity and their arises a fear of a rashness affecting decision making.

The style of work mentioned above, within the frame of reference established by the principles of mental performance hygiene, cannot provide for the long term effectiveness of work.

On the basis of the aforementioned research conducted in Poland and other countries, one can state that there are numerous deficiencies in work and the organization of management activities. They may be reduced to the following:

- the working time is systematically exceeded;
- the planning of their own activities makes up an insignificant percentage of all the operations;
- operational issues take almost the whole day;
- there is not enough time for their own conceptual activity. The majority of managers spend not more than 90 minutes per day on independent planning and organizational and preparatory activities. There are also such managers who spend only a few minutes a day on the activities;
- excessive fragmentation of the workday occurs as well, which means a continuous shift from one activity to another. Research shows that an average time of uninterrupted work lasts for 7 to 8 minutes;
- wasting time in talking to different persons is quite common. A remarkable percentage of the talking could be done by employees of a lower level within their competencies;
- there is also an excessive need for contact with and talking to superiors. Subordinates take superiors' time and demonstrate a lack of independence in operation;
- correspondence and conferences take too much time. The majority of conferences are organized by persons that are not members of a given institution;
- there is an anxiety (too much of manager's time is spent on hedging one's bets, too little time is spent on productive work);
- nervous tension, physical and mental fatigue is observed.

Professor Z. Dowgiałło provides data, after being the head of the London medical service, saying that 40 % of people who suffered from their first cardiac infarction used to work 60 hours a week. While in the Netherlands research

conducted by H. Luijk proved that managers' working time reached 70 hours a week. It was also found that 32 % of working time had been wasted¹.

Results of research carried out in Sweden by Sume Carlson are very interesting too. They showed the enormous fragmentation of a managing director's workday, including excessive involvement in conferences convened at the initiative of persons that were not employees of a company. The research demonstrates that approximately 80 minutes a day can be spent on independent conceptual activity². The detailed results of research enabled the development of an illustrative chart (figure 1) demonstrating statistic values of their activity within individual parameters. The data is not very precise but it does not hinder revealing the tendencies of shaping particular values, which is useful for designing an efficient organization model and referring to currently preferred methods of management by goals, exceptions and tasks. The model will make a basis for the improvement of a manager's activity. It should be emphasized here that the hypothesis is of an intuitive nature but based on logical premises resulting from the analysis of individual parameters' occurrence in practice.

Figure 1

Model of a manager's activity organization in reference to actual state (according to Kieżun)

No	Work evaluation criteria	How it is	How it should be
		Research results	Model
1.	Effective workday	8,48-14,43 hours a day	8-9 hours a day
2.	Workday structure (number of activity shifts)	43-62 times a day	10-15 times a day
3.	Time for conceptual activity	5-13,6% of effective time	60% of effective time
4.	Forms of decision development - level of joint authority	20-60% T made during meetings	10-20% T made during meetings
5.	Level of planned activity	20% T planned activities	70% T planned activities
6.	Broadening one's mind	2-4% T independent study	20% T independent study
7.	Scope of centralized decisions	50% decisions beyond one's competencies	within one's competencies
8.	Forms of contact with subordinates	12% T institution inspection	15% T institution inspection
9.	Involvement in supervision and control activities	40% T	10-15% T

¹ Dowgiałło, Z., *Praca menedżera*, Szczecin 1999, p. 133.

² Ibidem, p. 134.

Effective time "T" is the sum of nominal time and additional time, regardless of its place of occurrence. Number 4 shows the time spent on every type of joint undertaking including consultations, meetings, briefings and conferences in relation to effective time. Number 7 demonstrates the scope of centralized decisions. It describes an amount of decisions made by a manager beyond his or her competencies and is expressed in percentage terms. Number 9 shows involvement in supervision and control activities, both included in internal audit plans, and connected with dealing with current issues.

It is justifiable to think where sources of inefficient organization of a manager's activity are located. Critical analysis of their activity will enable this. The analysis defines causes for an irrational working style. In accordance with the military approach they can be divided into the following two groups:

- internal,
- external.

Internal causes include a centralized working style and a centralized management structure created by the boss themselves. Not delegating their competencies makes them deal with every issue, even the least important one, in person. The boss decides on the enterprises undertaken in the majority of cases. They relieve others of their tasks, even though their subordinates, deputies and chiefs of subordinate cells, are specialized and well prepared. Such a way of conducting business makes subordinates inform their boss about everything because they want to be up-to-date. This way is also supposed to make them enjoy the respect of subordinates and to demonstrate professionalism and irreplaceableness. Consequently it leads to a situation where the head of an enterprise becomes overburdened. Such a way of demonstrating efficiency causes a number of negative consequences:

- *it decreases the quality of work done by subordinates (the boss will correct it in his or her way anyway);*
- *it takes time away from the superior because subordinates, deprived of the simplest competencies, have to communicate with the superior in order to get their proposition approved;*
- *it stifles the initiative and creative inventiveness of subordinates, causes embitterment and does not give satisfaction with work done, discouraging subordinates from cooperating with the superior and from working in general;*
- *it limits powers of medium management levels, reducing their role to links forwarding directives issued by superior authorities to executors and thus a number of well prepared subordinates are not involved in the management process and not always sufficiently utilized;*
- *it disorganizes the activities of the manager.*

Internal causes also include interception and the performance of tasks that remain beyond the professional competencies of a manager and an organizational cell subordinated to them. An uncritical acceptance of all directives issued by

superior authorities falls within this category as well. It most often happens to new and inexperienced managers who make their mark. They want to show specific achievements of a subordinate cell (unit) and, often from ambitious motives and because they are not aware of subordinates' capabilities, such bosses declare a readiness for doing any job. It obviously disorganizes the work of subordinates that are not prepared for carrying out a set task, do not know its subject matter and improvise in order to fulfill it. For sure a competent person would do it better and faster. The results of such conduct are as follows: embitterment of people, loss of a manager's authority, disorganization of their activities and subordinates' work.

It seems that in similar cases a manager should recommend certain appropriate solutions to subordinates, especially in situations when their decisions might have a negative impact on the style and methods of their work, cause disorganization in management of a subordinate team and negatively affect the accomplishment of the assumed objective of operation.

Among subjective causes for tendencies to deal with many issues in person, there is an important one consisting of the excessive belief in one's skills and conviction that a manager should demonstrate professionalism in order to keep up their authority. It is an organizational error described as doing jobs that are too difficult for a manager and that should be done by experts who know a specific issue better than a manager does. This tendency has a long tradition dating back to times of primitive economic formations and clearly shaped in the guild system. A manager of a workshop was not called a "master" by accident. He was always the best skilled workman who knew his trade excellently. He did not only perform a managing function but played the role of teacher of an occupation in a team of employees (journeymen) as well. And thus the model of a manager's authority was established in industrial environments and affected other professional circles. It is obvious that considering the current complexity characterizing the process of enterprise functioning, the concept of a manager being the best expert in a company is not realistic. Nevertheless a tendency to demonstrate such a mystification may be observed in many cases.

However, an opposite phenomenon seems to occur quite often in our conditions. J. Rudniański claims that a superior who does not make decisions falling within their competencies because of their fears, usually finds fulfillment in minor decisions located within competencies of their subordinates. A superior of that kind feels safe in such a situation. This may be an explanation of a dialectic discrepancy between a tendency for collective discussion (and a significant extension of responsibilities at the same time) and a tendency for centralized decisions in terms of minor issues. In this case important issues, falling within the personal competencies of manager, are the subjects of extremely labour-consuming collective considerations, while a superior handles simpler issues that might safely be dealt with by subordinates.

The unawareness of subordinate team in terms of both features of character and the capability to perform specific tasks is closely connected with a lack of adherence to principles in employment policy. Knowing people and their features well, a manager can easier influence the shaping of positive interpersonal relations and prevent conflicts that otherwise they would have to settle themselves, unproductively wasting precious time. Knowledge of a human team enables a manager to optimally utilize the professional qualifications of employees and in this way to save time for the organization of their own activities. It matters when there is a need for the performance of a crucial task in shortest period possible and at minimum involvement of a manager.

Another internal cause is the improper planning of activities and specific management forms and methods. They often result from a lack of organizational skills and the inability to cope with issues efficiently and quickly. Typical symptoms related to the cause include: an unsystematic workday; summoning subordinates for minor affairs and frequently diverting their attention from work; giving orders ad hoc, without thinking them over; frequently interfering in the process of production; frequent changes in executive deadlines and dealing with numerous issues at the same time. Frequent consultations, meetings, briefings, wasting the precious time of subordinates, organized by some managers in the name of quasi-collective management which only become a nuisance to subordinates. As a rule they are reduced to hearing and receiving executive orders. Therefore they are so-called "deaf" meetings and do not bring benefits. A well prepared conference characterized by an atmosphere of untrammelled thought exchange may to a greater degree help a manager in making work more efficient and eliminating faults and shortcomings.

Another drawback is a frantic rhythm of work. Research shows that it is a typical working style for the majority of institutions and at the same time nothing justifies such a style. A lack of composure and calmness, bearing a mutual grudge, are to a great degree results of wrong planning and organizing. Anxiety is contagious, discourages, paralyses initiative and disorganizes operations of the entire team and thus activities of a manager too.

The negative features of a manager's character are an important factor affecting the occurrence of failures in the organization of their activities. Among those most negative, one can recognize: excessive belief in their own efficiency, failure to acknowledge subordinates' arguments, restriction of rank-and-file initiatives, uncritical esteem of their own personality, immodesty and tactlessness, criticism of others' achievements, especially of those who have a similar position in the hierarchy. Professional characteristics of a similar significance include: poor specialized qualifications, no increase in the level of professional qualifications, replacing skills with routine or avoiding discussion on professional issues.

In turn a manager's **excessive belief in their own efficiency and failure to acknowledge subordinates' arguments** cause the reluctant execution of orders,

lead to a disloyalty to superiors and a decrease in the efficiency of the team's operation. Whereas a manager who wants to excessively demonstrate diligence by showy actions, causes a wastefulness of assets and lacks recognition for subordinates' work can count only on short-time effects. Some managers forget that one cannot thoughtlessly, and because of ignorance, squander the enthusiasm and efforts of people. Often it happens that the efforts of ordinary employees are wasted in order to get a job done during a few days while it is required or used by superiors after a few weeks or even never.

Subjective factors disorganizing the activities of a manager may be described seriously, presenting scientifically proven causes and effects of disorder, unconcern or ignorance. They may also be illustrated in a humorous form. An example of such a demonstration is a typology of mistakes, "sins" of a boss harming his or her work and closest surroundings. The author of the typology, K. Haberkern, puts **postponing something till tomorrow** in the first place. It most frequently results from faults of character or inhibitions and fears of initiating unclear and vague issues or issues beyond one's competencies. Collecting issues and postponing them till tomorrow leads to the piling up of unsolved problems, which considering the pressure on their originators may have a negative impact on the rhythm of work and quality of solutions. The work of subordinates suffers damage due to such conditions. Others, most often co-workers, experience negative consequences because the above mentioned "sin" is very frequently connected with another one.

The partial performance of work is a sin. As a rule it is a result of a neurotic temperament, the inability to complete a job or an issue that has already been begun, difficulties with the mobilization of the energy necessary for its completion. The partial performance of work means that it has been carried out in a superficial, fake or "responsibility-shifting" way. This kind of system does not favour shaping good models of organization and decreases the efficiency of the entire team's work. External pressure put on efficiency, circulation of undone issues and an increase in the amount of new affairs are conducive to the occurrence of another sin that may be defined as **dealing with all the issues at the same time**. The direct personality-related cause of the sin is a lack of mental resistance and a selective approach towards different affairs, a defect of the mind, flight of ideas, etc. The absence of organizational mechanisms compensating for these personality faults, for example the structural enforcement of advisory utilization and an emphasis on collective forms of decision making, may be favourable to moulding organizational arrogance and an self-oriented approach. **The inclination to cope with everything in person** is also a sin. Adding causes of attitude occurrence, one can indicate a feeling of threat, distrust of employees, especially experts, an underestimation of their qualifications, challenging them with the cult of one's own qualifications and professionalism, which very often results in an excessive burden of work on the manager. It is directly connected with the **conviction that one knows everything better**. From the organizational point of view an "I-know-better" approach poses a

threat of disaster because it is a reflection of an expensive pride, a feeling of excessive self-confidence or often vanity. Voltaire used to say that doubt is not a pleasant condition, but certainty is absurd.

Another sin is having **pretensions to versatile competencies**. It arises partially from personality, for example an excited need for power, domination, and motives of governance; and partially from non-compliance with the rules of a task, responsibility and authority delimitation, which leads to disorder and competence chaos.

Blaming others for one's own mistakes creates another drawback of a manager's functioning. This sin characterizes weak people who demonstrate an excessive need for the positive perception of their own activities. It manifests itself in the fact that persons of that kind occupy themselves with useless and redundant things, they waste time and energy in the performance of detailed and minor tasks. Important issues escape their attention and become neglected. Blame for such a situation is put on others. This attitude is determined by a strongly excited need for achievements, the low resistance of others to states of frustration and stress and the easiness of blaming others for their own failure.

An extreme example of the pathological conduct of a manager is the concept of the so-called **indispensable man**. They enjoy respect and esteem in their own environment during their career and happen to be worth their weight in gold. An indispensable man morbidly loves power, wants more and more of it, not only at the co-operators' expense but at their superiors' expense as well. Such a man creates vacuity around themselves applying available legal remedies and takes over whatever they can into the range of their competencies. This type of manager does not take into consideration the interests of the managed institution and endeavours to achieve maximum information without sharing it because it makes an indispensable man strong – they want to be powerful. An indispensable man is constantly afraid of others becoming well informed and thus equally useful. None of their subordinates become independent because such a subordinate causes actual, or at least potential, competition while this kind of manager must be indispensable. They put clever and ambitious people off being in this manager's institution, they surround themselves with mediocre people in order to make an impression that the indispensable man plays a role of saviour, and the institution could not do without them. Indispensable man corrupts weak personalities that surround them because they are able to cooperate with the manager not due to their substantive values but due to their skill to endear themselves. There occurs a vicious circle: personnel corrupted by an indispensable man corrupt the manager by flattering and toadying. It has been said that: „indispensable man gives an impression of a general surrounded by non-commissioned officers only. No colonel is required because they would at least make a potential competition”. An attitude of this kind is a factor which disorganizes and destroys an organization. One should

decidedly counter the activities such a managing conducts at every level of management.

A further source of inefficiency is the **subjective inability to use the support of a secretary or assistant** who should relieve a manager of many administrative issues. They restrict access to external and internal clients and keep the boss's reference files. The function of a manager's time protection, if efficiently fulfilled by aide-de-camp or secretary, prevents the inefficiency of their work.

There are also **external causes** of irregularities in the organization of a manager's (a commander's) activities. Practice shows that they are, to a great degree, a source of their occurrence. If one is in the position of a subordinate, it is very difficult to counter them. They include, as mentioned above, all disorganizing activities of management caused by superior authority. Directives of the authority and superiors ordering a specific way to conduct business forces a manager to change the conditions and means of operation in order to achieve the temporary objectives desired by superiors. It causes delay or the non-performance of previously planned activities, decreases the level of assets' efficiency and causes their non-optimal exploitation. Such decisions, apart from losses inevitable in cases of that kind, undermine among members of the subordinate team the authority and confidence in the boss, and sometimes cause a reluctance and disbelief in all their instructions. This form of leadership, thwarting meticulously developed plans, is very frequently applied. It results in the issuing of orders by superiors in terms of activities that are not planned, thought-out or precise. A very short time is allocated for the carrying out of the activities. It sometimes results from protective regards and consists of reducing the time to a minimum. Dedicated personnel want to fulfill received tasks and use their own free time to do it. Applying this style of work favours improvisation, decreases in the level of its quality and is socially harmful (demotivating) in the long run.

Another external cause is **unclear and imprecise tasking, conducted by superior institutions**. Vague, general and, in many cases, unclear tasks specified after they are put forward by subordinates, which is apparently supposed to trigger rank-and-file initiative, leads to a waste of energy and time of a subordinate. It is usually preceded by a number of amendments, alterations and a sequence of drafts. This way it reverses the sequence of tasking and execution, remarkably reducing efficiency of a team.

Whilst raising this issue one should mention an important, and to a certain extent connected, form of operational efficiency – confidence in applying expenditure and confidence in operation. A subordinate carries out a task but is not sure whether their job, efforts and expenditure will not be wasted.

Quite a significant external cause, although less and less frequently occurring though, is **the tasking of organizational units or subordinates that are not competent to perform the actions**. Such cases most often result from a lack of knowledge of what subordinate institutions or personnel are able to do and

a reliance on a well-tried executor. A subordinate does not want to expose themselves to the allegation of the non-performance of an order and undertakes a task, though a more competent employee would perform the task better and faster. It is again a cause for the justified grievance of people forced to take on tasks that are not within their competencies.

There is also, last but not least, another cause - **excessive reporting**, which is most often conducted for internal and statistical purposes. It is mainly the demand for written reports, while an issue might be solved by a phone call or oral report. This set also contains an improper flow of information – detaining letters, sending them in the last moment before (or even after) the deadline, implementing changes to started or completed jobs and an excessive number of letters, guidelines and amendments to previously developed instructions. As practice proves these minor but onerous undertakings disorganize the functioning of an enterprise and do not support the rational and planned activities of a manager.

The improvement of a manager's activities

On the basis of research one can state that a typical organization of a manager's workday is characterized by fragmentation in terms of the performance of numerous actions, an insufficient focus on key issues, and the exceeding of a nominal workday limit. This is a model of an efficient manager who conducts many activities, is overworked and does not fulfill their tasks completely. A crucial issue is to arrange a model of a manager who, above all, plans, inspires and deals with key problems in the scope of an organization. In such a situation the range of a manager's interventions into everyday routine operations is reduced to emergency and atypical situations. They also include actions falling within a range of competencies. The target parameters of work characteristics when considering this kind of manager should be similar to the model proposed above. It is a model of a regulated work characterized by a high percentage of planned activities (70%), a considerable reserve for unpredicted actions and limited working time (up to 9 hours a day). **An exemplary manager does not get distracted in an overflow of activities** and is able to focus on important, key issues. Therefore they do not perform more than 10 to 15 activities a day and a substantial amount of their time is spent on conceptual activity, analysis, prognosis and decisions. At the same time a manager is up-to-date in terms of issues considering the development of theory both in the scope of organization and management science and in the scope of a fundamental area of a given organization's operational profile. They spend 20 % of their time on independent studies. A properly functioning manager reduces significantly the time of meetings and conferences, eliminates redundant consultations and improves course of collective involvement. Doing all these things they keep direct contact with their crew by spending about 15 to 20 % of

their time in employee's locations on inspecting, seeing to personal issues, informing on goals of the company and taking care of the needs and concerns of employees. Implementing such a model requires also a model setting of the balance between managing functions. Considering this, every manager should prepare the specification of their own organic functions and determine a level of detail characterizing their engagement in particular matters of organization.

One of the principles defining the organization of a manager's activity is the rule of **planned operations**. A manager must try to optimally limit activities that are spontaneous, unpredicted and unplanned. It is connected with a posture requiring a high level of personal discipline and composure. Often we may observe how much disarray a nervous manager can cause, reacting to every impulse.

Information collected by a manager results in the necessity for issuing respective decisions or gaining new data during contacts with subordinates. A nervous manager who is not composed enough immediately gets in touch with subordinates (in person or by phone). They do not wait for a planned meeting included in a meeting schedule, while in most cases such an "efficiency" is not really necessary. An effect of such a mode of operation is the frequent diverting of subordinates' attention from planned work, creating an atmosphere of anxiety, tension and specific mental stress, continuous waiting for an *ad hoc* summons to a manager's office. In this way the fragmentation of a manager's workday increases and so does the number of unplanned activities of the manager. This style favours making decisions that are not thoroughly thought over, often wrong or specified and formulated in an unclear way.

The effective use of working time needs, first of all, giving up the **rule of an open door**, a strict observance of time limits considering official contacts, both in person and by phone, and a selective approach towards important and urgent issues.

The first action, after arriving at a workplace, should be the specification of an activity schedule for a given day and to inform people concerned of the timing of meetings, arrivals, etc. It is crucial for them on account of the necessity to specify their own activity schedule.

The next step should be to look over incoming correspondence, put down handling instructions on individual letters and draw conclusions for further work. The most significant conclusions and observations should be written down in a workbook or a specially prepared record. Remaining correspondence, letters that do not need to be forwarded to subordinates in person, should be then looked into.

Having done the above, there is **time for conceptual work**. In this time a manager and other persons occupying management positions should independently (sometimes collectively) think over (or discuss) the most important issues arising from superior's decisions or actions taken up on their own initiative and specify a way they should be dealt with. In most cases the actions will have a forecasting/planning or organizational nature. They will define prospects for

further operations. The time spent on the performance of the above mentioned actions may vary. It is desired, however, depending on the level of management, that the time does not exceed **2 or 3 hours**, as it was stated earlier. There should be an absolute phone silence then. If necessary it may be extended over a period of another task's performance – seeing subordinates in order to consider matters reported by them. Every subordinate, especially in managing organs of higher levels, should have a designated time of seeing their superior. The duration of such meetings should also be specified and their frequency should be a resultant of the following two factors: the time capabilities of the superior and the needs of the subordinate. If they are more frequent, the time of their duration may be shorter, for example 15 to 25 minutes. If their frequency becomes even lower, let us say once a week or once a fortnight, then the duration time should be longer: 1 to 2 hours.

Superiors should not allow for the exceeding of the time limits of seeing a subordinate and subordinates should prepare their reports in a way which enables time to be reserved for questions asked by a superior, presenting additional explanations if necessary, etc.

When the seeing of subordinates (mostly reduced to looking into propositions prepared by them, making decisions, assigning additional tasks and forwarding guidance or instructions) is over then one may designate some time for independent studies (if not conducted earlier within conceptual activity) or so-called current management may take place. It usually consists of seeing superiors or cooperating cells in order to deal with different issues and direct subordinate institutions. Applying such an organization of the workday, current management, in most cases, will take place during the second half of the workday when there is a remarkable **decrease in the efficiency of mental activity**.

Managers, depending on the level of management and on purpose, have to make various decisions everyday. Their ranks are diverse. Decisions may be simple (routinized) and in this case they do not require much effort. They may also be difficult and very responsible or even risky. Improving the organization of the workday, one should strive for the elimination or limitation of the necessity of the same person to make decisions connected with significantly different levels of difficulty. It may be achieved by the appropriate distribution of competencies. One should also adjust the number of decisions made to reflect the capabilities of a given manager. Failing to take it into account this and allowing violations may lead to a decrease in the decision making process and in consequence become cause for loss or damage.

The level of efficiency is remarkably affected by the frequency of activity shifts throughout the workday. If tasks (activities) are simpler and do not require increased mental efforts, then the frequency may be higher. But if tasks are more difficult and require thinking over, then the number of different activities (tasks) performed during the workday should be limited.

An efficient manager makes efforts to observe the rule of planned contacts with subordinates by the careful preparation of decision material collected on the basis of their own thoughts and information gathered *ad hoc*. An atmosphere of peace and a manager's regulated operation mode spreads all over a workplace and becomes an important element of its functioning.

A regulated mode of a manager's activities is connected with the application of a personal work schedule. The possibility of planning activities carried out by a manager occurs when:

- we know exactly what has to be done;
- we know when it needs to be done;
- we can assess how long it will take.

On the basis of research results considering the organization of a managers' activities and experiments conducted, we can say that a manager's operations distinctly include two groups of actions:

- permanent,
- occasional.

Permanent actions may be further divided into two categories: regular (known time and type) and irregular (time of their occurrence is not known in advance). The former category covers reading correspondence, studying instructions, some conferences and the latter one includes phone calls and delegations.

Occasional actions may also be divided into two categories: expected (known time and kind of occurrence – conference on periodic plans) and sudden (unknown time and kind of occurrence).

Considering the above mentioned categories of actions, some (regular and occasional) may be planned in advance within periodic schedules.

As it results from considerations mentioned above, a certain percentage of a managers' time may be precisely planned within daily, periodic, weekly, monthly or quarterly schedules. The application of schedules requires, however, the realization of their certain conventionality, which means sufficient flexibility and feasibility. Above all the plans must not be too tight and too detailed. Making such assumptions does not relieve a manager of the obligation to maintain a corresponding level of personal discipline in both respect to them and to enforce company personnel to respect them as well.

One of the basic sources of inefficiency in an organization of a manager's activities is the excessive burden of conferences and meetings. Having that in mind one needs to optimally improve the organization of consultations and conferences in order to make them shorter and yet more effective at the same time. Irrespective of technical undertakings, it is necessary to systematically train all participants in the brief formulation of their thoughts. A manager's continuous work on themselves, their care over the precise and concise style of utterances are of a significant didactic importance.

The guidance presented above, certain hints telling a manager (a commander) how to conduct activities, make a set of propositions that are not connected with any specific environment or organization. They do not take a manager's personality into account either. Therefore much depends on their readiness to fulfill the function, flexibility in general and in the definite environment as well.

INSTITUTE OF COMMAND



THE NEW AND OLD THREATS TO NORTH ATLANTIC TREATY ORGANIZATION

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Abstract

The article presents the complex issue of the threats faced by NATO. Changes in the international security environment result in many dangers NATO cannot ignore, including conventional threats. In the globalized world, non-state organizations and structures pose a potential threat to transportation, energy supply networks and critical infrastructure. In this situation, one should not exclude the potential threat of conventional armed conflict. NATO continues to see the growth in the proliferation of weapons and their means of delivery as a source of threat. Terrorism and cyber-attacks pose a specific type of modern asymmetric threat to NATO. The development of new technologies and the use of space for military purposes is also very important for the security of NATO. The multi-faceted issue of threat is presented from the perspective of a number of examples illustrating the complexity of the problem.

Key words – NATO, threats, terrorism

Introduction

At the NATO summit in Lisbon (19-20 NOV 2010) a number of very important decisions were taken that have implications for transatlantic security as NATO adapts to the challenges and threats of the modern world. The “Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation” was not the only final document of the summit in Lisbon. In addition to the concept, a number of important documents were adopted. They defined the new nature and functioning of NATO, and formulated its position on key issues for the Alliance. First of all, the position of NATO on asymmetric threats; also NATO's involvement in Afghanistan, relations with Russia and the European

Union were determined then. However, the main emphasis was put on the new concept of an unexplained phenomena; the threats, risks and challenges of the contemporary international environment which were the main triggers to start development of the concept¹.

After many changes and reorganization, the North Atlantic Alliance has the operational capability to carry out multi-dimensional military operations, including asymmetric operations. In the opinions of many experts, the uniqueness of NATO includes, above all, its political - military structure, its expanded crisis response capability and an institutionalized system of links with partners, based on the common standards and values. An additional advantage of NATO in countering threats is Article 5 which provides member states with mutual security and defense. However, the "Concept ..." deemed it necessary to continue transformation and reform of the Alliance in order to adapt it to the newly emerging challenges, and above all to improve military capabilities and to develop operational capabilities. In this regard, the ability to formulate courses of action proves to be important, especially in terms of the elimination or reduction of potential risks. For this purpose, it is also important to conduct an actual and complete assessment of one's own military components and to further develop their existing operational capabilities. Indeed, as shown by the recent situation in Libya, despite NATO having adopted the Strategic Concept and applying certain military capabilities, it was not able to cope with the new threat, and to take a clear decision on intervention in this country. Building more mobile and expeditionary forces capable of rapid deployment to ensure the defense of a territory is a constant priority for NATO, because static, heavy forces will not deter terrorists, hackers and fallen states (which may have weapons of mass destruction at their disposal. For this reason, NATO should continue adaptive undertakings adjusted to changing challenges, so that the Alliance can be a guarantor of collective security in the XXI century².

Old and known threats to NATO

The "Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation" states that nowadays the Euro-Atlantic area is quiet and the threat of a conventional attack against NATO territory is low. However, this approach does not mean that the conventional threat can be ignored³.

¹ <http://www.nato.int/strategic-concept/index.html>, 14-10-2012.

² A.D. Rotfeld, NATO 2020 - Ensured Security and Dynamic Involvement, PISM, Warsaw 2010, p. 21.

³ For several months, international tension has been rising in the waters of East Asia. South China Sea, Philippine Sea, the Taiwan Strait, the Sea of Japan are the areas where important lines of communication run and are used by China, Japan, Taiwan, and both Republics of Korea. The reason for the dispute are the islands and rocks on the waterways connecting Asia with Europe. Further reading: K. Kubiak, *Chinese shadows on the waves. The disputed archipelagos in the waters of East Asia*, "Raport - wojsko, technika, obronność" 2012/11, p. 58-66.

The concept of the Alliance points out the fact that all countries are increasingly dependent on the routes which enable international trade and energy security. Therefore, they require greater international efforts to ensure their resistance to attack or disruption of communication. In the near future, some NATO countries will become even more dependent on foreign energy suppliers and hence also on foreign energy supply and distribution chains. Since most of the world supply is transported on a global scale, energy supplies are increasingly vulnerable to collapse, seizures and crime.

In recent years, a danger of military confrontation occurred around the North Pole. This is caused by the ongoing climate changes. Arctic waters are becoming an area of territorial disputes, which results from potentially rich mineral deposits. Hidden beneath the sea bed, they may soon be the subject of political disputes between all countries of the region.

Denmark, Canada, Norway, Russia and the United States of America (Arctic Five, A5) use their best means to persuade adversaries to their case. The task is not easy. It is necessary to terminate early a number of political disputes, to obtain the necessary mining technology and finally to strengthen the presence of the military force required to protect one's own interests. The second axis of the territorial disputes in the Arctic remains the matter of "North Passages". Ice cover melting in the waters of the Arctic Ocean makes plans to use the basin for international maritime trade more and more realistic. Stretching from Murmansk in the Barents Sea, through Siberia, to the Bering Bay, the Northeast Passage (NEP) and the surrounding arctic coast of Canada and Alaska, the Northwest Passage (NWP), are more seriously considered as potential new trade routes between the Atlantic Ocean and the Pacific.

It is estimated that the risk of attack by a group of pirates operating locally - at least initially - will not be a problem. Pirates can attack freighters, as happens in the Gulf of Aden or the Straits of Malacca. However, a major problem with the use of both passages is their legal status. Some countries, including Canada and Russia, intend to get the right to control maritime traffic which will take place in the future. Both Ottawa and Moscow argue that both routes can be found in their territorial seas. In this case the United States of America supported internationally by countries of the region geographically unrelated, such as China, Japan and South Korea present a completely opposing opinion. The U.S.-related international opposition claims that the passages should be internationalized in order to avoid the phenomenon of unnecessary and too frequent inspections of ships going through them, as well as unexpected transit fees⁴.

In the context of conventional conflicts, the 2000 Russian military doctrine took on an entirely new dimension to NATO. The doctrine does not mention NATO as an enemy but determines the spread of military alliances in the areas

⁴ M. Jarocki, *Warmer and warmer in the far North*, "Raport - wojsko, technika, obronność" 2012/3, p. 48-54.

adjacent to Russia as a military threat. Furthermore, the new doctrine makes a distinction between "military danger" and "military threat." The first term describes the international situation which may, under certain conditions, lead to a military threat. In this context, a military threat means the international situation which makes war possible. The expansion of NATO is listed on the top of the military dangers' list, which means that it could turn into a military threat, and thus actually in the recent Russian doctrine it has been reduced only to the level of the military danger.

It should be pointed out that since 2008 the Russian armed forces have carried out a military reform. The aim of the reform was to prepare all military units to fight without the mobilization of reservists. In principle, the Russian army at the end of the reform will number about 1 million soldiers. The operational capabilities are to ensure that the Russian armed forces will quickly react to conflicts along the borders of Russia. Gathered facts do not indicate preparations for military conflict with NATO. Nevertheless, the doctrine emphasizes the ability of the army to maintain the full combat readiness of operational units that can be developed only after mobilization⁵.

At the beginning of 2013 the president of Russia, in a speech, said that the number of instability zones in the world is increasing. In his opinion, conflicts in the Middle East and Central Asia do not seem to vanish, and there is an increasing risk of exporting radicalism and chaos to Russia's neighboring regions. Therefore, as announced by the president, Russia will strengthen investments in innovative technologies and maintain independence as a leading manufacturer of weapons⁶. In this context, one can see that the Russian army seems to be moving away from its own defense industry offers towards those proposed by the Western arms producers. Russia wants to cooperate with Western countries in the production of weapons⁷.

Assessment of the military security level is conditioned by the the prevailing significance of the belief circulating in the U.S. military that China's military

⁵ Russia, in early 2013, conducted an exercise that was unprecedented in terms of momentum. It was carried out in the Mediterranean Sea and included participation of the following fleets: Northern, Baltic, Black Sea and Pacific. Ministry of Defence announced that two warships of the Baltic Fleet came into the port of La Valetta (Malta), where after the resupply of potable water and food they continued their participation in the exercise. On January 10th Tactical Group of Black Sea Fleet resupplied in Larnaca, Cyprus and Northern Fleet warships, after a visit to the Spanish port of Genoa, took a course for Crete. Significant is the fact that one of the Black Sea Fleet amphibious assault warships, having on board a number of combat equipment items and special forces unit, passed through the Strait of Bosphorus and the Dardanelles to the Aegean Sea, where it headed for the Syrian port of Tartus. It should be noted that it is a supply point of the Russian Navy. Source: <http://www.polska-zbrojna.pl/home/articleshow/5952>, 02-02-2013.

⁶ For example - In 2012, in the U.S. market, Russian *Izmasz* sold small arms worth 16, 2 million \$, which means about 15% more than in the previous year. Source: <http://www.osw.waw.pl/pl/wiadomosci/2013-01-15>, 23-01-2013.

⁷ http://wyborcza.pl/1,91446,13472997,Putin_Rosja_bedzie_zwiekszac_swoj_potencjal_militarny.html, 27-02-2013

reforms are aimed at transforming Chinese armed forces from a defensive force into one capable of offensive actions. It is being pointed out that China is purchasing modern fighter aircraft and submarines, developing and modernizing missiles, nuclear forces and its navy. This is the base for the thesis that a classic military conflict cannot be ignored by NATO.

One estimates that in the next decade, in some of the most unstable regions of the world, the proliferation of weapons of mass destruction will be an extremely difficult problem. The proliferation of weapons and their means of delivery threatens incalculable consequences for global stability and security. This is especially disturbing in a situation where different countries have access to weapons of mass destruction and, in particular, they develop research on nuclear weapons. Since the beginning of the twenty-first century, many regions and countries around the world have gained new substantial operational capabilities⁸.

In this situation, it is difficult to predict the action's consequences for international stability and Euro-Atlantic security. This includes the proliferation of ballistic missiles which pose a real and growing threat to the Euro-Atlantic area⁹.

Iran still poses a real and growing threat to regional and international security. The strength and position of the state in international relations derives directly from its geostrategic location and is firmly rooted in history, Islam and national ethos. Therefore, the strength of the state is determined by both the ambitions and aspirations of both the secular and religious leaders of the state¹⁰. Iran is one of the largest countries in the Middle East, both in terms of territory¹¹ and population. These conditions predispose Iran to playing a key role in the region. The policy of Tehran is actually striving for it. It is easier at a time when Iraq is no longer an important actor in the Middle East. According to NATO experts Iran is destabilizing the situation in the Middle East by sponsoring terrorists (mostly Hezbollah, Islamic Jihad, Hamas) and thus creates a potentially serious threat to Israel, hinders the Palestinian-Israeli peace process and supports the anti-American forces in Iraq and Afghanistan¹².

The end of 2009 and the beginning of 2010 is the period when Iran showed the world how much, despite various political and economic sanctions, the country is determined to continue the development of its nuclear program¹³. The ambitions of

⁸ E.g.: Iran increased range of its tactical missiles, Russia acquired modern warships *Mistral*, China is developing and modernizing the armed forces, Brazil is becoming a military power in the region.

⁹ "Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organisation adopted by heads of states and governments in Lisbon". Working translation of NSB, 27.03.2011.

¹⁰ M. Amis, *Underground of Iran*, Forum Iss. 31 of 03.08-09.08. 2009.

¹¹ Only Saudi Arabia has larger territory than Iran among Middle Eastern countries (about 1960 km²). The territory of Iran is approximately 1648 km².

¹² National Security Strategy of the United States of America, The White House, Washington, D.C., 03.2006.

¹³ G. Kostrzewa-Zorbas, *Waiting for war*, "Newsweek Polska", 11.10.2009, p. 71-74.

Iran have been well known in the international environment for many years, however, the rhetoric became more aggressive upon the re-election of President Mahmoud Ahmadinejad who during his first term of office made it clear to the world that Iran, under his leadership, is not only going to become a superpower at a regional level, but also by building its own nuclear capability, it is to have an impact on the shape of global international security. Iran is a real and growing threat to regional and international security.

Military experts predict that in the next few decades the proliferation of weapons of mass destruction (WMD) will increase. Many countries that want to obtain weapons of mass destruction (WMD) will implement programs for the development of nuclear, chemical and biological weapons and their means of delivery, especially ballistic missiles. The countries developing WMD research programs are preparing to use the weapons in potential future local and regional armed conflicts¹⁴. The information gathered by the secret services of European countries shows that numerous chemical and biological weapons development programs are being conducted in areas surrounding Europe. The reasons for this include relatively the low costs of research and ease of their launch.

Despite the implementation of many disarmament agreements, some countries such as Russia have an arsenal of strategic and tactical nuclear weapons and the means for their delivery. Russian nuclear potential is used not only to respond to the actions of states possessing nuclear weapons but also to prevent the large scale use of conventional armed forces against Russia or its allies. In order to make the potential use of WMD credible, a threat to deploy tactical nuclear missiles in Belarus, Kaliningrad and on the Baltic Fleet warships has been put forward in discussions on national security. It is possible that, despite the realization, albeit belatedly, of the Convention on the Prohibition of Chemical Weapons (Chemical Weapons Convention - CWC), the Russian Federation and other countries will continue to keep this type of weapon and will improve the methods of its production. Substances analyzed in the course of research are to be more effective and at the same time more difficult to detect and neutralize.

Military experts say that high-risk countries are developing ballistic missiles in the neighbourhood of Europe. It is estimated that in the second decade of the twenty-first century, the territory of Europe may fall in range of missiles launched from Iran. Cooperation between the Democratic People's Republic of Korea and Iran in the field of missile programs entails the risk that Iran will be able to use missile technology with an expected range of 4500-6000 km and be capable of hitting NATO territory. Missiles are to be designed to carry conventional, chemical, biological or nuclear warheads. It cannot be excluded that as a result of receiving specialized assistance and materials from abroad, Iran, despite the pressure of international public opinion, independently will be able to produce nuclear weapons.

¹⁴ Ballistic missile modernization programs and development of UAVs are the ways to achieve this.

New threats to NATO?

Defining new threats always creates certain cognitive difficulties. The basis for generating new facts are basically the experience and the conclusions drawn from past events and trends of political and military systems' development. Unfortunately, considering the assessment of the risks, these simple correlations do not allow for the creation of future changes. Therefore, the evaluation carried out by a number of specialists included well-known risks that have taken new contexts with regard to the new face of the Alliance. Terrorism poses a direct threat to the security of the citizens of NATO countries and the related members of international community perceived more broadly. Terrorist groups penetrate and spread in areas of strategic importance to the Alliance. It should be pointed out that modern technology (dual-use technology) increases the risk and the possibility of terrorist attacks. The situation is particularly dangerous if terrorists come into possession of nuclear weapons, chemical, biological or radiological agents. Terrorism has not always been seen by NATO as such an important safety issue. Although the Strategic Concept accepted in 1999 defined terrorism as a new threat in the post-Cold War era, NATO members devoted little common attention to this issue until September 11th, 2001. However, since then almost every aspect of NATO's actions are considered in the light of the threat posed by terrorism. Operation *Active Endeavour* – the anti-terrorist NATO operation conducted in the Mediterranean Sea - clearly demonstrates the Alliance's resolve and ability to respond to terrorism. The operation was launched in October 2001 in the context of article 5 of the Washington Treaty, it included patrolling the Eastern part of the Mediterranean Sea and the monitoring of merchant shipping. These measures were subsequently extended to the escorting of civilian vessels through the Straits of Gibraltar and inspecting, upon their consent, suspicious vessels. Their geographic scope has been extended once again - to the whole area of the Mediterranean Sea.

The NATO allies constantly have to deal with asymmetric security challenges posed by international terrorism¹⁵. The attacks conducted on the United States in 2001, Turkey in 2003 and the UK in 2005 prove this thesis. In addition to these incidents, since the attacks of September 11th, authorities in Europe prevented at least 19 powerful terrorist attacks¹⁶.

NATO political and military authorities included the outline of a comprehensive approach to terrorism in the new concept of the Alliance. According to experts, the approach may be translated into a comprehensive way of dealing with the issue in the long-term. In the political dimension, the North Atlantic Council has decided that NATO should be ready to support - within the required time and place - efforts

¹⁵ On 24th October 2012, during a routine patrol off the coast of Somalia, Dutch landing craft *HNMLS Rotterdam* was shot at. She led the patrol mission in the NATO operation "*Ocean Shield*". "Raport - wojsko, technika, obronność" 2012/11, p. 75.

¹⁶ www.nato.int/docu/review/2007/issue1/polish/art4.html, 18-10-2011.

to deter, defend and protect against sabotage and terrorist attacks conducted from outside of its territory. The Alliance should also take into account the provision of operational and combat capabilities to support military operations against terrorism carried out in the fight against terrorism¹⁷.

A very important element in NATO's risk assessment is information warfare. Cyber-attacks are becoming more common, better organized and more expensive, taking into account the damage it inflicts on government administration, business and the economy. Information warfare is potentially a threat to transportation, energy supply networks and critical infrastructure elements. According to experts, cyber-attacks can reach a level which threatens national and Euro-Atlantic prosperity, security and stability. The opposing armed forces, intelligence services, organized crime, terrorists and other extremist organizations may be the source of such attacks. That is why the Alliance recognizes the very important role of cyber threats. There is no doubt that over the last 20 years information technology has been booming. From an administrative tool to support the optimization of office work, now it has transformed into an instrument supporting industry, public administration, health services and the armed forces. The first cases of cyber-attacks on NATO took place during the crisis in Kosovo. Activities of cyber-criminals led, among other things, to the blocking of email accounts. Furthermore, the object of attack and disruption was the Alliance's website.

Another cyber-attack, on Estonia in summer 2007, drew attention to the growing source of new threats to public space, safety and the stability of the state¹⁸. The three-week long campaign of massive attacks showed that the population of NATO countries may soon be exposed to cyber-attacks.

Until now, the most serious attack on a U.S. military computer system was conducted in 2008. With the use of an external data medium, spy software was entered into a U.S. Army computer in a military base in the Middle East. The virus spread quickly and imperceptibly, both in secret and in public information systems. It created a "computer beachhead" which enabled the downloading of thousands of data files to servers remaining under foreign control. In this way, the US Army lost a lot of important and secret information. Similar incidents were recorded in almost every NATO country. Since then, cyber-attacks and cyber espionage have become an almost constant threat¹⁹.

In June 2010, it became public that malicious software (malware) "Stuxnet" was entered into the Iranian computer network system. The electronic virus attacked Iran's nuclear program²⁰. The "Stuxnet" virus showed destructive aspect of cyberwar capabilities. It also showed the potential threat posed by malicious software (malware) attacking a key computer system managing energy

¹⁷ A.D. Rotfeld, NATO 2020 - Ensured Security and Dynamic Involvement, PISM, Warsaw 2010, p. 14.

¹⁸ *Estonia heals wounds after the first cyberwar*, Gazeta Wyborcza, 1st June 2007, p. 16.

¹⁹ R. Rybicki, *The Right to Cyberdefence*, "Polska Zbrojna" No 35 (30th August), 2009, p.14.

²⁰ *Virus in centrifuges*, Polska zbrojna" No 5 (30th January), 2011, p. 10.

supply²¹. For the first time, it was demonstrated that cyber-attacks can cause actual physical damage and endanger people's lives²².

A massive attacks on government websites and servers in Georgia took place during the Russian-Georgian conflict in 2008. This time, the term "cyberwar" has taken on a very specific, substantive dimension. Activities in cyberspace have not led to any physical damage. However, the Georgian government was weakened at a critical phase of the conflict, which had an impact on the ability to communicate with the shocked public in the country and around the world²³. The facts influenced the decision of NATO to initiate the necessary modernization of existing structures, including strengthening the capability of computer incident response. The alliance as an organization copes with the real and growing challenge of cyber-defense²⁴.

According to the new NATO Strategic Concept and the updated NATO cyber-defense policy, the Alliance defines cyber-threats as a potential reason for collective defense under NATO's Article 5. The new concept gives the Alliance members clear guidance on the agreed list of priorities for improving the Alliance's cyber-defense, including strengthening coordination within NATO and in relations with partners²⁵.

In the face of new threats, on 15th January 2013, the Russian President, Vladimir Putin, signed a decree ordering the Federal Security Service to create a system that would detect, prevent and eliminate attacks on information assets of the Russian Federation. The state system is to protect information and communication systems of state bodies in the territory of Russia and its diplomatic missions abroad, as well as private systems - in consultation with their owners, of course. It should be noted that at the beginning of 2013 "Kaspersky Lab", the company dealing with Internet security, revealed certain facts concerning massive attacks that have been conducted by the net of hackers calling themselves *Red October* since 2007. The attacks were carried out on government institutions, research centers and companies in the countries of the former USSR²⁶.

The development of new technologies will generate new threats to security. It is estimated that some of the trends and developments of new technologies,

²¹ *Stuxnet - the most dangerous virus of the world. Is it invention of Israeli intelligence?* swiat.newsweek.pl/stuxnet, 23-03-2011.

²² China is regarded as the leader of cyberwarfare which most frequently targets USA, e. g. on 7th November 2008 "Financial Times" reported that Chinese hackers have repeatedly managed to penetrate the computer networks of the White House and that the Chinese attacked US presidential election campaign computer networks of Barack Obama and John McCain.

²³ *Cyberwar in the Caucasus area* - <http://technologie.gazeta.pl/technologie/1,89479,5575376,22-09-2011>.

²⁴ In 2009 NATO launched the first major exercise of cyberdefense "Cyber Coalition 2009". Its aim was to improve the capability to respond in case of a cyber-crisis. Source: *NATO cyberexercise*, "Armia" No 1 (32) January 2011, p.19.

²⁵ *New threats: the cyber-dimension*, <http://www.nato.int/docu/review/2011/11-september/CyberThreads/PL/index.htm>.

²⁶ <http://wiadomosci.wp.pl/kat,1356,title,Wladimir-Putin-nakazal-wzmocnienie-zabezpieczen-informatycznych-w-Rosji,wid,15269363,wiadomosc.html?ticaid=1103e8>, 22-01-2013.

particularly the development of laser weapons, electronic warfare and nonlethal weapons will have a significant impact on the planning of NATO military operations. Of great concern is the theft and sale of dual-use technologies to countries of higher risk²⁷. In this context, there are concerns about the level of security connected with the fact that Belarus received the latest modern short-range anti-aircraft Tor-2M missile battery. The system was allocated to the 120th Brigade stationed in Baranovichi, Brest region. There are also plans to obtain a third battery.

Much concern is caused by attempts to use the space for military purposes. Despite the international assurances of many countries, space militarization has become reality²⁸. It is estimated that some countries have probably positioned electronic warfare satellites, various communication interference, and tracking and observation stations in the space²⁹.

In January 2007 China tested an anti-satellite missile (ASAT). The modified DF-21 missiles were used for the purpose of destroying a Chinese weather satellite. A space debris field estimated to contain 10 000 pieces of space junk arose as a result of the outbreak. It poses a threat both to manned and unmanned spacecraft. The successful test of the 2007 anti-satellite missile unveiled the new strategic capability of China. Analysts estimate that China, by launching attacks on satellites by the use of just a few dozen ASAT missiles, could seriously disrupt both U.S. and other nations' military operations.

The Russian air force is also evolving and will turn into an air-space force of the Russian Federation. The structure of new forces has already been determined by the command of air and missile defense of the country. The forces will be responsible for the control of space and will take over command of missile warning systems, especially in the case of threats posed by ballistic missiles³⁰.

These facts indicate that the militarization of space is entering a new phase. Space military units are being established and space laser weapons are being tested. In the near future, the space around our planet may become a theater of warfare activities. The use of space for military purposes, from the beginning, aroused the

²⁷ China uses a well-developed network of spies to steal military technology from the West. On 15th November 2007 the US-China Economic and Security Review Commission, in its report for the U.S. Congress, said that espionage conducted by China is the greatest threat to maintaining U.S. technological secrets and on 20th November 2008 it estimated that Chinese computer espionage against the U.S. government and business has been continuously increased. Similarly the report of that committee of 19 November 2009 stated that China is the country most aggressively applying cyber espionage against the United States. Source: <http://www.polishupdate.com/?p=6900>, 22-10-2012.

²⁸ In 2008 the European Union proposed implementation of the space conduct code. However, the document contains too many restrictions that are unacceptable to the United States, Russia, China, India and Brazil. Only Canada and Japan accepted the draft document. Refusal of the space powers to accept the code means that in the forthcoming years the space near Earth will remain free from the strict rules and restrictions - *Progress report on the implementation of the European Space Policy*, Brussels 2008, p. 12.

²⁹ E.g.: USA, Russia, China, India i Brazil.

³⁰ <http://news.mail.ru/politics/7478124/?frommail=1>, 05-01-2012.

strong opposition of many countries. At the same time, however, individual countries sent military equipment into space for various purposes. Devices mounted currently on satellites collect images in digital form and send them back to Earth by radio. Photographic intelligence is not the only way of observation from the orbit Earth orbit. Satellites are also used to eavesdrop on conversations carried out by radio waves and have special sensors that allow the observation of missile launches. Technically developed countries are almost dependent on space which accommodates the equipment for civil and military communications, weather forecast, positioning of aircraft and ships, etc. Striking these systems does not only limit the possibilities of potential adversary forces but causes the paralysis of entire countries. The armed forces of different countries are working hard on devices that would destroy hostile satellites and protect their own ones. It turns out that most of them are defenseless against ballistic missiles and laser beams³¹.

In further perspective the Alliance predicts threats arising from limitations on the environment and resources. Health hazards, permanent climate changes, water scarcity and increasing energy needs are effects of environmental changes. Therefore, the factors identified above will also be developed in the future security environment in the areas of NATO interest. Therefore, one should not rule out a situation where NATO will take actions relating to the maintenance and protection of the environment as a part of a military operation.

Another threat, as defined in the new "Concept ...", is a lack of stability or a conflict beyond NATO borders that can directly threaten Alliance security; especially in a situation where it inspires extremism, terrorism and transnational illegal activities such as the trafficking of arms, drugs and people. An example of such a threat is the situation in Africa and the Middle East. The "Concept ..." states that crises and conflicts beyond NATO's borders may pose a direct threat to the security of Alliance territory and populations. For this reason, NATO will involve itself, both where possible and where necessary, in the prevention of crises. It is expected that the main task of NATO will be to master the crisis, conduct stabilization operations and support the process of reconstruction³².

The experience of NATO operations, particularly in Iraq, Afghanistan and the Balkans demonstrate that a comprehensive political, civilian and military approach is necessary for effective crisis management. The Balkan operation is an example of the evolution of NATO's responses to threats to international security. The military action in Kosovo was the only way to stop the ethnic cleansing when all diplomatic means had failed. The aim of the NATO intervention was not destruction but suppression of the violence and the withdrawal of Serbian forces from Kosovo, the return of refugees and the creation of an area controlled by civil administration. NATO did not seize any territory. The operation was not about oil

³¹ M. Rotkiewicz, *War in orbit*, "Wprost" 2001, No 23 (967), p. 47.

³² A. Juszczak, *Evolution of the NATO Strategy*, "Kwartalnik Bellona", 2009/3, p. 7.

or commercial interests but only about the defence of certain values³³. The Balkan operation went down in history as a new category model of international activities in the field of security.

Subsequent operations, particularly in Iraq and Afghanistan, support the generally recognized argument that armed forces are no longer the only means of decisive operations. More and more importance is given to diplomacy and generally understood civil measures. There is no doubt that the success of contemporary operations largely depends on the coordinated efforts of a military and non-military nature³⁴.

The experience gained during NATO operations, especially in Afghanistan and the Western Balkans, shows that a comprehensive political, civilian and military approach is necessary for effective crisis management. Therefore it is particularly important now, and it will be the same in the future, to carry out operations on the basis of the expected results (Comprehensive Approach). It is assumed that the Alliance will actively involve itself, in cooperation with other international actors, before, during and after a given crisis. All of this is undertaken to promote joint activities, planning and carrying out operations in the region in order to ensure maximum the consistency and effectiveness of all forces and international actors.

If the crisis prevention proves unsuccessful, NATO will be able to reduce and take control over ongoing military operations. A clear example of such an attitude was the operation in Libya. NATO has unique skills and experience in the field of conflict management. It has its own system of command and control, combat units and necessary protection and support for military operations. The capability to deploy and maintain appropriate response forces remains a special attribute of NATO. Military operations conducted so far under the aegis of NATO indicate that the Alliance can make a significant contribution to shaping international security through the direct control of conflicts.

According to the Alliance's new strategic concept, addressing the threat should start far away from its own territory, where it occurs rather than where it is already developing. With regard to the armed forces, it means there is a need to further develop reconnaissance- -strike measures and systems so as to obtain the greatest possible operational capabilities while limiting threat. Syria is one of the states which are of concern to the international community. The country is accused - mainly by the U.S. - of intensive support for terrorism in the Middle East (especially in Palestine), which negatively affects the entire Middle East peace process.

³³ Opinion expressed by NATO Secretary General Javiera Solane - Ch.J. Dick: *Kosovo's legacy for the future of NATO*, "Jane's Intelligence Review", July 1999. On the basis of: S. Koziej, *Strategic problems of global and Euro-Atlantic security*, NDU, Warsaw 2009, p. 108.

³⁴ J. Rajchel, K. Załęski, *Military-political conditions of the NATO Strategic Concept in: The common security and defense policy. Implications for Poland* by A. Letkiewicz, Z. Nowakowski, J. Rajchel.

In addition, the international community is also concerned about the efforts that Damascus has undertaken in terms of weapons of mass destruction. Especially, since the Syrian chemical research program is very advanced and highly developed³⁵. In this context, Syria has long remained a major object of strategic observation and analysis. An extremely tense situation resulting from social changes in North Africa and the unstable situation in Iraq and Afghanistan make observers pay more and more attention to Syria.

The first protests in Syria were the result of the Tunisian revolution of January 26th, 2011. However, the nationwide uprising broke out in March 2011 when several demonstrations were held in various Syrian cities. In response to the demonstrations the Syrian authorities ordered security forces to violently suppress the uprising. Subsequently, in the assessment of international experts, hundreds of civilians were killed across the country³⁶.

Access to water and electricity was cut off in the cities where resistance was organized. The situation of civilians was worsened by security forces that confiscated goods, fuel, vehicles and food in order to prevent their use to support the insurgents. The suppression of the uprising was conducted by the national army. The government argued that its actions were directed against the Islamic movement. Tanks and armoured personnel carriers were sent to combat the insurgents and even snipers were used to counter the insurgency in the vicinity of strategic objects. In August the Syrian army brutally cleared Deir el-Zor and Latakia of insurgents. In addition, military actions against the insurgency also took place near the border with Iraq and Turkey seeking to cut off the insurgents from supplies and to block their escape routes.

In early October 2012 there was a serious crisis on the Turkish-Syrian border caused by fighting between the parties of the conflict. The activities met with Turkish retaliatory action consisting of the delivery of fire upon the Syrian territory. The insurgents exploited the situation and launched an offensive operation in the province of Idlib. It was aimed at cutting off the transportation route between Damascus and Aleppo. The Syrian army used the route to provide equipment and logistical support for its troops.

For political, economic and historical reasons, the international community is not able to end the civil war in Syria. However, many countries, especially those which have vital interests related to the situation in Syria and those which build their *image* on the basis of their engagement in the conflict, are involved in initiatives supporting the divided Syrian opposition and the development of plans for the future of Syria. Therefore, despite the ongoing civil war in Syria, not only Syrian opposition groups but many international actors are build scenarios for the

³⁵ Syria also has long-range missiles. See A. H. Cordesman, *Weapons of Mass Destruction in the Middle East: Regional Trends, National Forces, Delivery Options and Weapons Effects*, Center for Strategic and International Studies, Washington, D.C., 31.01.2002.

³⁶ R. Stefanicki, *The sky belongs to the Allies*, Gazeta Wyborcza, 22.03.2011, p. 1.

future reconstruction of the Syrian state³⁷. The Gulf states and Turkey have a real impact on the situation in Syria, though they support different religious opposition groups and strive to achieve such results of the conflict which will favor their interests.

There are many doubts related to maintaining NATO's nuclear capability. However, in the opinion of NATO Secretary General Anders Fogh Rasmussen, NATO must maintain the potential of nuclear weapons as the nuclear threat posed by other states and non-state organizations is real³⁸. For this reason, NATO re-defines what "deterrence" means and determines the potential ensuring that no entity will consider their attack on any of the member states to be successful. Thus, even though the Alliance shares the vision of world free of nuclear weapons, it realizes that these weapons will not be easily eliminated. Therefore, in the opinion of military experts there are countries and non-state actors that aspire to having a nuclear capability. For this reason, the reduction of nuclear arms must be done in a controlled and sustainable manner. It should be pointed out that nuclear capability is an essential part of the Alliance's credibility³⁹.

Conclusion

In summary, NATO predicts that conventional threats should not be ignored among other security dangers. Since many countries are increasingly dependent on routes enabling international trade and energy security, it should not be excluded that one will observe the development of piracy, attacks on networks that provide energy and international organized crime activities. The potential threat to transportation, energy supply networks and critical infrastructure are non-state organizations and structures. In this situation, there is a real risk of potential classic conflicts. Proliferation of weapons and means of their delivery will be a difficult problem causing increased danger to NATO. Terrorism poses a direct threat to the security of the NATO countries, their citizens and the entire international community. Terrorist groups, due to open borders, infiltrate and pass by controls, taking actions in the areas that are important to the Alliance. Moreover, according to experts cyber-attacks may constitute an important aspect of asymmetric threats. It is likely that cyber-threats will have the potential to threaten the security and

³⁷ On the basis of: K. Brudzińska, P. Sasnal, *International initiatives and civil war in Syria*, PISM, Issue No 91 (956), 11.10.2012.

³⁸ Under the leadership of President Putin strategic nuclear forces' exercise took place in Russia. It tested the combat readiness level of all three components of Russia's nuclear triad. Officially, on 20th October 2012, the press office of the Kremlin reported that this was the largest exercise of its kind in recent Russian history. See "Raport - wojsko, technika, obronność" 2012/11, p. 72 and <http://www.tvn24.pl/wiadomosci-ze-swiata,2/rosjanie-sprawdzili-nuklearna-triade-cwiczen-na-taka-skale-jeszcze-nie-bylo,283907.html>, 24-10-2012.

³⁹ <http://wiadomosci.wp.pl/kat,1020223,title,szef-nato-w-polsce-zagrozenie-nuklearne-jestrealne,wid,12070181,wiadomosc.html?icaid=1faac>, 14-03-2012.

stability system of the whole Alliance area. The development of new technology also gives rise to previously unknown security threats. A new global threat is the use of space for military purposes. NATO should be also ready to respond to the risks resulting from environmental degradation and resource constraints. NATO recognizes the fact that crises and conflicts beyond its borders may pose a direct threat to the security of Alliance territory and populations. Therefore, it is expected that the main mission of NATO in the near future will include bringing crises under control, conducting stabilization operations and supporting the process of rebuilding fallen countries.

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DETERMINANTS AND DIRECTIONS OF CHANGES IN COMMAND IN POLISH ARMED FORCES AFTER 1989

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Skillful command is a necessary but not sufficient condition for victory, while inefficient and incompetent command is a sufficient condition for failure.

L. Kuleszyński

Abstract

The lecture presents an overview of the major changes that took place in the Polish Armed Forces transformation at the turn of the century in the area of command. They are shown with an indication of the factors that determine the nature and course of the changes and their impact on organizational structures. The major ones included: change in the geopolitical situation in Europe and in the world, the economic situation of Polish economic, needs and requirements of the national security state, the obligations and requirements of allied and changes in the theory and practice of the art of war.

These changes have been identified with the presentation of examples showing their nature, scope and course of covering the transition from the military Warsaw Pact Member States to fully-fledged member of the politically and militarily NATO Alliance.

For over twenty years, these changes related to many areas of the command system of the Polish Armed Forces and they were engaged in an evolutionary way, and sometimes even revolutionary.

Key words – command system, transformation, changes

Introduction

Polish milestones during the nineteen eighties brought significant changes for Europe and the world. Particularly important were the political changes initiated in June 1989 because they contributed to a very deep, almost diametrical transformation of the military chain of command and the Armed Forces of the Republic of Poland. From the end of World War II Poland remained within the zone of influence and dependence on the Soviet Union, and was strongly associated with the military of

the Warsaw Pact, of which it was a member from 1955 until 1991¹. Eastern Bloc countries were subordinated in every area to the dominance of the USSR², the Warsaw Pact had also an antagonistic attitude to the democratic West and the North Atlantic Treaty Organization (NATO). It should also be emphasized that the Soviet troops stationed in Poland and neighboring countries were completely withdrawn in 1993.

Command of the Polish Armed Forces in 1989, therefore at the start of the transition, and the great social and political changes in Central and Eastern Europe was formed on the basis of patterns of eastern and command system in 1989, numbering more than 400,000. Polish soldiers were fully subordinated to the chain of command of the Warsaw Pact, including the Soviet Union Armed Forces command, located in Moscow, and the Xth Directorate of the USSR General Staff.

Factors determining the transition of command

Transformation of command in the Polish Armed Forces occurred after 1989 and was conditioned by many determinants, which are contained in the following areas:

- changes in the geopolitical situation in Europe and the world;
- the Polish socio-economic situation;
- national needs and requirements;
- allied commitments and requirements;
- changes in the theory and practice of the art of war.

The first group of determinants of command must be seen through the prism of the whole spectrum of conditions that resulted from the return of Polish strategic direction of democracy. This meant the transformation of the Polish Armed Forces, which covered all aspects of their operation. There existed until the beginning of the nineteen nineties a bipolar division of the world which affected safety on a global scale. The collapse of the communist system and the Warsaw Pact, the disintegration of the Soviet Union, the clear economic and social problems, the end of the "Cold War" and the arms race, and changes within Poland affected neighboring countries in a fairly significant way. This had an effect on the shape and character of the Polish Armed Forces, especially the system of command in the early nineties.

In 1989 at the beginning of the independence of the Polish Republic, the country found itself in a very difficult situation resulting from the instability of the geopolitical, military and economic region of Central and Eastern Europe. This

¹ For a time, the Warsaw Pact worked on the principle of inertia. Agreement to cease military cooperation within the framework of signed 25 February 1991 in Budapest. However, on 1 July 1991 in Prague solved political structures. This meant that no formal final liquidation of the Warsaw Pact no longer functioning.

² The USSR – Union of Soviet Socialist Republic.

resulted in an increase in threats to the security of the state in many areas. In the defense sector, due to a lack of other options, the concept of self-sufficiency in defense was approved, which sought independence in maintaining territorial integrity and sovereignty and opposition to any aggression detrimental to the security of the emerging Polish Republic. This period largely determined the changes in the army and it is reflected in the "Security Policy and the Polish defense strategy" of 1992.

The restoration of sovereignty and transformation in Europe and around the world have initiated a return to Western civilization, from which Poland was separated by the "iron curtain" for almost fifty years. The historic, centuries-old experience and realism concerning the geostrategic position of Poland led naturally to the adoption of a pro-Western orientation in international relations and efforts to ensure security in alliances, ensuring security and democratic values. In 1993 there emerged the concept of inclusion of Poland in the Euro-Atlantic security system – by joining NATO. These strategic decisions, very bold at that time, led to Polish accession to the NATO defense alliance, which became a reality on March 12, 1999 and the achieving of membership of the European Community which became the paradigm of the defense policy and strategy of Poland³.

The second group was related to determinants of command and the economic situation of Polish economy. Political transformation, the introduction of a market economy, and a deep economic crisis and high inflation after 1989 contributed to a significant decline in military spending, which in turn forced radical changes consisting primarily of significant reduction of the armed forces and armaments⁴.

The third group of determinants of command according to the needs and requirements of the national security state⁵ and orders include:

- the provisions of the Constitution;
- national security strategy and national security strategy;
- current security situation in the area (scale and threats);
- organizational structure of the armed forces;
- plans to use the armed forces (operational plans);
- other formal documents.

The fourth group of conditions - allied commitments and requirements adopted by the Polish Republic at the time of accession to NATO - committed the country's leadership to take into account:

- maintaining the readiness to execute the full spectrum of roles and missions under the common goals of NATO;

³ See: *Assumption of Polish security policy and Security policy and defence strategy of the Polish Republic*, Nov. 2, 1992. (Założenia polskiej polityki bezpieczeństwa oraz Polityka bezpieczeństwa i strategia obronna RP, 2 listopada 1992 r.).

⁴ The Polish Armed Forces consisted of: in 1989 – about 400 000 soldiers, in 1993 – 250 000 soldiers, in 1999 – 226 000 soldiers, in 2003 – 160 000 soldiers, in 2011 – 100 000 soldiers (without National Reserve Forces).

⁵ See: J. Michniak, *Dowodzenie i łączność*, AON, Warszawa 2005, page 45.

- transformation of the Polish Armed Forces in order to achieve consistency in structures of authority to provide leadership and opportunities to work with structures (systems) of NATO command;
- task of integration, standardization of rules and NATO procedures;
- principles of effective TA (transfer of authority) to the allied HQs;
- new directions and areas of change in the fundamental basis alliance, resulting from the transformation of NATO.

The fifth group of determinants of determining command - the theory and practice of the art of war - applies in principle to a wide range of methods and principles for action by both friendly and enemy troops. This group indirectly affects the command, directing them in a special way, appropriate to the nature of the activities and the resulting needs and requirements. The most important of these include:

- new means of command and communication technology;
- new rules of action and use of troops;
- new conditions of the battlefield;
- integration experience;
- interaction with others structures, organizations or entities;
- experience in missions and operations outside the Republic of Poland;
- a potential opponent (enemy).

A functional - organizational structure of the Armed Forces shows versatility, defined as the ability to undertake a variety of tasks. They are composed of different types of troops on the right for each other, with specific weaponry and equipment, and capable of performing under their specific tasks. Active binds specifically organized system of command, in which the processes of the tasks related to the implementation and achievement of the aims of the armed forces. Versatility is also possible in order to carry out activities in all environments, on foot, by means of struggle, in the depths of groups fighting the enemy in the woods, in the mountains, in the winter, etc. This feature can be seen also in the capabilities of different types of activities.

The emerging factors are further compounded by command events and forecasts specified by increasingly embodied actions against an opponent (often indefinable) which is more difficult for the international community than specific countries, coalitions or alliances.

New determinants of changes put in front of the commander which prove the increasingly diverse needs and challenges that gradually transform command. These challenges are related to, inter alia⁶:

- the dynamics of action and increased mobility on the battlefield;
- expanding the use of technical means of destruction;
- the need to ensure the effectiveness of the increased area of responsibility;

⁶ See more: A. Bujak, R. Chrobak, G. Sobolewski, *Wybrane aspekty przygotowania i prowadzenia obrony na szczeblach taktycznych*, AON, Warszawa 2003, page 170; J. Posobiec, *Etapy pośrednie w strukturze taktyki*, ZN AON nr 4(69), 2008, page 127.

- transfer operations into enemy formation;
- masking and confusing;
- decentralization of fight;
- shorter response time;
- increased independence of forces acting as separate elements of a combat formation;
- battle for supremacy in the conditions of network information;
- high precision and range of weapon systems;
- simultaneous operation across the full width, depth and area of the battlefield;
- asymmetric threats and actions;
- possibility of a confrontation with an unidentified or difficult to determine opponent.

Listed groups of determinants and conditions which affect the transformation and transition of command to varying degrees and scope. They revealed to varying degrees over the past twenty years, and they are not a closed set. It is, however, estimated that they had a major impact on the shape of the current system of the Polish Armed Forces command.

Outline of the main changes in command

The structure of the command system in 1989 was based on a hierarchical organization of the army: the team, platoon, company, battalion, regiment, division, district of the General Staff of the military, and three military districts which operated in a time of war ("W"), when such was declared by the army. Together these formed the Polish front and were operationally subordinate to the Soviet General Staff in planning aspects⁷.

In the contemporary period, a typical kind of command was instructional command, based on an omniscience and an authoritative commander exercising command. This was based on a rigid imposition of subordinate commands, further decisions were taken on two levels lower, which means in practice that, for example: the division commander made the decision imposing the manner of its implementation over the commander of the regiment - battalion commander. Subordinates gave detailed instructions on how to implement the tasks according to their plan, apart from their assessments and opinions. It centralized the power, access to information and decision making, which remained focused on the relatively high levels of command.

After being tasked the commander in the decision-making process (DMP) and staff officers undertook authoritatively to look for a way to support and secure the implementation in line with the disposal of forces and means. This was often

⁷ M. Huzarski, *Dekada Polski w NATO – doświadczenia sojuszników*, Bellona 1/2009, Warszawa 2009, page 27.

threatened by situations which appeared after the beginning of the action and were revealed as not expected by the instructional command.

The command procedures governed by rules which, among other things forced the commanders approval of the intentions or decisions of subordinates. Moreover, these decisions needed to be in a formal way (signature on documents proving superior) documented. Success in combat operations was a meticulous execution of tasks by subordinates. Strict discipline of the executive force, with the commander personally involved in organizing interaction in detail, ruthlessly imposing on subordinates a unity of effort in a prescriptive manner⁸.

Command documents were very detailed in nature. The colors and symbols used in proving tactics were by Eastern philosophy, that meant red army own, and blue enemy, and graphic symbols also differed dramatically from those of NATO countries.

It significantly limited commanders and staff officers, stifled initiative and at the same time allowed the senior manager to have confidence in the way the tasks were carried out. This led to a situation often defined as *a lack of decisiveness of Polish commanders and officers*, which was met after the accession to NATO. In the Polish Army there functioned methods of command and doctrine, regulations and instructions established in the Soviet Union, which in most were translations of the Russian language. In combat operations and military operations there applied strict standards that set forth from the lowest to the highest levels of the organization - including the team to the front - for example, some of the parameters: the width and depth of the regions, belts defense, attack, military deployment, deployment command posts, etc.

This short description, presents the synthetic approach, the general situation as a starting point for the transformation of the Polish Armed Forces, which has passed all expectations and in 1989 appeared to be impossible to meet. Poland from membership in the Warsaw Pact, joined the ranks of the opposing recognized (hostile) NATO Alliance, after what by then was nearly 10 years.

It was needed to stimulate the process of transforming and adapting the command system of the Armed Forces of the Republic of Poland to the new realities and challenges of the nineteen nineties, also restructuring the Polish Armed Forces and the democratization of the political system, the introduction of a market economy and liberalization of social relations created new, difficult, conditions for the functioning of command.

At the threshold of self-defense was the central General Staff, the highest-ranking authority to carry out strategic planning in the Armed Forces during wartime, and the coordination of strategic and defense planning in the non-military defense system of the state. Command of the armed forces was done by the command of the armed forces: Navy, Air Force and Air Defense (formed in 1990 through the merger of the Air Force Air Defense Forces), and in the absence of

⁸ J. Kręcikij, J. Wolejszo, *Podstawy dowodzenia*, AON, Warszawa 2007, page 58.

unified command of land forces by three military districts (Silesia - in Polish SOW, Pomerania - in Polish POW, Warsaw - in Polish WOW).

For 1990-1993 was the time to seek solutions to doctrinal and organizational problems and to prove command system development time, which would be adequate for the new reality of international security and defense of the democratic state. Then it was a historical event, which was for a civilian to take control over the army and the post of Minister of Defense (MoD) from a soldier. In 1992, this post also, as part of the reorganization of the new command system structure, included Krakow Military District (in original - KOW), which received on 01.01.1993 legal and economic independence. It was a response to the volatile situation across the eastern border, in the former Soviet republics and the need for rapid deployment of military units deprived of their presence in the eastern part of Poland. Its range covered 13 provinces and several isolated garrisons of WOW, SOW and POW. During this period, the primary goal was to identify the situation and the requirements of NATO, as regards a candidate for the NATO Alliance.

Between 1994-1999 a fully crystallized long-term accession to NATO structures resulted in participation in the Partnership for Peace (PfP) program, and pursuant to international agreements, increased effort associated with preparing the army to act in NATO structures. In reality there have been numerous initiatives reorganizing the system of command and taking us closer to NATO, including through:

1. International cooperation:

- Danish-German-Polish dating back to 1995, which formally took on the character of the 14th NATO⁹ summit (at which NATO officially invited the Czech Republic, Poland and Hungary - the first post-Soviet bloc countries), when it was decided to establish a joint structure. Its actual formation began in March 1998 and ended 18 September 1999. There was the official establishment of the Multinational Corps Northeast (Multinational Corps Northeast - MNC NE). It was assumed that housing staff will be stationed on Polish territory in Szczecin, and the three most important positions (commander, deputy and chief of staff) will be filled by on rotation by representatives of each country. After this point officers from other countries joined the staff of MNC NE, currently the number of countries forming it is 11, at the beginning of 2012. Croatia became the 12th state that signed the accession note on 31 January 2012. The official language of the force in the staff housing is English;

- Polish-Ukrainian started in 1995, in which over three consecutive years joint exercises were conducted and as a result, with the support of the United States, the headquarters of Polish-Ukrainian Battalion (POLUKRBAT) was created. POLUKRBAT was officially formed on 21st March 1998. It took an active part in 2000 in peacekeeping missions in Kosovo (in the KFOR structure). The POLUKRBAT commander has always been a Pole with a Ukrainian officer as his

⁹ Organized 14th NATO Summit in Madrid, Spain, on 8-9 July 1997, in which the 16 member states of NATO decided to invite the Poland, Czech and Hungary to NATO membership.

deputy. The staff consisted of officers of the two nations as 1st Mixed Polish-Ukrainian Battalion of the United Nations Peacekeeping Forces with the patron name of J.K. Chodkiewicz and P.K. Sahajdaczny Hetmans. The battalion was disbanded on 30.09.2010. The official language of the battalion was English, in practice, the soldiers had used their native language as well;

– Lithuanian-Polish initiated by Lithuanian President Algirdas Brazauskas in 1995 during his speech in the Polish Sejm. Formally, the Lithuanian-Polish Peace Force Battalion (LITPOLBAT) was established as a result of an agreement signed on 3rd March 1997 in Warsaw between the Ministers of Foreign Affairs of the Polish and Lithuanian. In February 1998, the battalion headquarters was established, and its readiness to act in the framework of peacekeeping operations was reached on 31st December 1998. LITPOLBAT was a multinational battalion, which was intended primarily to participate in peacekeeping missions on behalf of the UN, NATO and the OSCE. The official language of the battalion was English, though of course in practice the soldiers had used their native language too. In 2007, it was decided to liquidate the unit, which officially closed on 30th June 2008.

2. Elimination of the regiment level (mechanized and tanks regiments) and the creation in their place in 1994-1995 of a new organizational structure - Brigades;

3. Elimination of the deputy commander for political affairs (their place was taken by new position - educational officers);

4. Create of a position for chaplains in military units;

5. Liquidation of most divisions (in 1999 there remained only six divisions) and other units of the armed forces;

6. Establishment in 1997 of a new kind of command of the armed forces (land) – Land Forces Command, based in Warsaw, which took over operational command of the military district troops.

7. Renaming, in 1998, of the Krakow Military District (in original - KOW) into the Air-Mechanized Corps (in original - KPZ), which finally in 2001 was reorganized into the 2 Mechanized Corps (in original - 2KZ) - reaching full readiness levels on 1 January 2002.

Ending the first decade, in the considered time horizon, it was an extremely difficult time for the command: changes in the structure and decreasing the size of the army, which at the time to join NATO in 1999 was reduced and there were 226 000 full time military positions (filled positions was 198 500)¹⁰. Almost 173 000 positions disappeared in less than 10 years, which accounted for nearly half of the armed forces in 1989. This drastically reduced the number of commands at all tactical levels and meant a reorganized operational and strategic level.

However, it should be noted that the new cells were formed in the multinational command. There began intensive research and work on the elaboration of new structural and organizational solutions and doctrines of command, along with new

¹⁰ F. Gałgor, *Dziesięć lat w NATO*, Bellona nr 1/2009, Warszawa 2009, page 9.

command procedures compatible with the procedures in force in NATO countries. The National Defense University (NDU) provided the leading role, which developed prototypes before the accession of many of the current solutions in the Armed Forces¹¹. This period through collaboration and participation in peacekeeping operations and the intensive training of soldiers (especially language) was aimed at creating a platform for the upcoming inclusion in the structure of the alliance. Integration was a huge challenge for commanders, which had to cope with new qualitative terms, conditions, and solutions in the NATO force.

After Polish accession to NATO, which formally took place on 12th March 1999, there began a period of striving to achieve the goals and standards of NATO as well as a comprehensive and systematic transformation of the armed forces, including significant changes in the command.

Placed in the Accession Treaty and other documents were requirements aimed at achieving the interoperability and compatibility of all members of the alliance structures. They cover a broad spectrum of issues and solutions to issues occupying a prominent place in command structures as well as the ability to cooperate, the system structure of command and participation in the NATO command. It should be noted, that there are command structures of NATO, but NATO does not have an army, national forces are only secreted by the members at the disposal of NATO command structures.

In the first years after the accession there were dynamic changes occurring in the commands which had had significant structural and functional transformations, the most important of them were:

1. Create a deputy commander position and liquidation positions: deputy commander for logistic and operational matter;
2. Restoring chief of staff - first deputy commander of the previous system - to work as a coordinator of Staff, corresponding only with his subordinate staff (similar arrangement existed in the Polish Republic before 1939);
3. Adaptation, after many attempts, of the solution structures of the national alliance, the reorganization of the various structures of commands, for example, at the tactical level Army has been remodeled and expanded - they honored the following components:
 - commander, deputy commander, command group, made up of individuals and organizational units, which works directly with the commander;
 - staff, headed by the chief of staff, extract the major group in the staff structure, consisting of individual organizational cells, branches/sections S/G-1 to S/G-6;
 - chief of logistic, with the subordinate cells.
4. Reorganization of functional structures of command posts (planning, command and other cells were set up);

¹¹ Improved and refined by AON staff, in cooperation with land forces as currently has regulatory documents such as: DD/3.2.5 Planning activities at the tactical level in the land forces (*Planowanie działań na szczeblu taktycznym w wojskach lądowych*), DWŁąd., Warszawa 2007.

5. The chaplain matters have been included in the command group;

6. Expanded training division branch, which was then eliminated and restored again.

On the other hand, apart from the assumptions of command, there have been significant changes related to the introduction of new solutions, consistent with the assumptions of the theory of organization and management, in particular - making decisions. Here there was a radical change of command philosophy. A ubiquitous style of command - instruction - was replaced by the style known as commanding by objectives, which is essentially the opposite of an instructional style. Application of the principle of decentralization is here, which manifests itself primarily in setting tasks to subordinates by their superiors *mission* type (task or a task and purpose, according to which subordinates must act). Commanding by objectives is based on four components, which include¹²: a guide for commanders, subordinates initiative, putting the appropriate tasks to subordinates; appropriate distribution of power and resources. The commander makes the task, but does not say how it is to be done in this regard, leaving leeway to the subordinate within the well-known limitations.

Whereas the previous procedure and process of autocratic command was replaced by new solutions, which adopted the division into a number of phases, stages and activities carried out at all levels of tactical command¹³ with the increased role of the staff. Another solution used at the operational level was the adoption of the Operational Planning Process (OPP)¹⁴.

It should be noted that these solutions are based on the teamwork of staff, whose functional teams prepare possible solutions (courses of action - COA), leaving the commander to decide. Using creative thinking, here ordnance teams support the knowledge, skills and experience of the commander in the DMP, and do not seek to justify autocratically decision taken by the commander.

During our more than twelve years of NATO presence, there have been the significant changes in the command system structures of the Polish Armed Forces, that were dictated by the transformations of the alliance, the emergence of new threats and challenges, as well as the needs of a new nation. Directions of changes related mainly to¹⁵:

- fragmentation of central functions and organization of the armed forces command authorities (General Staff of Armed Forces, the armed forces headquarters, commands, functional component commands);
- flattening of organizational structures and the elimination of the vertical command structure;
- separation of operational forces from support units, security, administration, military and school units;

¹² J. Kręcikij, *Współczesny proces dowodzenia wojskami*, AON, Warszawa 2003, page 93.

¹³ Polish DMP is compatible with NATO MDMP.

¹⁴ This process is the same like used in NATO on operational level.

¹⁵ F. Gągor, *Dziesięć lat ...*, page 20.

- the active involvement in the command structure of both NATO and the European Union by Polish soldiers, taking a number of senior positions of command and staff officers;
- the implementation of lessons learned by the coalition and its allies, with the participation of Polish military contingents in divisional and multinational (international) exercises.

This was manifested in the implementation of many projects, the most important of these include:

1. Reduction and reformation of many units, but also the formation of new types of military units and troops (from 1999-2009 this related to 6032 military units)¹⁶.
2. Reorganization of the General Staff (three times in the last twelve years and the next round is announced).
3. The formation in 2001 of the 1st Mechanized Corps in Bydgoszcz (disbanded in 2003).
4. The creation on 1st Jan 2002 of the Air Operations Center, which carries out tasks for national and allied air defense system, and directs subordinate and approves operational active measures to combat organized activities in support of other kind of forces.
5. The creation on 1st July 2002 of the Maritime Operations Centre (COM) in the reorganization of the command system and its adaptation to NATO standards. This center is responsible for the planning and command of forces dedicated to the Navy, the coordination of forces assigned to peacekeeping and stabilization operations and for performing Operational Naval Service. In addition, working with state authorities in non-military maritime rescue, emergency response and control of shipping.
6. The creation in 2003 of the Operational Command, as a consequence of transformation and adaptation of the command of system of the Armed Forces in order to manage the activities and needs of combined operations in the country and beyond. From 1st July 2005 Operational Command took command of the forces involved in peace support operations and stabilization, including in Iraq and Afghanistan, the direct participation of separate military units in crisis situations and natural disasters across the country; it also conducts exercises for separate components of the Army, Air Force, Navy, and Special Forces to prepare them to provide combined operations. However, in a time of crisis it is part of a strategic command authority combining operations with allied or other forces (multinational). As a result of legislative changes in June 2007 it was renamed the Operational Command of the Polish Armed Forces.
7. The creation on 6th Dec 2006 of the Armed Forces Support Inspectorate, which gradually took over the all the tasks and responsibilities for organizing and managing the logistics support system of the Armed Forces, including the

¹⁶ F. Gągor, *Dziesięć lat ...*, page 20.

protection of military units used or residing outside the country, and managing the planning and execution of tasks resulting from the function of HNS; it is responsible for the management of territorial defense, dedicated military engineering forces and defense against weapons of mass destruction, directing local enforcement agencies of the Ministry of National Defense in operational matters of government administration, defense and detached (local military administrations)¹⁷.

8. The appointment in 2006 of a new type of Armed Forces - Special Forces which readiness was reached in 2007. This is a response to the contemporary challenges of corresponding needs. Special Forces Command is responsible for conducting special operations in a national, allied or coalition environment, alone or in collaboration with other components of the armed forces in peacetime, crisis and war, at home and abroad.

9. The renaming Air-Mechanized Corps (KPZ) to 2 Mechanized Corps (2KZ), which was formed on the basis of separate units of KPZ and the Silesian and Pomeranian Military District – the 2KZ's readiness was reached on 1st January 2002.

10. The decommissioning and liquidation of Military Districts and 1st Warsaw Mechanized Division (1WDZ), and the transformation of many units of this kind of forces from brigades to the regiments in 2011.

11. Starting the formation (in 2011) of HQ of Polish-Ukrainian-Lithuanian Brigade (which is expected to be ready in 2013).

An important factor contributing to the command was also put forward by Poland in 2001, the proposal to create an international brigade of Czech, Polish and Slovak troops. The appropriate defense ministers signed an agreement on 20th Sept 2001, and the HQ and staff were officially formed on 30th May 2002. The Polish-Czech-Slovak Multinational Brigade existed between 2002 and 2005. A number of organizational and financial problems led to the decision taken in 2004 to liquidate the brigade (the official agreement was signed by representatives of the three countries on 30th May 2005 and entered into force on 22nd June 2005).

¹⁷ www.iwspisz.wp.mil.pl. (15.12.2012)

Summary

To sum up over twenty years of recent Polish history, we can say that the visual perception of safety and the contribution of the Armed Forces in maintaining and shaping security was and is similar. The Armed Forces are an important link in the defense system of the Republic of Poland, cooperating on issues of national security and defense, and command of them is aimed at achieving the strategic objectives.

In the first decade after 1989, the command was not able to fully meet this requirement "defense sufficiency" and the contemporary threats and challenges. The command system operated in extremely difficult and contradictory conditions. The break in the "umbilical cord" connecting the military command system and dependencies on the Warsaw Pact was accomplished with the determination, faith and commitment of many people, both in and out of uniform. Submission to civilian control of the armed forces, an apolitical army, the search for space in the Polish defense system, not as the only factor, but an important participant, clearly demonstrated the role of the army in a fully democratic state. To emphasize however, that the consensus is on the return to the "Peoples of Europe", with the inclusion of political - military structures to ensure a high level of Euro-Atlantic security and the world, and consequently the security of the Nation and of the Republic of Poland.

It may be argued that the most important stimulus, which is basically a breakthrough in the development of the theory of command, was the Polish accession to NATO¹⁸. The need to meet the high requirements, achieving interoperability and integration and the standards of NATO created entirely new conditions for the development of the theory of command. These transformations were discrete in the nature of the changes taking place in each of the possible areas of command. Intensive work to meet the obligations of belonging to the Alliance led to the development of the existing theoretical solutions, showing that taking into account existing national achievements forms a coherent and comprehensive theory of command. It ensures the proper functioning of the Polish Armed Forces both in a national and multinational environment as part of a NATO alliance or while creating ad hoc coalitions.

Looking at predictions about the future for the next decade in the area of command, it is believed that this will not be an easy time. Accession to NATO initiated the process for permanently and caused evolution: the theory and practice of command, and the command of the organizational and functional structure of the system at every level of command, both command at the strategic level as well as the tactical and operational inclusive. In addition, new techniques and technologies, pose serious challenges to materialize in the new concepts of operations and command of the armed forces in the "information age." To achieve network centric

¹⁸ In fact, already in the process of preparation of the armed forces and the Polish accession, which occurred on 12.03.1999, work began to adapt the theory of command to NATO standards.

capabilities in command in the national and allied requirements. To create a highly mobility and expeditionary force and along with elements of the command system. Resilience to hazards and the ability to operate in cyberspace, which is increasingly accompanying the modern battlefield command.

Command in new conditions is becoming increasingly complex due to the wide variety of automated command systems, simulation activities, and IT support command processes. The need to achieve information dominance and interaction with the increasingly modern armies of other countries of the NATO alliance also contributes to such situations. This places high demands on commanders and staffs of officers who must have appropriate knowledge and skills related to the need to ensure the proper chain of command for subordinate forces on the twentieth century battlefield.

In conclusion, it should also be noted that retrospective changes and the resulting challenges and conditions for the chain of command have been presented only in a signalosome. This is due in part to the accepted limits and the extraordinary complexity of the issues of theory discussed and practice over the last twenty years. Maj. Gen. prof. Bolesław Balcerowicz, however, wrote that it is notable that it was a *period of continuous transformation-reforms, restructuring, reorganization, reconstruction*¹⁹ and rationalization, consolidation and transformation of the Polish Army in this particular command.

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¹⁹ B. Balcerowicz, *Doświadczenia i wnioski z przeobrażeń Wojska Polskiego [w:] Od autorytaryzmu do demokracji, Wojsko Polskie 1989-2009*, MON, Warszawa 2009, page 49.



THE DEVELOPMENT DIRECTIONS OF MILITARY RECONNAISSANCE

Col. Waldemar SCHEFFS, D.Sc.

Abstract

The race for dominance between the physical realities of systems of surveillance, command and control on the one hand, and the time and the reliability of the information on the other hand, has led to a condition, where manual supported reconnaissance measures are not keeping up with the development of other techniques of information transfer and reconnaissance. The most significant role in this race is played by time, the synchronization of many repetitive actions, the reliability of the information passed on to the decision-making centres and the possibility of collecting, gathering and processing the information by computer systems. Therefore, the factors which determine the reconnaissance have begun to play a dominant role. Technological development allowed the building of automated systems; which with regards to reconnaissance is important.

The object of the article will be the identification of results obtained as a result of solving the problem defined in the form of a question: What are the current trends in the modernization of the Polish Armed Forces' reconnaissance? The characteristics of military intelligence are under consideration in eight problem areas that determine its development.

Key words – reconnaissance, structure, tactic, automatisisation

Introduction

New technologies, as well as the new equipment of reconnaissance, forces the building of automated systems of surveillance to take account of changes in the patterns of the leading developments of reconnaissance. The analysis of the development of reconnaissance measures and the conclusions of stabilization peacekeepers in Iraq and Afghanistan imply that the main impact on creating a perspective system of surveillance will be that of ideas and the capacity of that system and, national security threats and the predicted operating models. From these premises comes the main objective, and thus the basic requirements and

concepts of a surveillance system. These conditions affect the changes in the theory and practice of reconnaissance.

The changes involve, inter alia:

1. developing new theories of reconnaissance, particularly in relation to emergency operations, activities in the net-centred environment of non military origin;
2. the introduction of a new or upgrading the old one, but still a perspective equipment;
3. identification of new areas of reconnaissance;
4. developing new ways and techniques for the implementation of reconnaissance tasks;
5. developing new procedures in the field of staff reconnaissance cells at the tactical and operational levels;
6. developing modular organizational structures essential to the carrying out of specific tasks in view of the purpose and capacity of reconnaissance subsystems in dedicated operations;
7. improving the system of reconnaissance specialists' trainings in all possible areas which are at the disposal of the Commander,
8. the automating of procedures and systems of reconnaissance.

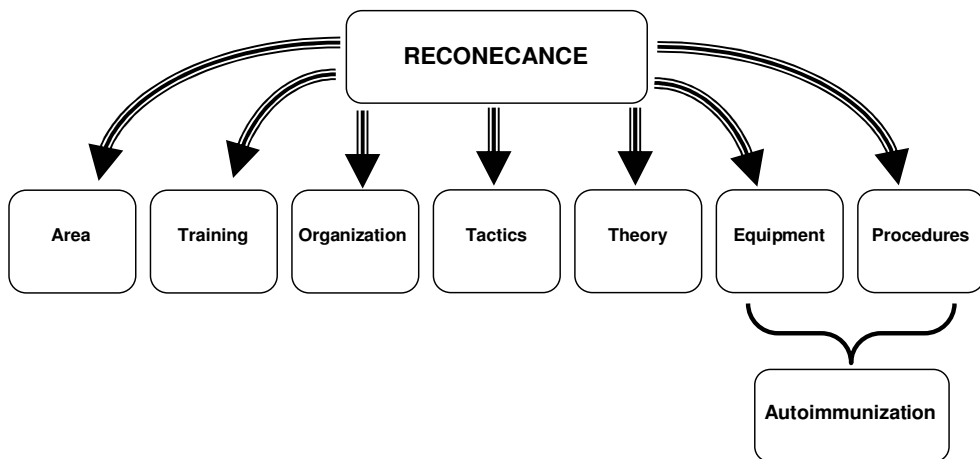


Fig. 1. Areas of reconnaissance modernisation

New possibilities of using reconnaissance equipment enforce new tactics of its use. So far the biggest problem for the components delegated in missions is their protection against the effects of the means of destruction used by the enemy. Past and current peacekeeping and stabilization operations have identified some equipment deficiencies, procedural in using reconnaissance system. These vulnerabilities have been highlighted very clearly in operation 'Iraqi Freedom' as

well as in the current stabilization mission in Afghanistan. Absenteeism of reconnaissance subunits in the national component¹ makes it necessary to seek help from the allies, who may not always be able to secure the reconnaissance patrols sent with the information on the threat. Equipment failures in reconnaissance measures condemns individual patrols or convoys increasing the effective impact of the terrorist attacks.

The area of reconnaissance theory

The development of reconnaissance theory can be looked at on several levels. One of them is that of any newly introduced equipment, generating a new theory about tactics; the second one is the procedures of acquiring and transmitting information in conjunction with databases; the next one are activities in environments other than traditional ones. To these environments undoubtedly should belong the net-centred environment or the environment of the civilian objects in the crisis operations.

Analysis of the management process of a reconnaissance system in high-intensity activities as well as conclusions from armed conflicts show that, in relation to the net-centred activities, we should include the following stages²:

- separation of units intended for the task forces,
- organization of reconnaissance system (connecting individual components, subsystems and systems of reconnaissance according to the information needs of the Task Force Commander in the combined operation);
- planning and preparation of the reconnaissance system to participate in the combined operation;
- movement and placement of the reconnaissance units in the area of operation,
- reconnaissance actions, in back-line, direct and deep service zone;
- termination (reducing the level of) the conflict and stabilising the situation in the area of operation.

In order to enable the reconnaissance system to gain information in future action environments, i.e. net-centred environment, the reconnaissance elements (patrols, stations, equipment) must be equipped with computers with software and

¹ The opinions and proposals of reconnaissance officers returning from the subsequent changes of the Afghan mission confirm that particularly in the initial period of stabilization actions, reconnaissance system used the allies' sources of information. Currently it is not fully satisfactory either, although its effectiveness is on the rise. The proof of that can be the success achieved in the elimination of weapon and ammunition compound, as well as the arrests of dangerous criminals. On the basis of conclusions from the participants of the VIII change PMC Afghanistan who took part in the course WKOT 2012. in AON.

² CF. M. Wrzosek, Exploratory information in C4ISR System, [in] The transformation of command systems, CTM Gdynia 2010, p. 203.

operating systems common to the whole environment of the combined operation. Each soldier, especially a Scout, should be identifiable on the battlefield, one should therefore have the receiving and transmitting radio sets, which joined with sensors can be the basis to build independent reconnaissance centres and network information by creating an information node network for the entire system³. Such a solution already existed during operation "Iraqi Freedom". The American forces equipped the reconnaissance subunits with the terminals of satellite communication system *Trojan Spirit II*, which served as parts of the information system for the Allied forces.

Another area of modern solutions which are likely to be in the arsenal of the reconnaissance is the technology of "smart dust". The research centres have been working for many years on such a solution that will be able to collect information from a large area without the loss of their own assets. The creators of "smart dust" suggest that this technology will be more effective than other sensors and detectors. "Smart dust", spreads over a vast area, collects data about its environment, using microscopic sensors and sends them to a distant headquarters. Each speck of smart dust is the size of rice grain and it keeps in contact with its closest neighbours through a Wi-Fi connection. The area where such sensors have been deployed, automatically configures the information network, therefore the task of the operator is limited to the distribution of the sources of information in the field which he wants to monitor⁴.

In view of the increasing demand for information and at the same time reducing the time needed to detect and transfer information about objects from several hours down to just a few minutes the operational awareness of decision makers responsible for the implementation of the plans of the operation and achieving the intended operation results in the various stages of the campaign has been increased. The operational needs can be met only by using automated information transmission systems. This area of reconnaissance activity, although it is known, it is still a little exposed in theory and almost overlooked in practice. Therefore, we must continue to work to solve this problem.

It is assumed that due to the increasing number of participants in activities, reconnaissance subsystems can no longer carry out tasks independently, but they should form one integrated common reconnaissance-striking system, based on electronic identification sub-systems and beacon equipment. The system will be capable of generating data on the basis of developed operational algorithms for automatically commanded impact measures. In the future such a system will meet the requirements of activities in the net-centred environment. In the Polish Armed Forces such solutions are just beginning to develop, but other armies already demonstrate this technology.

³ Ibid, p. 204.

⁴ See. M. Czapelski, The end of secrets, http://www.pcworld.pl/artykuly/41637_2.html.

A lot of scientific work carried out in the last decade at the National Defence Academy was devoted to, among other things, forecasting the development of reconnaissance. The conclusions from the analysis carried out indicates the broad lines of reconnaissance development. They mainly concern: the automatisisation process as the overall level of automatisisation and development of fully automatic unmanned combat means continues; solution concepts of networking sensors of reconnaissance and analysis of modular structures for particular reconnaissance subunits. The studies clearly indicate the tendency to build independent automated reconnaissance-combat formations. Generally it is assumed that it will be the land instruments, because they are relatively the cheapest ones, which does not mean that the aircraft or marine instruments will not be constructed. It is assumed that the land combat instruments carry out the actions with the support of unmanned aircraft and reconnaissance vehicles. Another direction in the theory of diagnosis is necessary to build a system based on the multispectral reconnaissance devices operating in one communication network, and thus providing all users with operational awareness. Many of the new solutions provide imaging data transmission "on line", which gives you the opportunity to direct the monitoring of the area or object. Another direction of theoretical consideration is the integration of a reconnaissance and combat system on a single base vehicle. In this way we come to the automatic connection of identification and impact functions. Another aspect of automatisisation is the matter of the information support of information processes. Both the harvesting and processing as well as distribution of information is to take place in a completely automatic way, according to previously programmed actions.

New areas of reconnaissance

The reconnaissance implements the tasks in line with certain priorities of time in relation to essential army operations. For this reason, the time and the depth of the carried out activities are one of the primary determinants of their operations. The features of the reconnaissance are to know more, faster and more precisely. The reconnaissance tasks are carried out in all hitherto known natural environments provided that they are an indicator of the depth of the reconnaissance. The reconnaissance tasks are carried out in all hitherto known natural environments provided that they are an indicator of the depth of the diagnosis. It is not of any importance whether the air reconnaissance has the largest reconnaissance capacity due to the moving apparatus platform. The dominance of air reconnaissance was undermined with the introduction of the reconnaissance satellites in the orbit around the Earth. The depth of the space reconnaissance has started playing a dominant part; also the diagnosis of space began to play a dominant role. However, not all countries can afford this type of reconnaissance, therefore it is

assumed that air reconnaissance will be leading in the countries with small and medium-sized budget expenditures on defence. The smallest range of reconnaissance belongs to land reconnaissance subunits. This is understandable as it is impossible to dispute with the laws of physics related to the optical or electronic horizon. The way out of the problem has turned out to be unmanned flying vehicles. They increase dramatically the depth of reconnaissance, covering the areas of reconnaissance responsibility on the each level of army operations. In conclusion, the historically established difference between the depth of reconnaissance and the allocation of the environment to different sections of the troops is becoming blurred. Currently the land force reconnaissance systems can carry out tasks on the reconnaissance depth of the air force (tactical and operational area) or on covering an area of the navy activities on the nearest sea. Of course there are also some opponents of this thesis, who are arguing that the BAL (unmanned flying vehicle) is an air vehicle and therefore it should be assigned to the air force. However, please note, that the areas of reconnaissance are not divided due to reconnaissance measures' moving platforms but because of the tasks carried out for the benefit of different troops sections. Therefore the BAL, as a part of the land force reconnaissance system achieves the tasks in its favour. A similar uncertainty and doubt can be raised with regard to a warship equipped with on-board reconnaissance systems, which the BAL and helicopters are integral equipment. They also conduct reconnaissance in the air, but for the benefit of the naval reconnaissance system.

Environmental areas of reconnaissance system activities are one of the levels of reconnaissance development, while another one would be the activities in the environment less physically tangible, namely in the net-centred environment. The area of operations of reconnaissance systems is still not fully recognized and raises a lot of doubts. The reconnaissance carried out in the net-centred environment cannot be detached from the general principles of conduct for the reconnaissance activities as they in fact result in the tactic of using reconnaissance systems. Building the systems up from the ground is not advisable. You need to prepare and improve the existing system, to have the ability to operate in the net-centred environment. The main principle of conducting operations in the net-centred environment is striving for the information advantage. For the reconnaissance system it means such an ability for the acquiring, accumulating, processing and distribution of information, that allows in the almost real-time, using available tools, it can pass information to the decision-making centres. Therefore, full access to the sources of information is the priority for the reconnaissance system. The speed of command is inextricably linked to synchronization, understood more as a synergy of all available reconnaissance systems implementing the tasks in a specific area. Although so far we have been talking about cooperation, it is quite a common practice that the reconnaissance subsystems are implemented in each task separately, without a correlation in time and space. Currently this will be

impossible in the net-centred environment activities. The future battlefield is characterized by non-linearity and even for this reason, the concentration of reconnaissance subsystems on selected objects is the essence of the action. This rule is connected with the idea of force dispersal and swarming tactics in which for a specific task (object reconnaissance) different reconnaissance subsystems are concentrated in one place and time.

Organisation of new reconnaissance structures

The economy of forces is one of the determinants of the rational use and maintenance of forces and means of reconnaissance in operations. Not all the reconnaissance subsystems can be used at any given time and not all of them are available. Even though we can make use of the information obtained by the allies (partners), but then we will be still restricted in the implementation of tasks. The economic factor, although it should not affect the basis for the construction of the reconnaissance system, turns out to be significant. Therefore, when building varied reconnaissance structures on the basis of existing units we have to reduce costs while at the same time we have to adapt it to the new tasks.

Currently almost all military reconnaissance units have the same structure and equipment and perform the same tasks. When we are proposing the organisation of future structures in stabilisation missions or net-centred actions we need to pay attention to the greater flexibility of units in relation to the tasks. The selection of the appropriate unit will depend on the type and nature of the operation.

The selection of individual subunits can be made on the basis of whole subdivisions or individual structures within the subdivision. For example, if we organise a few reconnaissance regiments, when each of them could be used for other tasks, then we can delegate one company for the use of peacekeeping missions to carry out the unit tasks without prejudice to the whole regiment⁵. Alternatively, the problem can be approached from the other side. In each regiment we could organize appropriate companies for specific expertise, e.g. far, special, close, electronic reconnaissance, aircraft reconnaissance, etc. In that case we would delegate individual companies, platoons or even specialized teams for the needs of module, which would result in even less impairment of the combat capability of the regiment.

The vital task in organizing the system of modular reconnaissance is to join all the subunits (reconnaissance subsystems) into a single information system. Information that exits from each reconnaissance subsystem should be included in the system of a single decision maker, who would navigate the whole system from the command centre. In this context emerges the need of an automated system to assist with the command of various reconnaissance subsystems.

⁵ This principle has already been practically applied for ISTAR system at the division level.

Reconnaissance procedures

The experience from operations in Iraq and Afghanistan has highlighted the needs for carrying out new kinds of actions in a net-centred environment. The necessity that will have to be faced in the future is the use of new sources of reconnaissance data. Therefore, it is assumed that the new sources of reconnaissance information would be the reconnaissance platforms and systems ISR (Intelligence, Surveillance, Reconnaissance⁶), which would have the ability to detect and track aircraft and ground-based mobile targets⁷. The conclusions and the analysis of the course of the armed conflicts as well as the evaluation of military experts indicate that the amount of these measures is insufficient in relation to operational needs⁸. So in order to ensure their effective use, we need to organize them into a single integrated intelligence and reconnaissance system and integrate it with global impact systems (e.g., fire, electronic, psychological). This will allow the rational management of acquired information resources by all the components of the combined operation.

Organisational changes launched in the land forces in 2011, which referred to staff cells resulted in the introduction of the ISTAR procedure from the battalion to division level inclusive, although at its lowest level it only exists residually. At the same time the new organization forced the new procedures for the assessment and analysis of information, planning and the management of the reconnaissance system.

Additionally, the national procedure includes one more factor of Target Acquisition, i.e. the process of identifying and finding the position of objects (targets) with precision that allows the efficient use of destruction forces. Due to the fact that this task has been entrusted to the reconnaissance for implementation, the ISTAR procedure also included the indicating of the targets, although the ISR is more often discussed in NATO.

Experience with current operations indicates that to support and secure the information needs of the command process in net-centred environment the information resources of reconnaissance should be correlated according to the field (thematically) and the levels of command. This operating requirement creates the new technical requirements. Therefore the essential problem is access to information resources, with the possibility of verifying them at all the levels of

⁶ In the context of the article, the individual components of ISR should be interpreted in the following way: intelligence (intelligence, reconnaissance)-the ability to understand (know) the intention and the nature of the activities of a potential opponent, surveillance (tracking, monitoring)-the ability to supervise the activities of the forces and resources of our own and of a potential opponent, reconnaissance (reconnaissance, reconnaissance)-the ability to detect and locate the objects, the ability to use the field for the need of activities.

⁷ Ground Moving Target Indicator.

⁸ J.M. Brzezina, Z. Dańko, Italian experience from combat use of unmanned aircrafts in Iraq, The Air Force Review 2005, no. 3.

command. Where as this challenge may not be a problem in a national arrangement, the multinational system reveals some problems related to the hardware and software compatibility and users' permission to access specific information⁹.

The management of information resources of the reconnaissance system in future operations must be implemented dynamically and according to the needs of the changing situation or the commander's informational priorities. It should be stressed that the identification of the targets within the framework of the future operations may only take place in the case of the full operational consciousness of political and military decision-makers relating to the possible effects of the planned measures, especially including the direct impact of the means of destruction.

Tactics of reconnaissance subsystems operations

As we recognize the technological conditionality of leading the fight, it should be pointed out that the transformation of the reconnaissance system to the new dimension needs to be considered in the context of the change in the concept of carrying out the operations (Revolution in Military Affairs). In the assent of many experts, the biggest beneficiary of the upcoming changes will be the system of transferring and compiling information based on the command system (C4I). In the bold concepts for future actions it is assumed that the system of command and reconnaissance of army forces will not only be a data bank, but also will have the ability to create knowledge¹⁰, which means that it will be able to pass the developed products to fulfil the needs of users of future military operations. The way to achieve this target will be by creating net-centred forces (troops) whose operational capability and advantage over an opponent will be based on information. The future reconnaissance subunits will have then incomparably more operational awareness (knowledge of the operational area as well as the location and the operation of its own forces and terrorist groups), which will allow them smoothly exchange information¹¹. The consequence of these actions will be the ability for the self-regulation of the combat system - automatic stroke synchronization and manoeuvre.

⁹ See. M. Wrzosek, ed. cit., p. 201.

¹⁰ The reconnaissance is knowledge, the end product of compiling a number of reconnaissance data in a form of useful messages to the fight participants. See. Military reconnaissance, General Staff, Warsaw, 2003.

¹¹ (Currently this is not possible, because all the armed forces and sometimes even army subunits, apply different data format.)

The modernization of reconnaissance equipment

The experience obtained so far during the missions in Iraq and Afghanistan shows the urgent need to equip the reconnaissance subunits with reconnaissance means capable of early warning and threat prevention, especially from the terrorist forces. The equipment offered should be uptight in one coherent system of reconnaissance, which would provide data on potential battlefield objects from the threat areas in real time. On the one hand, a well equipped traditional reconnaissance subunits and, on the other modular (future) reconnaissance structures¹² will allow for more flexible and more efficient use of the capabilities of combat-reconnaissance equipment.

One of the most urgent needs is to equip the reconnaissance subunits with unmanned flying vehicles. It should be able to conduct the reconnaissance in all weather conditions, day and night, and the expected depth of the execution of a task should be large enough to reach places which are not accessible to the other reconnaissance systems (e.g. in the mountains, cities). This object should be equipped with communication devices capable of transmitting data in real time, in order to be able to use the acquired data for military interventions.

The complex experience of American, British, Italian and even Romanian units which have introduced and used the unmanned flying vehicles to monitor the situation in their areas of responsibility allows for effective and rapid transformation of the experience and the practical application of this type of equipment in the Polish Armed Forces. Polish land forces should transfer from playing a subsidiary role to being self-sufficient and able to perform reconnaissance tasks. The few unmanned short-range vehicles (e.g. Orbiter) used by the Polish subunits in Afghanistan do not fulfil the hopes. In order to meet the needs, the land forces have purchased unmanned flying vehicles operating at greater range. However, we must ask the question: will the BAL (unmanned flying vehicle) be only for reconnaissance units at the tactical level? Or can it also serve lower command levels? Or maybe it could be used for other military subunits? Current information suggests that the main user will be the Division, and the next ones would be lower command levels.

The introduction of BALs to land forces will create the need to make an efficient use of them as well as to command them with proficiency. The process of preparing and carrying out operations with the use of BALs should already take place in automatic mode¹³. The planning of reconnaissance missions in a manual way, using the pen and the foil, seems to be anachronistic. It takes too much time

¹² It was assumed that the transition to the modular structures of reconnaissance systems will not happen in the next 10 years, therefore, the transitional solution is the use of traditional structures and building the new ones, which would be certified until the reorganization of the whole system.

¹³ In the stabilisation mission in Iraq the BAL flights (e.g. Romanian) were planned ahead of time from 24 to 72 hours. It might seem to be the sufficient time for planning, but in the case of the situation of automatic command and data transfer time will become a priority.

and it is less accurate, at least in the analytical part, because not all the aspects of the enemy (terrorists) assessment may be sufficiently analysed. This is especially true for the whole procedure of the electronic and reconnaissance preparation of the battlefield¹⁴.

Presented areas of modernization are mainly related to the unmanned platforms elevated in the air, but we should not forget about other reconnaissance devices. The development of technology has launched a whole range of optoelectronic devices in which the integrated pods of reconnaissance in infrared, thermovision and day light cameras form the basis of the reconnaissance system. In addition to reconnaissance sensors, the open matter remains the combat reconnaissance vehicles. This problem is still unsolved in the land forces. The situation in other military services is similar. The navy is testing unmanned marine reconnaissance vehicles, but they remain at the demonstrative stage¹⁵. The smallest number of ideas on the development of reconnaissance are presented by the air force. The problems with the appropriate use of the DB-110 device and the problem with the AIDEWS¹⁶ system suggests that in the near future the air forces will first need to cope with the full use of them in order to think about buying them or designs for the future.

Training of reconnaissance personnel

The skills required from the officer regarding technological development keep changing over the years, along with technical transformation in armed forces. As a sub-division leader they should, among other things, have the ability of team leadership, where a man is treated as the most valuable resource of any organization, the armed forces in particular. As a superior and instructor for subordinates, he should have the knowledge of the essential armament and military equipment of a subdivision, their use in combat operations, and the implementation of the tasks within the combat group as well as on its own. In order to train the subordinates he should be familiar with the methods and the ways for the effective transmission of theoretical knowledge as well as its practical implementation.

¹⁴ It is even more labour-consuming than the procedures used in the Warsaw Pact. However, from the point of view of the opponent's assessment (including electronic assessment) and the area it is definitely more complete.

¹⁵ See, "Marine Technologies for defence and security" [in] The fifth session of international scientific and technical conference, NATCON, Gdańsk 2012.

¹⁶ AIDEWS-ADVANCED INTEGRATED DEFENSIVE ELECTRONIC WARFARE SUITE is integrated on-board electronic system for self-defence, whose main task is to ensure the protection of the air forces against the measures using EM, by unburdening the pilot and focusing on the task.

When it comes to officers' training, the contents necessary to obtain basic and specialist qualifications are handed over within the specialist contents group¹⁷

The general assumptions presented above are generally a complex problem for future scouts, which affects all the departments in the polish army. The reconnaissance, as it concentrates a lot of specialties in its circles, is often overlooked in training due to the insufficient school group (should count about 15). The insufficient number of trainees is only one of the problems, whereas another one is the training centre and the training staff.

Colleges and centres are not always able to offer the required range of knowledge and the equipment necessary to train the participants of the stabilisation missions. Implementation of a new piece of equipment implies that it should also be directed to the training centres. In the case of a lack of such equipment this responsibility should be taken over by the companies which provide the army equipment, which is not always in line with the company policy as the company requests a considerable amount of money for the training. The lack of system solutions results in the fact that currently it is quite common for soldiers to be trained using the method of "senior teaches the younger", and what makes it even more dangerous is the fact that it takes place during the mission. This is a quick training, but it does not cover all aspects of the problem as it only refers to those aspects which the trainer came across himself during the mission. In this area of the development of the reconnaissance system there should be developed the appropriate assumptions and procedures which should be strictly followed.

Automatisation

One issue which should be addressed is the interoperability of their own reconnaissance systems with allied systems, whereas another one is the automatisation of internal reconnaissance systems in all military units. Subunits and the command posts can work without the automated system, but whether this is the time for such action in the 21st century is another question. No matter whether these are going to be peacekeeping missions or stabilization or operational actions, the focus of automatisation in first place should be the planning processes and collecting information from multiple information sources on a single platform. Because the first element of the plan is always the evaluation of the opponent, the automatisation process should begin at the reconnaissance officers' work stations, where the computer support of the information process for the preparation of the battlefield is a priority.

¹⁷ See. S. Markiewicz, Professional qualifications as the determinant of officers education in the line of electronic fight for the needs of automatisation of decision-making process, Scientific and Technical Conference of Command Automatisation, 2013, Warszawa-Gdańsk 2013.

By using automatisisation measures we can greatly improve the job of reconnaissance cells officers. The automatisisation measures are not able to replace a human, their knowledge, experience and intuition and their behaviour in difficult situations, but it can significantly speed up their actions and help them perform many arduous steps. They also do not change the procedures used in the reconnaissance and command cycle.

The most important steps that need to be improved by automating their performance are:

1. The operations of the information process and the electronic preparation of battlefield:

- comprehensive field assessment and the development of different variants of field obstacles;
- assessment of the weather and variants of the weather;
- setting the districts, roads and the corridor of the enemy (in crisis situations abroad, eg criminal groups) manoeuvre as well as creating different variants of them;
- drawing up the map of the battle situation and electronic view of the enemy on the basis of the conclusions of their actions by combining it with the field assessment and data from a variety of sources;
- drafting variants of events (variants of actions of the enemy), stating the points and areas of possible events (e.g. planting the remote ignited loads);
- confrontation of the variants of the enemy and its own military forces activities (e.g. computer game);
- drawing up the pattern of trouble areas and planning the BAL mission on this basis of that.

2. The implementation of individual action plans in respect of activated IPPW/EPPW.

3. The activities related to the current documentation (maps, logs, databases, etc.).

4. The activities related to the compiling and e-mail transmission of certain descriptive and graphic documents: annexes to the orders along with follow-ups; reports; messages; the demand for news, etc.

In addition, as a result of automatisisation we can provide a current preview of produced documents in individual teams of the decision-making cycle.

A very important factor from the point of view of time and quality as well as the circulation of reconnaissance information is its automatic encryption, without the need of using code tables¹⁸. Not all the documents produced by the reconnaissance team should be encoded and vice versa. Due to the nature and safety of reconnaissance operations (anti-reconnaissance, special, etc.) the distribution (the ability to preview) of reconnaissance documents is limited which

¹⁸ We can encode the text using the code tables but we cannot encode the graphic documents. It then encode the file.

does not mean that complete access to information is also limited. In each case, the produced document should have an "electronic access distributor".

One of the automatisisation problems are the consolidation opportunities of independent sensors which can recognize the targets and transmission of the gained information to the headquarters. Automatisisation and robotization has become increasingly common in military forces, but their extensive use has not yet occurred. One of the main problems, which refrains from adopting robots to the armed forces are power systems and the mobility of the platforms. Scientists are able to deal with the other issues, e.g. with the manoeuvrability and miniaturization of devices. The development of information transfer technology has developed so far that the current ways of transmitting information by reconnaissance means do not create a problem. The issue of software devices and retrofitting them in appropriate equipment is the choice of the method and the manner in which information is transmitted. The problem lies in the combination of many old and new hardware solutions in a single system. Quite often this cannot be done. Therefore the system solutions require structural analysis and the selection of such management algorithms so that the integration and in consequence the automatisisation could be done at the lowest price. The issues of the reconnaissance subsystems integration are still open for discussion.

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SATELLITE COMMUNICATIONS IN CONTEMPORARY PEACE SUPPORT OPERATIONS

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Abstract

The Gulf War and the conflicts in Iraq and Afghanistan clearly confirmed, and continue to confirm, the importance in today's modern battlefield of command and communications systems. From the beginning an important role in these conflicts was played by satellite communications. Today, the peace support operations being conducted and Polish involvement in such activities, promote the development of satellite systems in the Armed Forces. Polish military units in Afghanistan, use both NATO satellite systems and their own satellite communications as the main means of communication and way to communicate in the field. Recently, the command mobile satellite terminals equipment units entered the army at the tactical level. In the fight against an asymmetric enemy satellite communications are the primary method of exchanging information and maintaining command of a military contingent. Other systems, such as radio are kept as a reserve, used on ad hoc basis, at lower levels of command or during patrol operations as a link in the column.

The author wishes to bring to light in the paper the development of military satellite systems and the possibility of Polish detachments carrying out their tasks with the use of satellite imagery. The analysis especially concerns satellite systems used in the recently concluded operations in Iraq and ongoing operations in Afghanistan, and the abilities of land forces components engaged in current and future activities in the international arena.

Military communications satellites need to be constantly adjusted to meet the growing challenges and needs of the number of calls made. The use of modern technology and services of satellite systems have to bring to our troops and units at the tactical level activities creating a NCW (Network Centric Warfare) environment. The development of space technology is not standing still. The world is planning new programs such as the further development of space stations, plans to build a base on the moon, building colonies in space and of course the development of military satellite communications systems. Space has become a challenge for the twenty-first century man.

Key words – satellite systems, satellite communications, peace support operations.

Introduction

Modern military operations, conducted by coalitions of states mostly within a framework of agreements and alliances, are seen as crisis response operations (Crisis Response Operations, CROs). There may be different military and non-military activities, such as targeted by the NATO military alliance, with the support of international organizations of political, military, humanitarian and economic types, covering a whole range of events both political, diplomatic, economic and military, carried out under international law. Most are associated with counter-terrorism operations in the Middle East, the Arabian Peninsula and Africa.

As a rule, Polish forces are engaged in multinational contingents of armed forces of the alliance, while maintaining the possibility of cooperation with other countries, international organizations, governmental and non-governmental organizations (such as Partnership for Peace, PfP). Operations of this type, depending on the situation, may take the form of peace support operations (conflict prevention, peacekeeping, peace enforcement, peacemaking, peace building, humanitarian). Under the doctrine of AJP-3.4.1 peace support operations (Peace Support Operations, PSO¹) are multifunctional operations conducted impartially in support of a UN mandate (or other organizations in Europe), including the use of military force, the involvement of diplomatic and humanitarian organizations designated to achieve long-term agreement connected with political or other conditions explicit in the mandate)².

To create a reliable communication system for modern military and civilian operations one must use the entire telecommunications infrastructure in the area of operation. On a cautionary note however, it is uncertain whether the failure rate or unavailability due to failures that have been made in the course of previous actions. Therefore, we should strive to create a system independent of the area in which the operation may be carried out. The success of each operation is conditional on a constant stream of reliable information on the state of the current situation and the possibility of the secure transmission of commands, especially at the lower levels of command. Today only satellite systems are able to meet these demands, especially in asymmetric operations against an opponent with a low level of technological advancement in the potential battle.

The creation of a satellite network as the main communication tool will allow, among other things, an increase in the effectiveness and efficiency of the command headquarters, reducing the personnel of the sub-units command and credit management activities (command post, CP) in the field of direct action, and enabling increased capabilities at lower levels of command through a synchronization

¹ Term peace support operation is used to describe NATO's military operations which joined the international military may be used under the auspices of the UN or other international organization to deal with international crises.

² See B. Panek, *Operacje reagowania kryzysowego*, AON, Warszawa 2007.

of actions. This establishes a system safe from the effects of a direct opponent and is available for all actions against militant groups in the area of responsibility (Area of Responsibility, AOR).

The experience of coalition operations in Iraq, a number of operations in the Balkans, and especially of the NATO operation in Afghanistan leads to the conclusion that when forming subdivisions of Polish military contingents, task forces and their bases must be provided with the transmission of large amounts of data from their supervisor (operations centers, databases), neighbors or specialized centers of the host country, and those remaining in the home country of national supervisors. They should also have the possibility to maintain continuous connectivity for private families and loved soldiers involved in the operation (Internet, phone, mail). The need for this type of communication descends lower to the level of platoon, team, individual soldier, and civil worker. The solution can be large telecommunications centers with information retransmitted to the downstream sub-units, or the equivalent formation satellite networks (starting from the lowest level) and using in them all available satellite equipment. The key element is thus becoming a satellite terminal and a satellite phone available for lower-level units and individual soldiers. The organization of satellite communications has therefore began to play such an increasingly important role in contemporary peace support operations.

Organization of satellite communications

The concept of the organization of the satellite communication for the Polish units in future peace support operations should be based on assumptions relating to the significance of the environmental impact of the operation. The basic element should be made available to ensure that all components of the operation obtain a complete picture of the situation of the area of operations (Common Operations Picture, COP). The monitoring of the area of operations with the use of modern systems of this type are designed to create a real, fully and equally understood video image coming from all levels of command. The image should be created on the fly and available at any time from the required coverage of information. This solution will create a communications network, characterized by the rate of exchange of information (data) and at the same time which allows to easily determine the author and recipient of information. An example might be the solution to the so-called American future command post (Command Post of the Future, CPOF). This software allows the U.S. Army to support command and control activities of subordinate forces. It gives the tactical level commanders and their superiors continuous imaging of the battlefield. It allows you to work with supervisors, interacting forces and commanded armies, based on the current operational situation. Other solutions used in military operations include the

solution of a monitoring system (Blue Force Tracking, BFT). It is a system to monitor the location of a side's own troops while in motion, allowing also to liaise with sub-units equipped with the communication terminal of the system³. Using data from the GPS makes it possible to monitor the location of one's own troops in near real time. In order to enable the implementation of the monitoring of locations and communications it is necessary to have troops in vehicles or command centers with capable terminals and a satellite transmitter. Virtually every modern system of command (command support) requires the organization of satellite communications for their operation.

The concept of satellite communications understands the type of radio communications on a global scale, using satellite retransmission with intermediate stations as a way to maintain connectivity between cooperating communication ground stations. Satellite communications (in the army at the operational and tactical level) is part of the vast field of telecommunication networks and includes communication between:

- ground stations and artificial Earth satellites and other space objects; artificial satellites of the Earth and objects in space;
- two or more ground (surface ships) stations via artificial satellites.

Satellite communications between the ground station and the space object is used to convey information in both directions, the amount of information varies, depending on the direction of the transfer. In general, the basic flow of information is transmitted from a space object in the direction of the earth station.

Technical and operational requirements for communications satellites were and are dependent on the tasks to be fulfilled by satellite communications systems. These include:

1. long periods of active operation, not less than 10 years;
2. flexibility in the use of satellite channels;
3. securing high quality and reliable communication;
4. running at higher frequency ranges;
5. having an antenna with controlled beam of radiation from the Earth.

Network connectivity and the interoperability of the command relationships of today's contingent in Afghanistan is the primary function of the satellite.

Satellite communications in this operation are used to provide:

- operational communication with the superior commander of the contingent in the country (explicit and implicit telephone, computer network MIL-WAN);
- telephone communication with the families of the soldiers of the contingent;
- coalition communication (interaction);
- communication with the leadership of the international forces (command);

³ The system is used in the ISAF operation. It is mounted on a MRAP vehicles Cougar. The system name is associated with the color blue, as the NATO troops color displays own (allied).

- NEC communications for the commander with the elements of his party (*Storczyk* systems,
- computer networks WAN, Internet).

A satellite communications network involves duplicated radio communications using HF and VHF radio with different resources and measures: integrated radio, mobile and portable. Radio communication measures are used during patrols and escorting and tasks for closer distances.

An area of operation which has many times previously destroyed by warfare, does not have a fixed infrastructure or it is not sufficient for use by military contingents (technical compatibility, the security of information), and therefore it is not possible to use all means of communication and information technology. Examples include operations in Iraq and Afghanistan, or the beginnings of KFOR operations (or SFOR) in the former Yugoslavia and Albania (AFOR).

In the initial stage of these operations, regional infrastructure has been partially (or completely) destroyed or deliberately locked and you could not use it.

Communications with the country was provided by satellite and radio networks KF. Satellite communications ensured, among others things:

- 1) ability to conduct explicit and implicit calls;
- 2) the transfer of explicit and implicit messages by fax;
- 3) the implementation of data transmission (video-conferencing);
- 4) access to the Internet.

During the operation of NEC in Iraq there was organized an efficient system of communication through a range of satellite communications, including: multi-channel and single-channel terminals for voice and data transmission, individual satellite phones and terminals for Internet access.

Due to the lack of its own communications satellite (does not have a communications satellite) Poland used the leased satellite links between the U.S. military and the NATO alliance and satellite communications (terminals, mobile) leased from an Italian commercial company⁴. In the operational area, a very important element was access to the classified network of the departmental MIL-WAN⁵. This network will allow communication with the superior NEC headquarters in the country.

Before starting the operation in Iraq, the military satellite communications (especially at the tactical level) had been used very rarely. Only a few commercial satellite terminals of the standard Inmarsat Mini - M were present in each headquarters outside the country (in the former Yugoslavia using the telephones: Hagenuk and Nera). The priority of the system was radio communication with the devices of old (analog) and new (digital) generation. However, the need for the

⁴ Polish units in Iraq used as a satellite transponders: Eutelsat W5, U.S. SAT - TACSATCOM NATO IV, INTELSAT 707.

⁵ MIL-WAN, Military World Area Network, departmental information exchange military system on Polish territory.

exchange of information in a multinational division in Iraq (Multi-National Division Central-South, MND CS) brought major changes in the perception of the role that satellite communications can play at the tactical level.

While on the operation the Polish contingent gained for the first time full access to the information which results from the full potential of the IT activities of the U.S. Army. This situation has forced planners to seek new solutions for communications organization for contingents, their equipment and training, and flexible approach to the former standards of information exchange. The use of satellite communication devices has become a necessity. The satellite phones, along with the lists of emergency numbers have become primary tools for convoys in performing tasks outside their bases. Satellite phones are also connected to the central IT systems used in databases as a gateway through which they are coupled with the public telecommunications networks. After all, thanks to the launch of a communications satellite the Internet is accessible to group combat. During the operations in Iraq a military operation TACSAT UHF system was launched for the first time. Polish military contingents were given the opportunity to work with the latest technologies and obtained funds for the operation of satellite systems for units of command and communications directed to security operations.

Since 2010, there has been the full-time employment of this equipment at a subunits tactical command level. Ground troops formed a group (subdivisions) of satellite communications and satellite battalions which received money for equipment previously used only at the operational level such as command support brigades. Currently, the Armed Forces and the Polish military contingents operated two basic types of systems: public (commercial) and military (military).

Polish solutions in this area are:

PORTABLE SATELLITE TERMINAL (PPTS 1,8v2, picture 1)



Source: <http://www.wz11.com.pl/?app=newsarch&cid=2>

Picture 1 . Terminal PPTS 1,8

The terminal allow:

- SCPC and TDMA technology – as main (hub) station or remote station
- Transmission in C, X and Ku band

- Full compatibility with the military or civil communication systems of the military forces from other NATO countries
- PPTS 1,8 has various connection interfaces including STANAG 4210 in electrical and optical version and it's fully compatible with Polish Transmission Shelters.
- PPTS 1,8 is suitable for any kind of weather conditions.

MOBILE SATELLITE TERMINAL MTS – 4,6 (picture 2)



Source: <http://www.wzl1.com.pl/?app=newsarch&cid=2>

Picture 2. Terminal MTS 4.6

The terminal allows to run a satellite communication network TDMA, or as a main (HUB) station within the SCPC communication system. It makes it possible to connect the system to the existing telecommunication infrastructure.

Essential characteristic:

- High mobility,
- Automatic antenna,
- Possibility to operate within numerous satellite network configurations,
- Possibility to operate in difficult conditions,
- Short preparation time for operation and transportation.

Since the inception of the MND CS in Iraq and Afghanistan there has been exploited on a large scale commercial satellite resources. The most popular were the Thuraya mobile system (with built-in GPS receiver, coverage included most of Europe, Middle East, North Africa, Central and Eastern Europe, Asia and Australia, picture 3), Iridium, Inmarsat Mini-M (often connected to a central DGT), Inmarsat M -4 and VSAT. The popularity of some was due to the decision to include easy operation and a built-in network support satellite and GSM phone in one device.

GLOBAL SATELLITE TELEPHONS

Satellite phones INMARSAT 110 are dedicated to .

INMARSAT satellite phones equipped with stationary external directional antennas are designed to ensure emergency (EMERGENCY) and backup

(BACKUP) connection for Tactical Operation Centers inside the Polish Military Contingent.

IRYDIUM satellite phones are designed to provide emergency (EMERGENCY) and backup (BACKUP) communications between units or person outside the bases.



Source: <http://www.ts2.pl/pl/Thuraya-SG2520>

Picture 3. Satellite Phone Thuraya SG-2520

With the use of satellite phones, commercial operators turned out to be the easiest and most popular method to call for the medical evacuation (MEDEVAC) of forces or call for the quick reaction force (QRF). As of this time every soldier involved in this type of operation has a complete list of phone numbers and codenames and frequencies of support forces and can use satellite systems created for the operation. Many coalition soldiers owe their lives to just those communications. Satellite measures, in conjunction with the digital radio system *Storczyk* and HF and VHF radios (Harris Falcon, PR4G), enabled the construction of a new generation of reliable communications systems, providing a wide range of IT services which had so far not been available at the tactical level in the Armed Forces.

It is worth noting that the Polish armed forces decided to widen the use of satellite systems, especially in peace support operations. There is a growing demand for ever greater mobility, bandwidth and security of IT networks, and there is increasing demand for bandwidth in data transmission services both in terms of the integration of fixed and mobile telecommunication networks and regular access to the Internet. There is growing independence among the various groupings, especially in the context of asymmetric warfare where independent groups can

operate on any specified area and a single soldier can carry out critical tasks or operations and determine the success of the mission.

Space is increasingly a testing ground, used to test a variety of services and facilities (conferencing, video on demand, remote education, etc.) which are projected to a larger scale in the subsequent stages of terrestrial systems. As a result of similar actions, as well as a result of continuous expansion in the number of users (increasing the capacity and improving the lines used and internal data processing techniques), satellite systems are increasingly seen as access networks with integrated services (Integrated Service Access Network, ISAN), which qualitatively new opportunities will undoubtedly revolutionize the techniques and ways to communicate in the international community through an organized network (multi-national military contingents in peace support operations).

Satellite communications in peace support operations should be carried out in each case according to certain procedures specific to the operation of separate. However, the organization of satellite communications for these operations needs to be taken into account in the various relations of command and co-operation, especially in terms of communication with the country (corporate and her outside):

- the multinational command (in the dimension allies or / or coalition);
- command in the action and inside the headquarters and subordinate groupings of combat;
- cooperation;
- notification, warning and alarm.

While the organization of satellite communications follows the normative documents of the operation (SOFA, ROE) and the provisions contained in the standard setting out of the rules on the organization of cooperation in multinational operations, such as STANAG 5048.

Conclusion

In August 1990 in the Middle East there were developed only four terminals for satellite communication via long-range DSCS satellites which played an important role during the development of operations involving allied forces in the region. By 15 January 1991, 113 terminals had been developed, which provided a continuous and reliable connectivity while also proving highly dynamic in harsh desert conditions. Currently, no mission or military operation can do without the satellite systems used in the process of exchange of information, where the activities developed in the area include the use of thousands of different types of terminals and destinations.

The development of modern information processing techniques and developments in the minds of users make more and more common the use of space (space research programs, communications satellites) and satellite systems to carry

out the task of not only the transmission of data on military telecommunication networks, but also the so-called real-time services (telephone, video) or other connections that have traditionally been regarded as the domain of terrestrial networks.

Military actions in space play an increasingly important role. The leading armies of the world develop their communications system based on satellite communications. Without the contribution of space it is hard now to imagine the modern armed forces. The space arms-race involves an increasing number of countries. In the future, we can expect the further development of military space systems and the war to be carried into space. It is, therefore, expected that weapons systems and military installations will be based in space.

The possibility of using satellite communications for a fast and practical and unlimited range transmission of information creates a sense of information superiority and thus increases, among other things, the efficacy of modern military operations. With the use of modern surgical warfare, more and more modern means of warfare and related control systems, as well as engagements in more and more countries, the system of communication has to meet ever higher challenges. Challenges include the transfer of larger amounts of information over long distances in a variety of relationships and the implementation of new IT services. The implementation of these requirements poses for communications system the need for an appropriate high level of reliability and security while meeting the speed of information exchange and appropriate level of interoperability of national telecommunication systems with those of the coalition countries. The matrix of this system will be extensive communication networks, which give information wherever the situation arises on the future battlefield.



UNCERTAINTY IN DECISION-MAKING

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Abstract

This article addresses selected aspects of uncertainty in decision-making. It is meant for theoreticians and practitioners who deal with the optimization of the decision-making process. The content is focused on the notion of uncertainty and such criteria of decision making in uncertainty conditions such as: Wald's pessimism, Hurwicz's optimism, Savage's regret, Szaniawski's caution and Laplace's equal likelihood. The paper presents the example of using some quantitative tools which support decision-making processes and when used competently may facilitate the making of optimal decisions.

Key words – uncertainty, criteria, optimal decision-making.

Introduction

The number and the importance of decisions made in situations of incomplete and uncertain information grow in contemporary organizations. Therefore effective human capital management increasingly forces the necessity to take the uncertainty phenomenon into consideration. Undoubtedly, managers' deep knowledge and great abilities in the conscious perception of uncertainty affect success in business. Since, as a rule, they do not have the necessary resources to decrease uncertainty they are forced to learn tools supporting decision making in situations when they have uncertain or incomplete information. The correct understanding of the character of the uncertainty phenomenon enhances the effectiveness of the decision making process and thus contributes to the increase of correct solutions adopted in managers' every day practice.

Decision taking under uncertainty is significantly more difficult than under risk¹. It results from the fact that uncertainty occurs in a situation when the complexity and correlation of the environmental elements are considerable. It is strongly manifested along with the changeability and dynamism of events both difficult to predict and distant in time while simultaneously weakening of the

¹ Compare. T. Tyszka, *Decyzje. Perspektywa psychologiczna i ekonomiczna*, (Decisions. Psychological and Economic Perspective), Scholar, Warsaw 2010, pp. 28–28.

decision maker's control on external conditions. However, the greatest uncertainty appears when the decision maker is not able to define which factors to take into consideration to achieve a solution. Such difficult decision making circumstances influence a manager's subjective feelings. They may lead to a conviction about an existing threat that may later change into the feeling of helplessness and the tendency to rely on blind chance. Unfortunately, in spite of technical and scientific development and progress in contemporary managerial practice, such situations are not rare.

Here it is noteworthy to see a paradox which is made up of the fact that enterprises which successfully resolved difficulties acted against common sense expectations. Instead of reducing the risk, they took up additional business challenges. Thus they did not economize (save) but invested in their employees', clients', customers' or partners' loyalty. Instead of taking into account pessimistic scenarios, they focused on optimistic variants of actions. In other words it can be stated that they achieved success as if in a self-fulfilling prophecy. Which means that they responded to uncertainty stemming from the environment not to reduce it but increase the uncertainty in their own actions².

The problem of uncertainty is so universal nowadays that it necessitates considering it both individually and on various levels as well, i.e. organization, regional or global ones. Emerging new decision making concepts respond more or less adequately to dynamic changes taking place in an organization and its environment. However, defining properly reasons and effects of the occurring changes is not always possible, particularly with a shortage of resources due to time pressure. Therefore, as a rule managers do not have complete and certain information relating to the changes taking place in business. This implies looking for new and more adequate tools supporting decision-making.

Uncertainty

Research shows that uncertainty refers mainly to conditions in which a decision is to be made, i.e. to states of matters independent from a decision maker. The risk, however, relates primarily to negative effects that a chosen course of action may bring³. Thus uncertainty is characterized in the fact that it is not possible to estimate the probability of the results of the course of actions under consideration.

According to F. Knight uncertainty may take a measurable and immeasurable form. At the same time, the risk is defined as measurable uncertainty determined by probability. Uncertainty, however, is considered as uncertainty in the strict

² Compare: A.K. Koźmiński, *Zarządzanie w warunkach niepewności. Podręcznik dla zaawansowanych*, (Management in Uncertainty Conditions. Handbook for Advanced Learners), PWN, Warsaw 2005, p. 70; R. Rigby, *Moving upward in a downturn*, Harvard Business Review, June 2001, p. 105.

³ K. Bolesta-Kukulka, *Decyzje menedżerskie*, (Managerial Decisions), PWE, Warsaw 2003, p. 190.

sense⁴ and is determined by a level of faith. So the risk is a state of the world whereas uncertainty is a state of the mind⁵.

K.J. Arrow and E. Kulwicki have expressed a different approach to the uncertainty phenomenon as they differentiate uncertainty and risk basing this on the cause and effect criterion. According to them, uncertainty generates risk but it is not identical with it. They assumed that the greater level of uncertainty, the greater the risk. In contrast, if factors causing the risk undergo reduction, the risk decreases. Consequently, uncertainty causes the risk which affects managers' behaviour by the size of the threat. In other words, uncertainty generates the risk which is the result of uncertainty and not its cause.

On the other hand, G. Hofstede has distinguished people's attitude to risk and uncertainty as one of the dimensions differentiating cultures. He stated: Uncertainty relates to risk as anxiety to fear. Fear and risk are focused on something specific such as an object or a person ...Anxiety and uncertainty are not explicitly specified... This is a situation in which anything can happen and nobody knows what it might be⁶. According to this researcher there could be distinguished a continuum of attitude to uncertainty which extends from the acceptance of uncertainty that generally means a positive reaction to the change and emerging new solutions to the avoidance of uncertainty which relies on preferring existing structures and routine activities⁷.

The level of uncertainty depends primarily on two groups of factors. The first of them refers to external conditions, whereas the other relates to the time horizon. It can be assumed that the more unpredictable and complex the external environment and the more the time horizon of decisions made extends, the more the level of uncertainty grows. In this situation the level of the problem complexity and the dynamically changing environment generally prevent the estimation of the probability of how the situation develops. Consequently, we deal with an uncertain situation when the decision maker is not able to determine explicitly the effects of the courses of actions and the probability of their occurrence. Hence the level of uncertainty while making a decision could be mainly reduced by the precise identification and recognition of the environment, prediction of changes taking place in it and shortening the time horizon of activities.

Because uncertainty implies the lack of the possibility to determine the probability of future events, managers are generally unable to assess the expected utility of expected results using the tools which are available to them. Therefore, there is a difficulty of which criterion to choose in order to make the right decision. In this situation the proposals and suggestions of normative decision theory experts could become a useful directive of expeditious actions that will allow the making of optimal choices by managers.

⁴ E.H. Knight, *Risk, Uncertainty and Profit*, Chicago – London 1985, p. 233.

⁵ D. Dziawgo, *Credit rating*, PWN, Warsaw 1998, p. 14.

⁶ G. Hofstede, *Kultura i organizacje* (Culture and Organizations), PWE, Warsaw 2000, p. 184.

⁷ R.B. Kuc (ed.), *Zarządzanie ryzykiem – wyzwania XXI wieku*, (Risk Management – Challenges of the 21st Century) Wyższa Szkoła Zarządzania i Prawa im. H. Chodakowskiej, Warsaw 2007, pp. 13–14.

For further considerations it has been assumed that uncertainty is a situation in which the probability of independence from the decision maker's will for future states of phenomena or the courses of processes cannot be calculated. At the same time in this situation there is a possibility to identify possible courses of action, determine a set of external world states and assess the results of actions. Both in the past and in the present the manager has very limited influence on shaping the uncertainty whose level usually depends on unpredictable and uncontrollable conditions contained in their environment.

Decision making criteria under uncertainty

Managers in the normative model of decision-making should seek to remove uncertainty effectively through logical and rational behaviour⁸. In a situation when they have limited possibilities to practically reduce uncertainty and information shortage appearing outside, it is vital in order to reach an optimal decision to apply an economically viable, clear and acceptable criterion of choice.

The most frequently mentioned decision-making criteria in uncertainty conditions (presented in Figure 1) are Wald's pessimism, Hurwicz's optimism, Savage's regret, Szaniawski's caution, and Laplace's equal likelihood.

The basis to define the currently functioning criteria of decision-making under uncertainty is an assumption formulated by T. Bayes in the 18th century, which says that if there is no difference between the probability of different events to emerge, it must be assumed that each of the mutually exclusive states can appear with the same probability. In other words, in cases where it is not possible that one event is more probable than the other; both of them should be treated as equally probable. This assumption, although necessary to formulate decision-making criteria under uncertainty, shows a fundamental weakness, i.e. in real business situations it rarely happens that all expected events occur with equal probability. Therefore it is worth remembering that the criteria under consideration, in spite of their remarkable utility, have a limited possibility to reflect and explain actual (real) decisions.

⁸ R.W. Griffin, *Podstawy zarządzania organizacjami*, (Management) PWN, Warsaw 2006, p. 192.

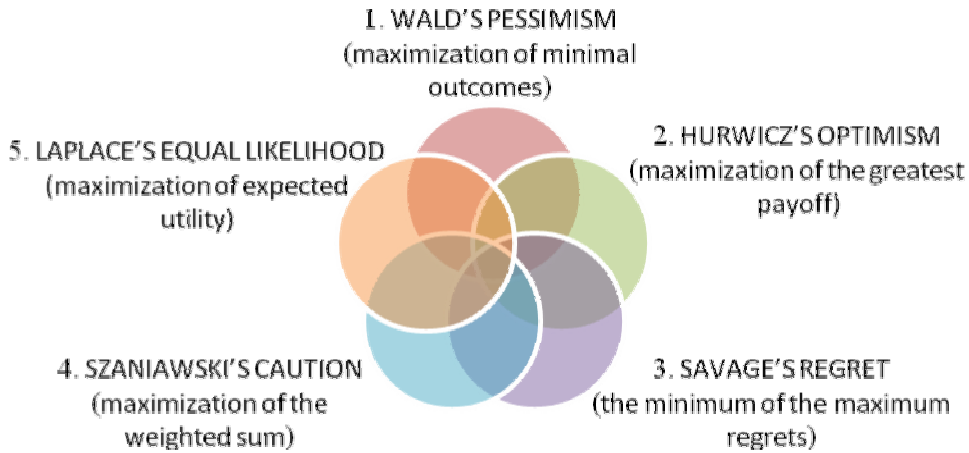


Figure 1. Decision making criteria in uncertainty conditions

Wald's pessimism criterion

Wald's pessimism criterion, also called the rule of the highest security⁹, is based on an assumption that a decision maker should always be pessimistically inclined, thus assumes the malice of factors inside and outside the organization. In this case, the worst outcomes of possible courses of action should be the object of comparison and selection. According to Wald, the most reasonable is to choose such a variant which brings the maximum of minimal profits (payoffs) – maximin. This criterion is based on a decision maker's play-safe attitudes¹⁰. It is a recognized and widely used decision-making model in various areas and fields of human activity such as economics, statistics, operations research and philosophy¹¹.

In this case the optimal decision is defined by the following formula:

$$D_o = \max(\min U_i) \quad (1)$$

where:

D_o – denotes the optimal decision,

U_i – denotes the utility (e.g. profit) of the state of matters under consideration,

i – denotes 1, 2, ..., n number.

For a better understanding of this and other criteria, an example of a local airline X was used, which has faced economic hardships forcing the managerial

⁹ K. Bolesta-Kukulka, *Decyzje...*, op. cit., p. 222.

¹⁰ Z. Ścibiorek, *Podjęmowanie decyzji*, (Decision Making) ULMAK, Warsaw 2003, p. 163.

¹¹ M. Sniedovich, *Wald's maximin model: a treasure in disguise!* Journal of Risk Finance, 9(3) 2008, pp. 287–291.

staff to make strategic decisions aiming at keeping afloat and developing of the company. The direction of further actions could be to increase, maintain or decrease the fleet they owned. A group of analysts examined the profitability of investment and presented the outcomes at the company's general meeting. It appeared that the company's profitability depends on many factors such as the price of fuel, the cost and time of transformation and also the public opinion's evaluation. However, according to analysts, the demand for air transport would have the fundamental importance for possible business outcomes in the nearest 10-year time span (as presented in Table 1). It was logically determined that the demand for air transport could grow, maintain or decline. The Board of Directors assumed that while taking the final decision they would also take into consideration, apart from their knowledge and experience, information resulting from mathematical calculations relating to determining an optimal decision basing on Wald's, Hurwicz's, Savage's, Szaniawski's and Laplace's criteria.

In this situation the algorithm of selecting an optimal decision according to Wald's pessimism criterion will run as follows:

Step 1. The construction of an outcome (profits or losses) matrix – presented in Table 1. Information contained in the table allows for the describing of the decision-making process through the following elements:

- 1) events or the set of external world elements,
- 2) outcomes (results) – as profits or losses,
- 3) decisions – defined as possible courses of action.

Table 1

Matrix of airline X results (outcomes)

Decisions (D)	Events – the set of external world states (S)		
	1. Growth of air transport demand	2. Continuation of air transport demand	3. Decline of air transport demand
1. Increasing the fleet	100 million PLN	20 million PLN	-80 million PLN
2. Maintaining the fleet	40 million PLN	50 million PLN	-20 million PLN
3. Decreasing the fleet	30 million PLN	10 million PLN	20 million PLN

Step 2. Determining the minimal outcomes (results) for acceptable decisions.

This activity focuses on the analysis of expected outcomes (results). The lowest scores for particular decisions are to be indicated. In this example the lowest score (indicated in bold in the table) is as follows:

$\min U_1$ (increasing the fleet) = -80 million PLN,

$\min U_2$ (maintaining the fleet) = -20 million PLN,

$\min U_3$ (decreasing the fleet) = 10 million PLN,

Step 3. Choosing the maximum result out of the lowest (minimum) in accordance with Formula (1).

This step aims to choose the greatest (maximum) outcome (result) out of the minimal ones (maximini) – Decision No 3 – the decreasing of the fleet where the minimum profit is 10 million PLN and it is the largest of the remaining minimal results in particular decisions.

Hurwicz's optimism criterion

Hurwicz's optimism criterion relies on courageous risk taking and is also called the principle of the greatest gain (maximax)¹². When it is applied, it is of crucial importance to determine the individually the optimism index (α). It is assumed that the ratio of optimism and pessimism (levels) equals to 1. In order to determine the optimism index, the decision maker should consider at what event x he/she would be indifferent between decisions D_1 i D_2 , that are described in the table below¹³:

Table 2

Determining Hurwicz's optimism index

Decisions (D)	Events – the set of external world states (S)	
	S_1	S_2
D_1	0	1
D_2	X	X

For example, if the decision maker states that they are indifferent between D_1 i D_2 for X equal to 0.7, the optimism index amounts to $\alpha = 0.7$. In this case, the optimism index is $1 - \alpha = 1 - 0.7 = 0.3$.

Deciding is based here on the following algorithm: the greatest result (outcome) of particular decisions is multiplied by the optimism index and the lowest result multiplied by the pessimism index is added. The sum of these products is characteristic for the gain assigned to each action. Then the actions are maximized, i.e. the decision whose outcome is the greatest is taken. Therefore, the optimal decision is described by the following relation:

$$D_o = \max\{[\max U_i \times \alpha] + [\min U_i \times (1 - \alpha)]\} \quad (2)$$

where:

D_o – denotes the optimal decision,

U_i – denotes the utility (e.g. profit) of the state of matters under consideration,

α – denotes the optimism index,

$(1 - \alpha)$ – denotes the pessimism index,

i – denotes 1, 2, ..., n number.

¹² K. Bolesta-Kukułka, *Decyzje...*, op. cit., p. 222.

¹³ T. Tyszka, *Decyzje...*, op. cit., p. 335.

The algorithm of the action taken is as follows:

Step 1. The construction of results (outcomes) matrix.

The same matrix is applied as in the case of previous criteria, i.e. Table 1.

Step 2. Determining the optimism index.

It has been assumed that the optimism index equals to 0.6. In this situation, the pessimism index equals to 0.4.

Step 3. Determining results (payoffs) matrix of the maximum and minimum outcomes of possible decisions.

For particular decisions, the maximum and minimum payoffs have been determined (in bold in Table 3). Then, the utilities of particular decisions are calculated by summing the values received from the product of the optimism index and the greatest result and the pessimism index and the minimum result.

Table 3

Maximum and minimum results matrix

Decisions (D)	Events – the set of external world states (S)		
	1. Growth of air transport demand	2. Maintaining of air transport demand	3. Decline of air transport demand
1. Increasing the fleet	100 million PLN	20 million PLN	-80 million PLN
2. Maintaining the fleet	40 million PLN	50 million PLN	-20 million PLN
3. Decreasing the fleet	30 million PLN	10 million PLN	20 million PLN

$D_1 = 100 \text{ million PLN} \times 0.6 + (-80 \text{ million PLN}) \times 0.4 = 60 \text{ million PLN} - 32 \text{ million PLN} = 28 \text{ million PLN},$

$D_2 = 50 \text{ million PLN} \times 0.6 + (-20 \text{ million PLN}) \times 0.4 = 30 \text{ million PLN} - 8 \text{ million PLN} = 22 \text{ million PLN},$

$D_3 = 30 \text{ million PLN} \times 0.6 + 10 \text{ million PLN} \times 0.4 = 18 \text{ million PLN} + 4 \text{ million PLN} = 22 \text{ million PLN}.$

Step 4. Choosing the highest result in accordance with Formula (2).

Thus Decision no 1 is the optimal one because it guarantees the highest payoff of 28 million PLN.

The criterion of Savage's minimax regret

Savage's minimax regret criterion¹⁴ is as pessimistic as Wald's. The method of actions (proceedings) differs from the one described above. It requires the processing of an outcomes matrix into a regret matrix in order to calculate the so-called amount of regret. As a measure of regret amount, Savage proposes the difference (ratio) between the maximum profit and the actual one, which can be obtained by knowing in advance the state of affairs that has already occurred.

¹⁴ K. Bolesta-Kukułka, *Decyzje...*, op. cit., p. 223.

Processing the entire table of outcomes (results) in this way allows for determining maximal regrets in each available state of affairs. Then the rule is to be applied in order to select the lowest (minimum) of the largest (maximum) regrets of available decisions (minimax regret).

Applying the lowest (minimum) regret criterion, the optimal decision can be presented using the following formula:

$$D_o = \min(\max Z_i) \quad (3)$$

where:

D_o – denotes the optimal decision,

Z_i – denotes the amount of regret,

i – denotes 1, 2, ..., n number.

The action taken for the same example referring to airline X is as follows:

Step 1. The construction of the outcome (profits or losses) matrix.

This matrix is the same as in Wald's criterion (Table 1).

Step 2. Determining the regret matrix.

We transform the results (outcomes) matrix into the regret matrix and then calculate the loss as the difference between the maximum payoff in any event that we would get if we knew what the set of external world states and other payoffs would be. Thus in each column relating to the external world set, from the maximum amount we subtract particular smaller or equal values – see Table 4.

Table 4

Savage's regret matrix

Decisions (D)	Events – the set of external world states (S)		
	1. Growth of air transport demand	2. Maintaining of air transport demand	3. Decline of air transport demand
1. Increasing the fleet	100 million PLN - 100 million PLN = 0 million PLN	50 million PLN - 20 million PLN = 30 million PLN	20 million PLN - (-80 million PLN) = 100 million PLN
2. Maintaining the fleet	100 million PLN - 40 million PLN = 60 million PLN	50 million PLN - 50 million PLN = 0 million PLN	20 million PLN - (-20 million PLN) = 40 million PLN
3. Decreasing the fleet	100 million PLN - 30 million PLN = 70 million PLN	50 million PLN - 10 million PLN = 40 million PLN	20 million PLN - 20 million PLN = 0 million PLN

Step 3. Determining the greatest (maximum) regrets for each decision.

The maximum regrets (in bold) in this matrix are as follows:

$\max Z_1$ (increasing the fleet) = 100 million PLN,

$\max Z_2$ (maintaining the fleet) = 60 million PLN,

$\max Z_3$ (decreasing the fleet) = 70 million PLN.

Step 4. Choosing the minimal out of maximal regret in accordance with Formula (3).

This step relies on the identification of the maximum regrets in particular decisions (lines) and determining the least regret. In this case, the maximum regret amounts to 100 million PLN and occurs in case of Decision no 1. – decreasing the fleet. The next maximal regret (70 million PLN) refers to Decision no 3 – increasing the fleet. The least regret (60 million PLN) occurs in case of Decision no 2, i.e. maintaining the fleet. This example shows that a rational decision maker, while taking a decision applying the minimization of maximum regret, should decide on Decision no 2 and maintain the existing fleet.

It is worth noting that although regret is an unpleasant feeling for the decision maker, it can bring them benefit. Firstly, the fear of regret generally leads to a deeper assessment of the situation before making a decision. Secondly, it often leads to avoiding making the same mistake and in this way contributes positively to correct wrong decisions.

Szaniawski's caution criterion

This criterion takes into consideration the weighted sum of the smallest and medium utility of decision. Contrary to Hurwicz's optimism criterion, the second component of the weighted sum is not the maximum value but the average of possible payoffs. The similarity lies in the fact that it is permitted for the decision maker to set the index (indicator) themselves. In K. Szaniawski's case it is the caution index, whereas in Hurwicz's – optimism index. Therefore, the decision maker does not have to be limited to the minimum results (outcomes) as in case of Wald's optimism criterion. However, they should determine the caution index β , where $0 \leq \beta \leq 1$ and $\beta + (1 - \beta) = 1$. The choice of optimal decision relies in the maximization of the weighted sum of minimum utility multiplied by β *caution index* and average utility multiplied by its opposite, let it be called the *courage index* $(1 - \beta)$ of particular decisions. The optimal decision can be expressed by the formula¹⁵:

$$D_o = \max\{[\min U_i \times \beta] + [1/n \sum_{i=1}^n U_i \times (1 - \beta)]\} \quad (4)$$

where:

D_o – denotes the optimal decision,

U_i – denotes the utility (e.g. profit) decisions under consideration,

β – denotes the caution index,

$(1 - \beta)$ – denotes the courage index,

i – denotes 1, 2, ..., n number.

¹⁵ Por. T. Tysza, *Decyzje...*, op. cit., p. 336.

Taking into consideration again the example of airline X, the algorithm of the activities consists of the following steps:

Step 1. The construction of results (outcome) matrix.

The identical matrix has been applied as in the case of the previous criteria (see Table 1).

Step 2. Determining the caution index (β).

It has been assumed that for a courageous decision maker this index is low and amounts to 0.2. In this situation the courage index is $1 - \beta = 0.8$.

Step 3. Calculating the average value $1/n \sum_{i=1}^n U_i$ in particular decisions.

$$\begin{aligned} 1/n \sum_{i=1}^n U_i \text{ for } D_1 & \text{ is } \frac{100 \text{ mln PLN} + 20 \text{ mln PLN} + (-80 \text{ mln PLN})}{3} \\ & = 13,3 \text{ mln PLN,} \end{aligned}$$

$$\begin{aligned} 1/n \sum_{i=1}^n U_i \text{ for } D_2 & \text{ is } \frac{40 \text{ mln PLN} + 50 \text{ mln PLN} + (-20 \text{ mln PLN})}{3} \\ & = 23,3 \text{ mln PLN,} \end{aligned}$$

$$\begin{aligned} 1/n \sum_{i=1}^n U_i \text{ for } D_3 & \text{ is } \frac{30 \text{ mln PLN} + 10 \text{ mln PLN} + 20 \text{ mln PLN}}{3} \\ & = 20 \text{ mln PLN.} \end{aligned}$$

Step 4. Calculating the weighted sum of particular decisions' utility:

$$D_1 = 0.2 \times (-80) \text{ million PLN} + 0.8 \times 13.3 \text{ million PLN} = -5.36 \text{ million PLN,}$$

$$D_2 = 0.2 \times (-20) \text{ million PLN} + 0.8 \times 23.3 \text{ million PLN} = 14.64 \text{ million PLN,}$$

$$D_3 = 0.2 \times (10) \text{ million PLN} + 0.8 \times 20 \text{ million PLN} = 18.00 \text{ million PLN.}$$

Step 5. The choice of the optimal decision by maximization of the weighed sum (see Formula 4). In this case the optimal choice will be Decision no 3, i.e. decreasing the fleet.

Laplace's equal likelihood criterion

Laplace's criterion, also called the equal likelihood principle¹⁶ assumes that decision makers base judgements merely on individual conjecture relating to the probability of events. If they do not know the likelihood of particular events, they should recognize that they are equal. Then they will seek to maximize the expected utility assuming that all states of matters will occur with equal probability. This criterion, although frequently used while making a decision under uncertainty, is actually a special case of decision making under risk when it is subjectively assumed that all events are just as likely.

¹⁶ B.R. Kuc (ed.), *Zarządzanie...*, op. cit., p. 67.

Therefore the optimal decision could be defined by the following formula:

$$D_o = \max(1/n \sum_{i=1}^n U_i) \quad (5)$$

where:

D_o – denotes the optimal decision,

U_i – denotes the utility (e.g. profit) decisions under consideration,

i – denotes 1, 2, ..., n number.

In the case of airline X, applying Laplace's criterion, the following steps should be followed:

Step 1. The construction of results (outcome) matrix.

This matrix is the same as the previous ones – see Table 1.

Step 2. Calculating the expected utility of each decision.

Because the probabilities of the external world states are not known, it should be assumed that they are equally likely. Therefore, with three states, each of them will occur with a probability equal to 1/3. This can be written as follows:

$D_1 = 1/3 \times 100 \text{ million PLN} + 1/3 \times 20 \text{ million PLN} + 1/3 \times (-80) \text{ million PLN} = 13.3 \text{ million PLN},$

$D_2 = 1/3 \times 40 \text{ million PLN} + 1/3 \times 50 \text{ million PLN} + 1/3 \times (-20) \text{ million PLN} = 23.3 \text{ million PLN},$

$D_3 = 1/3 \times 30 \text{ million PLN} + 1/3 \times 10 \text{ million PLN} + 1/3 \times 20 \text{ million PLN} = 20 \text{ million PLN}.$

Step 3. Choosing the highest (maximum) expected utility.

The choice is made basing on the maximization of the expected results values (5). Decision no 2, maintaining the fleet, fulfils this condition and the expected value is the highest and amounts to 23.3 million PLN. It is worth noting here that if analysts described a subjective probability of the states, the optimal decision could be different. The weakness of this criterion is the fact that it assumes indifferent attitude to probability which is not always the case in reality.

The quoted example of airline X indicates that applying different criteria to the same decision-making process leads to taking different decisions under uncertainty. Having used Wald's pessimism criterion, and similarly in case of Szaniawski's caution criterion, the optimal decision is to decrease the fleet (Option no 3). However, Savage's regret criterion and Laplace's equal likelihood criterion lead to a decision to maintain the fleet, i.e. Option no 2. In turn, according to Hurwicz's optimism criterion, a rational manager should choose Option no 1 – and increase the fleet. Due to the fact that the application of these particular criteria and indexes leads to different decision directives, the suggested tools to support decision-making a process under uncertainty generate only helpful information. Actually, these are the managers who take responsibility for the final decision. Therefore

they can, but do not have to, take into consideration the directives resulting from their application.

Criteria for decision-making under uncertainty are useful in a situation when the effects of actions and the set of external world states are known. However, the decision maker is sometimes forced to make a choice without sufficient knowledge when they cannot predict the set of world states and their consequences. In such a case, according to J. Kozielecki, one of the most important decision making meta-strategies is the principle of profit as a centre of gravity¹⁷. In accordance with it, while making a choice one should focus only on positive effects of actions and ignore negative possibilities. Such an approach encourages managers and is necessary for the transgression of their own abilities. As a result they often overcome an economic depression without losing the momentum of their actions which allows them to maintain an advantage over their competitors. However, this strategy is not fully rational but in many cases effective. Apart from the fundamental advantage of a continuous trend in the organization's development, it has a drawback connected with the possibility to suffer severe losses resulting from an over-optimistic perception of running the business. Thus there are many arguments proving that the most effective manager is the one who in their actions uses opportunities and at the same time does not forget about threats. Still maintaining the so-called golden mean, i.e. balanced actions bring the best long-term effects.

It is worth noting here that the assumptions theory of decision-making under uncertainty can be used for both playing with nature and the competitor as well. In both these cases, it is interesting to introduce the principles of game theory that deals with, among others, armed, economic or political conflicts¹⁸.

Conclusion

To sum up the considerations mentioned above, it can be concluded that uncertainty is a situation where one cannot predict the probability, independent from the decision maker, future states of phenomena or processes. At the same time, there is a possibility to predict the effects of actions and the set of external world states in such a situation. In the past and nowadays the manager has very limited influence upon the modification of uncertainty whose level generally depends on the unpredictable and uncontrollable conditions found in their environment.

There is no doubt that the mathematical operations presented above in connection with the proposed criteria of decision making under uncertainty help

¹⁷ J. Kozielecki, *The Polish economic reform: Transgressive decision making*, Journal of Economic Psychology nr 6, 2006, pp. 175–204.

¹⁸ Compare: Z.J. Pietraś, *Teoria gier jako sposób analizy procesów podejmowania decyzji politycznych*, (Game Theory as a Way to Analyse Processes of Taking Political Decisions) Uniwersytet Marii Curie-Skłodowskiej, Lublin 1997, p. 21.

the decision makers to optimize their choices. At the same time, they are not the ultimate indicator of their actions. They play an important and often irreplaceable function in supporting the development of an optimal decision. Decision makers make decisions depending on their personality or a situational attitude to uncertainty. If their attitude is to play safe, it is advisable for them to take a decision basing on Wald's pessimism criterion. If they do not like to lose, they should take advantage of Savage's least regret criterion or Szaniawski's caution criterion. In case they do not want to act without any preferences, it is reasonable to choose Laplace's equal likelihood criterion. However, if they strive to maximize the biggest gain, Hurwicz's optimism criterion seems the most appropriate.

It must be underlined that applying the criteria of decision-making under uncertainty does not always translate into the improvement of the effectiveness of an organization's functioning. It results from the fact, among others, that they assume an equally likely occurrence of particular events which is a very rare phenomenon in business. Because of that, the knowledge and application of particular criteria is not the only decision-making rule. The research clearly shows that the best results are achieved by those managers who compare the results obtained having applied different criteria and who while taking decisions take into account not only information obtained from mathematical calculations but are also guided by their knowledge, experience and intuition.

The reflection that appeared during the research paved the way to indicate the directions of further exploration, particularly in terms of developing a multi-criteria model of decision-making under uncertainty. There is no doubt that multi-sided and in-depth research in this area is needed. At the same time, the obtained results can provide a valuable material for further theoretical and practical explorations aiming at deeper understanding and greater improvement of the process of decision-making under uncertainty.

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SOURCES OF LEADERSHIP IN ORGANIZATIONS

Maj. Waldemar ŁYDKA, Ph.D.

Abstract

Leadership is not only a privilege granted formally to commanders, but also a duty and responsibility to their employees, which are expressed in the form of decisions. Absolute obedience, forcing others (connected with the abuse of power), should not play such a significant role in command. The modern leader should seek and create situations in which others desire to follow, not impose their formal leadership. For this to happen, however, one needs to understand what the sources of formal leadership are and realize that power is only a formal basis for the complex process of becoming a leader.

Key words – leadership, power, authority

The understanding and perception of leadership has evolved with the development of many fields such as sociology, political science, social psychology, the science of organization and management, and many others. This was due to the incompleteness of the earlier attempts to describe and define leadership and permanent development as well as transformation in the environment. In addition, with the development of the environment, new challenges appeared before organizations and confronted their head staff¹.

The consideration of issues relating to an organization and its framework to manage people is directly related to the exercise of power by the executive. The legality of proper authority entitles, and obligates at the same time, people to fulfill the basic functions of management, which usually include: planning, organizing, leadership² and control.

With regard to the management of organizations, leadership is based primarily on someone's position in the hierarchy and is identified with the position of the service which reflects a hierarchy of power. This implies that the government is the

¹ See. R. Mrówka, *Przywództwo w organizacjach*, Oficyna Wolters Kluwer Polska Sp. z o.o., Warszawa 2010, p. 16.

² A leadership is sometimes used in the same sense as the motivating.

direct source of leadership. M. Armstrong says that *power is the ability to bring one's own purposes or values on others*³. On the other hand, M. Weber argues that *power is every chance that, within a social relationship, will be driven through one's will, even against resistance and regardless of what concerns this opportunity*⁴.

Both of the above definitions of power point to a direct relationship with a leader's power to impose their own will on subordinates, which in turn requires a certain regulatory approval of the person holding power and a precise definition of the scope of its powers.

Given the nature of leadership, it can be concluded that the possession of formal authority, allows for the legal and organizational legitimacy of leadership and the ability to create conditions for its development. This kind of power is not the only one which is described in the literature. M. Weber defined the following three types of power⁵:

- traditional (based on tradition and custom),
- charismatic (resulting in wide circles of public admiration due to extraordinary abilities and leadership skills),
- legal (it is based on legal provisions).

Wider recognition of the typology of power was described J. A. F. Stoner and Ch. Wankel, who distinguished five types⁶:

- reward power (based on the fact that one person may reward the other for the execution and fulfillment of other requirements),
- enforcement power (is the possibility of punishment for non-compliance, it is the opposite of reward),
- law power (centers around the authority and the degree to which the subordinate considers that the person who has it is legally entitled to exert influence within certain limits, and the subordinate is obliged to submit),
- expert power (is the perception or belief that the holder is exercising a particular expertise or knowledge of the subject, that there is no one who has influence on them),
- reference power (based on the voluntary basis of the one who subjected themselves, wishing to be like that person or follow the one who wields it).

The typology shows that the government is a complex phenomenon based on the relations between the person exercising power and those bound to accept it. The acceptance of power by subordinates depends largely on their ability and voluntary submission to the authority held by the supervisor. In certain situations (especially extreme or dangerous ones), it is possible to highlight another aspect, namely – the need to comply with the person who has the power, as the person which is capable

³ M. Armstrong, *Zarządzanie zasobami ludzkimi*, Oficyna Ekonomiczna, Kraków 2001, p. 147.

⁴ R. Mrówka, op. cit., p. 16.

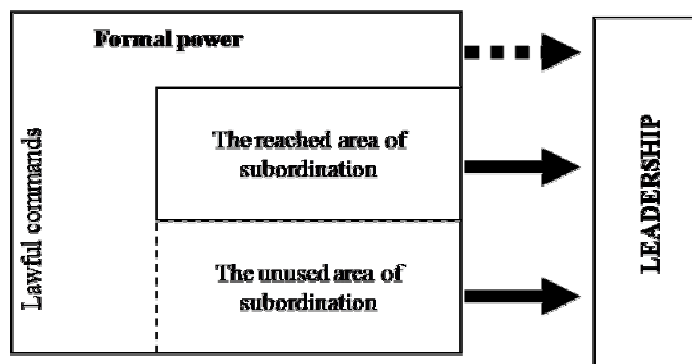
⁵ Ibidem, p. 16.

⁶ Zob. J. A. F. Stoner, Ch. Wankel, *Kierowanie*, Polskie Wydawnictwo Ekonomiczne, Warszawa 1996, p. 259-260.

of making difficult decisions. In this case, the group somehow legitimizes itself by their superior authority as a decision-making center, which takes in their name decisions suitable for the entire group.

Such a broad definition of power also draws attention to the fact that the legal authority, which under the law is supplemented by other types, is based largely on interaction and human relationships. In fact, the leadership should be based on power, not only focusing on formal sources, but also applies to other types of power that are natural complements and depends on the situation and accepted style of leadership. Focusing only on purely formal power may not be sufficient for the education of a superior image as a leader.

In relation to the proper authority, leadership is therefore essentially a consequence, as a natural need to strengthen and support the formal powers held. It complements the relationship between superiors and subordinates. It is an important factor uniting two main areas of obedience to a superior's orders to subordinates (Figure 1).



Source: based on J. A. F. Stoner, Ch. Wankel, op. cit., p. 259.

Figure 1. Power as a source of the leadership

It follows that, despite having formal authority and the associated power to issue orders to subordinates, there is also an area that is not exactly sanctioned by formal authority. This refers to the sphere which is defined as the unused area of command. It is a gap that should be filled by the supervisor by influencing subordinates without the use of formal authority. The skillful use of their power and awareness of these two areas to ensure the compliance of the subordinates to the position of the leader in the group, and is a natural and unforced provision of leadership.

However, the mere awareness of having power does not mean that every manager is a leader. This calls for specific actions, which are implemented on a continuous basis; being thoughtful and appropriate to the situation, will allow a manager to become a leader and create a positive image of power. The positive face of power is best characterized by concern for group goals, assisting in

formulating and achieving common targets. This is shown by influencing things for the benefit of other people. A successful head of a group encourages members to develop the strength and skills they need to achieve success, as people and as members of the organization, which, in essence means to help them meet their needs at different stages of development⁷.

This approach to the problem can, in turn, be used to formulate a set of specific leadership behaviors that determine the effectiveness of the possessed strengthening of authority, and at the same time legitimizing leadership⁸:

- sensitivity to the source of power and caring for compliance activities with the expectations of subordinates,
- understanding of the basis of proper authority and the ability of an individual to apply methods to individual subordinates (individual approach),
- demonstrating confidence through constant self-improvement of expert proper authority,
- pursue personal career goals and focus around their authentic followers,
- avoid impulsive behavior and excessive displays of formal power,
- a skilful and balanced use of power as a factor necessary for the execution of tasks while at the same time satisfying their own leadership ambitions.

These things are inseparable from the concept of power and its associated rights related to authority, which is a form of formal and informal power, and depending on how the exercise of power may act as⁹:

- formal,
- expert,
- reference.

It is desirable that power was based on all categories of authority and command minions performed not only with the need to meet the formal requirements, but a natural urge and desire to comply with the supervisor and the informed acceptance of their authority. The entails a greater submission to authority requiring subordinates to execute the commands of a supervisor and recognize them as valid. This happens when a leader simultaneously satisfies the following conditions¹⁰:

- verbal communication skills (subordinates are able to comprehend and understand the command),
- compliance with the objectives of the organization,
- compliance with all subordinate personal interests,
- feasibility (consider the possibility of mental and physical health of the subordinate).

⁷ J. A. F. Stoner, Ch. Wankel, op. cit., p. 261.

⁸ Ibidem, p. 262.

⁹ J. Szczupaczyński, *Anatomia zarządzania organizacją*, Międzynarodowa Szkoła Menedżerów Sp. z o. o., Warszawa 1998, p. 11.

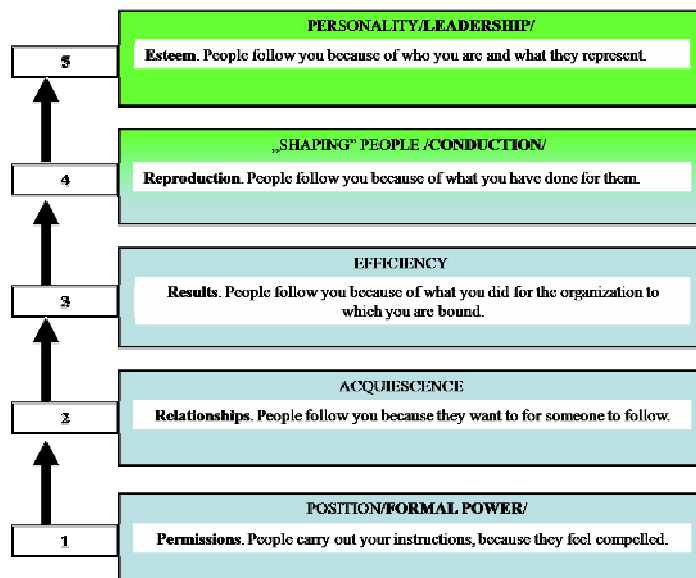
¹⁰ Zob. J. A. F. Stoner, Ch. Wankel, op. cit., p. 259.

Summarizing the above considerations it can be concluded that conscious management activities should be developed to the level of formal authority ensuring the level of respect from a leader's subordinates, who will also be identified with the leadership.

The first of the elements is presented in Figure 2, the power given along with the position and functions. It still does not entitle a statement that the person is acting as a leader. Subordinates obey the first formal power and the requirements to execute commands.

A purposeful activity manager should be directed not only to the performance of tasks and the achievement of organizational objectives, but must include both the interest in subordinates, as integral players in managerial work. This aims at avoiding their objectification in conjunction with an increase in confidence in the superior; as well as the sustainable development of the relationships between supervisors with subordinates.

The result of such proceedings is to minimize the importance of formal power in favor of the coordination of people, which naturally turns into leadership, as the highest and most effective way to lead a team.



Source: based on www.ckl.com.pl.

Figure 2. Levels of leadership

Without a doubt, a key aspect of this process is the acceptance by subordinates and the flow of information. One way to gain knowledge on the subject is to obtain feedback from subordinates or colleagues. However, this requires a selective and balanced analysis of the information which has not yet reached the point at which

they hamper their development. This may be a result of negative evaluations based on feedback. Self-improvement requires strong leadership and taking into account the nature of the criticisms, while rejecting unjustified criticism¹¹.

To sum up, it is clear that power and authority as a source of leadership requires the adequate development of relations between superiors and subordinates. Interactions that occur between them increasingly marginalize the formal aspects of leadership, and imply a need to focus on the other, where a person and their behavior in the organization play a much larger role as a subject in the processes of the organization.

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¹¹ *Przywództwo w zarządzaniu rozwojem lokalnym*, Fundacja BFKK, Białystok, p.147, www.bfkk.pl.



CHARACTERISTICS OF CHANGES IN THE ORGANIZATIONAL CULTURE OF THE NATIONAL DEFENSE UNIVERSITY – RESEARCH REPORT¹ NATIONAL DEFENSE UNIVERSITY

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Abstract

The article presents a research report that was made in the National Defense University for a PhD Diploma. The principle contents are concerned with the factors that mold culture at the University. The author presents respondents' opinions about the changes in the organizational culture at the National Defense University.

Key words – organizational culture, change conditioners, main principle contents

Introduction

Organizational culture is a social life medium that allows people to communicate, it makes sense of their activities, experiences and choices. We can say that organizational culture shows us how to behave, it determines decisions of all organization members, and so it decides about efficiency of the organization.

Every organization has its own culture with its specific values and views about the behavior of the workers and their co-operation. In the organization all specific culture norms, patterns of behavior and opinions about the world around us, are made. The most important feature of the culture is experience accumulated by incoming and outgoing members, by registration and observation; it is an achievement of the individuals that are the members of groups, families and society; handing down values; it influences the education and personality of the leader; is made with the men's abilities; it changes and converts. Public organizations includes also some kind of nature, as described by M. Krzyżanowska: *a non commercial organization that is made by a national administration or by a territorial self-governing region depends on founding an organization that has public character (so it's available for each citizen).*

¹ The article is based on the research results which was made during the preparation for a doctoral degree about *Changes in the organizational culture of the National Defense University*.

The currently state of knowledge about the problem of this article is not adequate. While analyzing the bibliography, I found that a lot about the characteristics of some institutions and companies, but none of them refer to the organizational culture of a University. This is the reason I decided to analyze the changes at the National Defense University since it was founded.

Taking into account the above considerations, the object of the article is to find the answer to the main research question: what are the characteristics of the changes taking place in the organizational culture of the National Defense University?

An object of these research was the changes in the organizational culture at the National Defense University. The changes had been analyzed as a transformation (symbols, means of communication, rituals, values, myths and taboos to L. Zbiegień-Maciąg) at the University.

I made the survey questionnaire with the use of a questionnaire given to the academic and administrative staff, and the students of the National Defense University. The questionnaire included 24 questions, the research was carried out between 7th and 18th of January 2013. A try-out group had been chosen arbitrarily and I surveyed as many as 429 people out of whom 73 were academic, 85 administrative staff and 271 students.

It is important that organizational culture conveys the meaning of the „architecture of the company” - its structure, relative contacts between company and employees, between employees, and between the company and the surrounding environment; that means the formation of a unique company on the labor market. The manner of a company's work with national institutions is a result of considerations defining the situation on the market made by the organization members who made up the control group in accordance with the law.

Characteristics of changes in the organizational culture of the National Defense University

Respondents have been asked about the communication styles at the University (in their opinion). In table 1. the reader can see the answers to the questions in NDU, separated into three groups: academic staff, administrative staff and students.

Table 1

Communication styles in the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Partnership style	21	28,77	14	16,47	56	20,66
Similar to partnership style	17	23,29	19	22,35	65	23,99
Hard to say	14	19,18	29	34,12	105	38,75
Similar to un-partnership style	7	9,59	10	11,76	20	7,38
Un-partnership style	14	19,18	13	15,29	25	9,23
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

While analyzing the results, it can be seen that, in the opinion of academics, the main communication style in the National Defense University's is a partnership style (28,77%), similar to partnership style (23,29%), for 14 persons (19,18%) un-partnership style; for administrative staff: 34,12% could not decide which style is used, for 19 people (22,35%) the style is similar to a partnership one, for 14 people (16,47%) it's is a partnership style. In the students' opinion 38,75% believe it is hard to determine which style is used in the University, 65 people (23,99%) decided that the style is similar to a partnership style, while 56 people (20,66%) chose the partnership style. In conclusion, in the respondents' opinion, the most common communication style at the National Defense University is partnership style or a style with a similar character. The difference in answers may be caused by the fact that the university possesses its own communication style, which may be hard to classify in conjunction with the bibliography.

Respondents were questioned about the orthogonal subculture at the university, which is understood as the way of presenting their personal values as well as other unique values. They were required to answer if they thought those values could be found in the university's life. In table 2. the responders answers to this question are presented, divided into three groups: academics, administrative staff and students.

Table 2

Orthogonal subculture

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	4	5,48	8	9,41	13	4,80
Yes	53	72,60	52	61,18	171	63,10
No	16	21,92	25	29,41	87	32,10
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

As can be seen, in the respondents' opinion, academics (72,60%), administrative staff (61,18%) and students (63,10%) realize the orthogonal subculture at the National Defense University. Consequently, the respondents agree with the definition of orthogonal subculture and they can see observe it in the University's life.

The third question about the organization's internal atmosphere was meant to characterize the culture of the organization. In table 3. it is shown how the responders answered this question, it is parted into three groups: academic staff, administrative staff and students.

Table 3

Types of organization atmosphere at the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	4	4,71	6	2,21
Innovative-technocratic	27	36,99	31	36,47	63	23,25
Authoritarian-autocratic	4	5,48	7	8,24	60	22,14
Sociable	22	30,14	13	15,29	69	25,46
Bureaucratic	17	23,29	30	35,29	73	26,94
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

Based on the obtained data, the organizational atmosphere in the university presents itself, in the responders opinion, as follows: at first, for academics (36,99%) - the innovative-technocratic climate, secondly it is sociable (30,14%) and, at the very end, a bureaucratic atmosphere (23,29%). In the category of administrative staff, those values are respectively: (36,47%) – innovative-technocratic, bureaucratic (35,29%) and sociable (15,29%); for the students: bureaucratic (26,94%), sociable (23,25%) and innovative-technocratic (23,25%). The bibliography provides the specific characteristics of the organization's atmosphere, however according to the current research at the National Defense University, it is not so obvious – it is rather mixed. It appears that the respondents connect the perception of organizational atmosphere with the University's working methods.

To identify the type of organizational culture at the National Defense University, the respondents received the fourth question to answer. In table 4. it is shown how the respondents answered this question. The responses are divided into three groups: academics, administrative staff and the students.

Table 4

Types of organizational culture in the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	4	4,71	5	1,85
Family	5	6,85	8	9,41	34	12,55
Eiffel Tower	45	61,64	47	55,29	112	41,33
Controlled bullet	18	24,66	16	18,82	80	29,52
Incubator	2	2,74	10	11,76	40	14,76
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

The respondents stated that within the university the dominating type of organizational culture is the one known as the Eiffel Tower. For the academics, the second most common is the „Controlled bullet” type (24,66%) and the “Family” type (6,85%). According to the administrative staff: (18,82%) – „Controlled bullet” and “Incubator” (11,76%) are the second most common. Last but not least, the students claimed that: (29,52%) - „Controlled bullet” and “Incubator” (14,76%) are used after the Eiffel Tower. From the above mentioned results it can be derived that there is a strong significance in the group to which the respondents belong to. However, it is also not easy to define the culture type included in bibliography.

Analyzing the results of the research, it is possible to form a conclusion that, according to opinions of the National Defense University respondents, the most popular communication style can be named as mixed, which is a combination of all styles included in the bibliography, although a significant portion of respondents stated that it is the partnership style which appears to have a similar character. Respondents decided that within the university an orthogonal subculture exists, while the organization atmosphere at the NDU is a combination of the innovative-technocratic, bureaucratic and sociable styles. This may be caused by an opposite perception of the university by each group of respondents. The type of organizational culture is called an Eiffel Tower but there is difficulty in deciding which kind of culture can be observed at the university, making the responders choose “Controlled bullet” and “Incubator” as well.

Characteristic of the Ingredients of the Organizational Culture at the National Defense University

The first question of the questionnaire given to the academic and administrative staff and students of the National Defense University featured elements of an organizational culture which may be the ingredients of the organizational culture at National Defense University. The construction of the first question in the questionnaire referred to the clinical model of E. Schein, which was exploited as a

starting point for the construction of other questions in the questionnaire. Respondents were asked to respond to each of these questions by selecting the closest (in their perspective) notes from the scale: the most important, important, of average importance, not important, the least important. The matrix tables allow researchers to analyze each factor of the National Defense University.

Table 5. presents the responses to the question about symbols as elements of the organizational culture in the National Defense University, divided into three groups of respondents: academic staff, administrative staff and students.

Table 5

Symbols as elements of the organizational culture in National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	1	1,37	7	8,24	0	0,00
The most important	21	28,77	27	31,76	60	22,14
Important	32	43,84	33	38,82	127	46,86
Of average importance	13	17,81	14	16,47	56	20,66
Not important	3	4,11	4	4,71	20	7,38
The least important	3	4,11	0	0,00	8	2,95
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

It can be concluded that for the majority of respondents the symbols are a highly important element, which corresponds with the organizational culture of the University. For academics, the symbols are important (43,84%), very important (28,77%) and of average importance (17,81%). For the administrative staff symbols are an important category (38,82%), very important (31,76%), and of average importance (16,47%) while for students symbols are important (46,86%), very important (22,14 %) and, finally, of average importance (20,66%).

The second part of the organizational culture of the National Defense University is the means of communication.

Table 6. presents the answers related to the criteria of the means of communication as part of the organizational culture of the National Defense University. Results are divided into three groups of respondents: academics, administrative staff and students.

Table 6

The means of communication as part of the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	0	0,00	3	3,53	1	0,37
The most important	36	49,32	48	56,47	130	47,97
Important	25	34,25	25	29,41	86	31,73

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Of average importance	9	12,33	6	7,06	36	13,28
Not important	1	1,37	2	2,35	15	5,54
The least important	2	2,74	1	1,18	3	1,11
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

In respondents' opinion, the means of communication are the element of great importance. For academics, the means of communication are very important (49,32%), important (34,25%) and of average importance (12,33%). Next, for administrative staff they are very important (56,47%), important (29,41%) and of average importance (7,06%). For the students, the means of communication are very important (47,97%), important (31,73%) and of average importance (13,28%).

The third category, to which the respondents had to take a stand, were the rituals. In table 7. there are the answers to questions about rituals as part of the organizational culture of the National Defense University; it is divided into three groups of respondents: academics, administrative staff and students.

Table 7

Rituals as part of the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	10	11,76	3	1,11
The most important	10	13,70	9	10,59	38	14,02
Important	25	34,25	28	32,94	84	31,00
Of average importance	22	30,14	24	28,24	90	33,21
Not important	10	13,70	10	11,76	40	14,76
The least important	3	4,11	4	4,71	16	5,90
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

According to respondents, the rituals are an important part of live for the academics (34,25%), then of average importance (30,14%) and very important or unimportant (at 13,70%). For administrative staff it is an important category (32,94%), of average importance (28,24%) or very important (11,76%), part of the organizational culture of the University. The feelings are important for the majority of students (33,21%) while for significant group they are an element of average importance (31%) and for some not important (14,76%).

The fourth element of organizational culture on which respondents were questioned concerned values. Table 8. presents the distribution of responses for the values as part of the organizational culture of the National Defense University; divided into three groups of respondents: academics, administrative staff and the students.

Table 8

Values as part of the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	2	2,74	6	7,06	2	0,74
The most important	34	46,58	38	44,71	105	38,75
Important	27	36,99	31	36,47	110	40,59
Of average importance	7	9,59	8	9,41	45	16,61
Not important	1	1,37	1	1,18	6	2,21
The least important	2	2,74	1	1,18	3	1,11
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

It can be concluded that the respondents of the academic staff perceive values as a very important element (46,58%), important (36,99%) and element of average importance (9,59%). However, for the administrative staff the values are a very important element (36,47%), important (36,47%) and of average importance (9,41%), which conveys the organizational culture of the University. The feelings of the students are respectively: an important element (40,59%), very important (38,75%), element of average importance (16,61%).

The next element of the culture of the university, of which respondents were asked, was myths. Table 9. presents the distribution of responses to the myths as part of the organizational culture of the National Defense University and are divided into three groups of respondents: academics, administrative staff and students.

Table 9

The myths as part of the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	1	1,37	7	8,24	1	0,37
The most important	3	4,11	2	2,35	12	4,43
Important	11	15,07	4	4,71	31	11,44
Of average importance	14	19,18	22	25,88	82	30,26
Not important	27	36,99	27	31,76	100	36,90
The least important	17	23,29	23	27,06	45	16,61
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

Empirical data allow researchers to conclude that for a significant group of academic respondents the myths are not a very important element (36,99%), unimportant (23,29%), or an element of average importance (19,18%). Secondly, for the administrative staff the myths are of minor importance (31,76%), unimportant (27,06%), or of average importance (25,88%). Interestingly, for the

students it is a very important part (36,90%), of average importance (30,26%), or an unimportant element (16,61%).

In aspects of the final element of the organizational culture, the respondents were asked about taboos. Table 10. presents responses to the question about taboos as part of the organizational culture of the National Defense University and responses are divided into three groups of respondents: academics, administrative staff and the students.

Table 10

Taboos as part of the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	1	1,37	7	8,24	0	0,00
The most important	5	6,85	1	1,18	14	5,17
Important	5	6,85	8	9,41	40	14,76
Of average importance	12	16,44	18	21,18	86	31,73
Not important	22	30,14	19	22,35	75	27,68
The least important	28	38,36	32	37,65	56	20,66
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

As can be seen, taboos are not an important element for academics (38,36%), not important (30,14%) and an element of average importance (16,44%). For administrative staff it is an unimportant element (37,65%), not so important (22,35%) and of average importance (21,18%), for students it is not an important part of shaping the organizational culture of the university (20,66%), not so important (27,68%) or unimportant (20,66%).

Taking the collected facts into consideration, the researchers may form a conclusion that the respondents ultimately decided that the most important elements of the National Defense University's organizational culture are symbols, means of communication, rituals and values. They had been given the marks for classification of: very important, important, and of average importance. The sole elements classified as not an important part of the organizational culture of the university are myths and taboos. In this particular respect, the results provided by the majority of responders were: of little or average importance and unimportant.

The Characteristic of the Relationship and Relations with the External Environment of the National Defense University

In question number 8. in the questionnaire the Author constructed a question relating to the view of the tested group with the aim of finding out if there is a distinction between the academic, administrative staff and students.

Table 11. presents the answers to questions about the division of students, administrative staff, and academics in the National Defense University. The results are divided into three groups of respondents: academics, administrative staff and students.

Table 11

Division of students, administrators, and academic

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	2	2,74	11	12,94	21	7,75
Yes	62	84,93	66	77,65	198	73,06
No	9	12,33	8	9,41	52	19,19
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

It can be said that in the results, according to the respondents' opinions, there is a significant division between the academics (84,93%), administrative staff (77,65%) and the students (73,06%). All of the examined groups had similar answers to this question.

Consequently, as can be seen from the above analysis of empirical data, the National Defense University is divided into the staff and the students. It was decided on this basis to question the respondents to verify their ideas about the differences in their views on various issues between the military personnel and civilian employees.

Table 12. presents the answers to questions about the differences in views between soldiers of the military and civilians in the National Defense University and results are divided into two groups of respondents: academics and administrative staff.

Table 12

The differences in views between soldiers and civilians in the National Defense University

Categories	Academics		Administrative staff	
	n	%	n	%
Referring to himself	26	13,13	31	14,35
Realization of the task	38	19,19	37	17,13
Payment	52	26,26	73	33,80
Generate an opinion about the University	23	11,62	23	10,65
Gossip	25	12,63	17	7,87
Exchange of information on changes in NDU	34	17,17	35	16,20
Total	198	100,00	216	100,00

Source: Own study.

Comparing the answers, it is clear that, in the respondents opinion, there are differences in approach and outlook between the military and civilian personnel. In the opinion of the academics, the most important thing is the difference in payment (26,26%), subsequently differences in scope of responsibilities (19,19%) and in exchange of information on changes in the NDU (17,17%). However, in the opinion of the administrative staff, the difference is reflected in payment (33,80%), tasks (17,13%) and the exchange of information on changes in the NDU (16,20%).

What is more, another issue about which respondents were asked, was the motivation to work or study in the university. Table 13. presents the distribution of answers to questions about the motives to work or study in the National Defense University. It is divided into three groups of respondents: academic, administrative staff and students.

Table 13

The motives to work or study in the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Prestige of the University	45	16,36	44	15,33	109	9,93
Good location	33	12,00	57	19,86	91	8,29
Friends recommendation	18	6,55	25	8,71	157	14,30
Friends/family members work at NDU	9	3,27	23	8,01	48	4,37
The desire to work /study at national universities	19	6,91	43	14,98	188	17,12
The desire to work /study at military universities	41	14,91	27	9,41	153	13,93
Family traditions	10	3,64	21	7,32	22	2,00
Interest in teaching and learning	48	17,45	19	6,62	169	15,39
Career development	52	18,91	28	9,76	161	14,66
Total	275	100,00	287	100,00	1098	100,00

Source: Own study.

It can be concluded that the main motive of the academic respondents was a willingness to develop their career (18,91%), interest in teaching and learning (17,45%) and the prestige of the university (16,36%). For the administrative staff it was a convenient location (19,86%), the prestige of the university (15,33%) and the desire to work in state-managed educational sector (14,98%). For students, the main motive was the desire to study in the national university (17,12%), interest in teaching and learning (15,39%) and career development (14,66%).

Question 15. in the questionnaire is concerned with the students assessment of relations between the university and the external environment.

Table 14

Assessment of the relations with the external environment

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	1	1,37	0	0,00	2	0,74
Very well, I see a very significant opening of the University to external environment	12	16,44	13	15,29	41	15,13
Good, I can see significant changes in this area	34	46,58	44	51,76	87	32,10
Do not know	10	13,70	20	23,53	103	38,01
Bad, I didn't notice changes in the relationship between the University and the external environment	11	15,07	7	8,24	28	10,33
Very bad, I think that the University is still closed to the external environment	5	6,85	1	1,18	10	3,69
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

It can be assumed that, in the respondents' opinion, the rating of the relationship with the external environment depends on the researched groups. Academics believe that the relationships are satisfactory (46,58%), very well and recognize the significant opening of the NDU to the external environment (16,44%). However, in the same group's view, the relations are also bad because they do not observe many significant changes in the relationship with the external environment (15,07%). A similar opinion comes from the administrative staff - they evaluate those relationships well (51,76%) while 20 people had no opinion (23,53%) or a very good one (15,29%). Students presented themselves as not having any opinion about the relationships of the university with external environment (38,01%), good (32,10%) and very good (15,13%).

The study shows that respondents are conscious on the division into all groups of the university community – the academics, administrative staff and students. Respondents realize the differences in perception of certain issues based on belonging to a group of either soldiers or civilian employees. In this case, the respondents stated that the biggest difference is narrowed down to the payment, tasks, as well as the way in which the information comes to the university. The main motives taken by the respondents to choose to work for or study at the National Defense University is its unquestioned prestige, interest in teaching and learning, career development, and a convenient location. The latter to which the respondents referred was the relations between the university and the external environment. The respondents rated it as good or very good and recognized the significant and important changes in the relations of the university with external environment.

Characteristics of Changes in Organizational Culture in the National Defense University

The next question in the questionnaire is about respondents' opinion about the most important events that influenced the organizational culture of the National Defense University.

Table 15. presents the answers about the events that shaped the organizational culture of the National Defense University and are divided into three groups of respondents: academics, administrative staff and students.

Table 15

Main events affecting the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
AGS PAF transformation	38	9,82	50	11,47	114	7,57
Changes in the NDU organizational structure	39	10,08	50	11,47	101	6,71
Transformation of Departments	36	9,30	39	8,94	188	12,48
Authority appointment	17	4,39	31	7,11	50	3,32
ERASMUS programme	40	10,34	46	10,55	210	13,94
Renaming the official position Rector-Commandant	7	1,81	2	0,46	31	2,06
Civil-military character of the University	65	16,80	62	14,22	222	14,74
University open to civilian students	56	14,47	63	14,45	214	14,21
Women in the management of the University	12	3,10	12	2,75	77	5,11
Poland's membership in NATO	28	7,24	25	5,73	58	3,85
International exercises	26	6,72	36	8,26	121	8,03
Participation of the academics in missions	23	5,94	20	4,59	120	7,97
Total	387	100,00	436	100,00	1506	100,00

Source: Own study.

It ought to be noted that in the respondents' opinion, the most important events which have the greatest importance and impact on the organizational culture in NDU are: for academics (16,80%) - giving the university a civilian-military nature, opening it to civil students (14,47 %) and the ERASMUS programme - (10,34%). For the administrative staff it was respectively: opening it to civil students (14,45%), civil-military nature of University (14,22%), changes in the structure of NDU (11,47%) and conversion of the Academy of the General Staff of the Polish Armed Forces into the National Defense University (11, 47%). However, the most important events for students include: civil-military University nature (14,74%),

the opening of the university for civil students (14,21%) and finally the ERASMUS programme (13,94%).

In question 16. the respondents were asked about their assessment of changes in the National Defense University. In Table 16. the answers to the question about this aspect are presented and the respondents are divided into three groups of respondents: academics, administrative staff and students.

Table 16

The assessment of changes in the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	1	1,37	1	1,18	2	0,74
Very good, I can see the University is open to the external environment	5	6,85	8	9,41	30	11,07
Good, I can see some changes	18	24,66	33	38,82	86	31,73
I do not mind	17	23,29	28	32,94	118	43,54
Bad, I did not notice changes in the relationship between the University and the external environment	21	28,77	14	16,47	29	10,70
Very bad, I think the University remains closed to external environment	11	15,07	1	1,18	6	2,21
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

Conclusions are that the respondents rated as follows: academics expressed a negative opinions about changes (28,77%), positive opinions about observing significant changes (24,66%), 17 persons did not have any opinion (23,29%). However, the administrative staff's opinions is are: (38,82%) – had good opinion; 28 people (32,94%) had no opinion about it or say that they don't see changes (16,47%). Students: (43,54%) had no opinion, a significant number of students had positive opinions (31,73%), or a very good opinion – (11,07%).

Question 18. of the questionnaire was concerned about the changes that have taken place over the last three years (2010-2012) and which were assessed as the most important. Table 17. presents the answers to this question. It is divided into three groups of respondents: academic staff, administrative staff and students.

Table 17

**The change in the organizational culture of the National Defense University
in the last three years (2010-2012)**

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Education quality	23	12,50	20	9,43	137	18,32
Studies program	29	15,76	30	14,15	185	24,73
Students expectations about the NDU	16	8,70	24	11,32	102	13,64
NDU's organizational structure	40	21,74	44	20,75	115	15,37
The position of the Rector-Commandant	30	16,30	40	18,87	106	14,17
The position of the National Defense Minister	19	10,33	14	6,60	42	5,61
Economical and social crisis	27	14,67	40	18,87	61	8,16
Total	184	100,00	212	100,00	748	100,00

Source: Own study.

Analyzing the material, it should be noted that the most important changes that have taken place in the last three years (2010-2012) at the university, according to the academics, occurred in the organizational structure of the NDU (21,74%), the creation of the position of the Rector-Commandant (16,30%) and degree programs (15,76%). For the administrative staff: the changes that have taken place in the organizational structure of the University (20,75%), the creation of the position of Rector-Commandant (18,87%) and the economic and social crisis (18,87%). For students, the most important changes were in the program of studies (24,73%), the quality of education (18,32%) and in the organizational structure of the University.

In question 19., respondents were asked about the factors that affected the changes in the National Defense University's organizational culture. Table 18. presents the answers (divided into three groups of respondents: academics, administrative staff and the students).

Table 18

**The type of environment as a factor that shapes the organizational culture
of the National Defense University**

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	8	9,41	3	1,11
Very important	13	17,81	14	16,47	53	19,56
Important	34	46,58	41	48,24	132	48,71
Of average importance	19	26,03	15	17,65	69	25,46
Not very important	3	4,11	7	8,24	11	4,06
Doesn't matter	1	1,37	0	0,00	3	1,11
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

According to table 18., the respondents considered the type of environment as an important factor shaping the organizational culture of the university, (regardless of the research group). For the academics it is an important factor (46,58%), of average importance (26,03%) or very important (17,81%), while for the administrative staff is an important element (48,24%), of average importance (17,65%) or very important (16,47%) and, finally, for the students it is an important element (48,71%), an element of average importance (25,46%) and very important (19,56%).

Another element the respondents were asked about were the features of the organization. Table 19. presents the answers to the question about the characteristics of the organization as a factor that shapes the organizational culture of the National Defense University, and is divided into three groups of respondents: academics, administrative staff and students.

Table 19

The characteristics of the organization as a factor that shapes the organizational culture of the National Defense University

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	5	5,88	5	1,85
Very important	19	26,03	13	15,29	67	24,72
Important	43	58,90	51	60,00	138	50,92
Of average importance	5	6,85	14	16,47	52	19,19
Not very important	3	4,11	2	2,35	7	2,58
Doesn't matter	0	0,00	0	0,00	2	0,74
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

As we can see, respondents considered the organization as an important factor shaping the organizational culture of the university. For the academics it is an important factor (58,90%), and very important (26,03%); for the administrative staff it is an important element (60,00%), of average importance (16,47%) or very important (15,29%), while for the students it is an important element (50,92%), very important (24,72%) and of average importance (19,19%).

Another element which was a subject of this research, is concerned with the characteristics of the organization as a factor affecting changes in the university. Table 20. presents the responses of participants in the field of the characteristics of the organization as a factor that shapes the organizational culture of the National Defense University. The responding group was divided into three groups: academics, administrative staff and students.

Table 20

**Characteristics of the organization as a factor that shapes the organizational culture
of the National Defense University**

Categories	Academics		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	7	8,24	3	1,11
Very important	31	42,47	23	27,06	83	30,63
Important	31	42,47	42	49,41	117	43,17
Of average importance	6	8,22	11	12,94	57	21,03
Not very important	2	2,74	1	1,18	10	3,69
Doesn't matter	0	0,00	1	1,18	1	0,37
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

Analyzing the responses, it can be concluded that the respondents considered the characteristics of the organization as an important factor shaping the organizational culture of the university, regardless of the research group to which they belong to. For the academics it is an important factor (42,47%), very important (42,47%), for the administrative staff it is an important element (49,41%), very important (27,06%), or of average importance (12,94%), for students it is an important element (43,17%), very important (30,63%) and of average importance (21,03%).

The fourth element the respondents were asked about was the type of organization as a part of forming the changes in the university. Table 21. presents responses to the question about the type of organization as a factor forming the organizational culture of the National Defense University. Divided into three groups, the respondents consisted of: academics, administrative staff and students.

Table 21

**The organization's type as a factor that forms the organizational culture
of the National Defense University**

Categories	Academic		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	9	10,59	4	1,48
Very important	14	19,18	14	16,47	54	19,93
Important	38	52,05	44	51,76	137	50,55
Of average importance	17	23,29	14	16,47	62	22,88
Not very important	1	1,37	3	3,53	12	4,43
Doesn't matter	0	0,00	1	1,18	2	0,74
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

Based on the collected data it can be concluded that the respondents considered the type of organization as an important factor shaping the organizational culture of the university, regardless of the research group to which they were assigned. For the academics, it is an important factor (52,05%), of average importance (23,29%) or very important (19,18%), for the administrative staff it is an important element (51,76%), of average importance (16,47%) and very important (16,47%), while for students it is an important element (50,55%), of average importance (22,88%) and very important (19,93%).

The fifth element is the legal changes in the area of higher (academic) education as part of shaping the changes in the university. Table 22. presents the responses for legal changes in the area of higher (academic) education as a factor that shapes the organizational culture of the National Defense University, divided into three groups of respondents: academics, administrative staff and students.

Table 22

Legal changes in the area of higher education as a factor that shapes the organizational culture of the National Defense University

Categories	Academic		Administrative staff		Students	
	n	%	n	%	n	%
Lack of indications	3	4,11	8	9,41	3	1,11
Very important	21	28,77	30	35,29	60	22,14
Important	36	49,32	35	41,18	117	43,17
Of average importance	10	13,70	8	9,41	68	25,09
Not very important	3	4,11	3	3,53	18	6,64
Doesn't matter	0	0,00	1	1,18	5	1,85
Total	73	100,00	85	100,00	271	100,00

Source: Own study.

In this particular subject of the Author's research, the conclusions are: the respondents considered changes in the area of higher education as an important factor forming the organizational culture of the University, regardless of the research group to which they were assigned. For the academics it's an important factor (49,32%), very important (28,77%), or of average of importance (13,70%), for the administrative staff it's an important element (41,18%), a very important one (35,29%), or of average importance (9,41%), while for students it is an important element (43,17%) and very important (22,14%).

Analyzing all the accumulated empirical data on the factors influencing the organizational culture of the NDU, it is obvious that the respondents considered the type of environment, the characteristics of the organization, characteristics of participants in the organization and legal aspects in the field of higher (academic) education as essential, very important or important elements.

According to the mentioned facts, it is fully understood that for the majority of respondents what is the most important is the open character of the university to the civilian students-and its evolving nature. Secondly, another important aspect is the

civil-military cooperation, the availability of the ERASMUS programme, changes in the organizational structure and the transformation of the Academy of the General Staff of the Polish Armed Forces into the National Defense University. In the academic and administrative staff's opinion: changes at the University are good, very good or bad, and for the students (probably due to the nature of this group), they have no definite precise view. As the most important changes in the period of last three years (2010-2012), respondents considered: changes in the organizational structure of the National Defense University, the position of the Rector-Commandant, changes in the programs of studies and quality of education, but also the economic and social crisis. The factors that in the respondents' opinion are believed to be of a high importance (from the perspective of changes taking place in the university) are: the type of environment, characteristics of the organization, characteristics of the organization's participants, and type of organization. The only factor that was associated with the legal changes in the area of higher (academic) education, respondents considered important or very important.

Summary

The results of empirical studies allowed the author of this article to generalize, give conclusions and make observations. While starting the work I defined a research problem that was expressed in terms of the following research question:

What are the characteristics of the changes taking place in the organizational culture of the National Defense University?

The study shows that in the University there is a style of communication defined as a partner style or close to it, with a strong orthogonal subculture. The university is a type of organizational form in which the climate is being formed from a combination of the following features: organizational climate for innovative-technocratic, bureaucratic, and sociable aspects. However, the most common type of organizational culture refers to the model broadly known as the Eiffel Tower, but also other types of organizational culture such as "Controlled bullet" and the "Incubator" - those factors allow one to identify characteristic elements of organizational culture in the National Defense University, a unique "personality" of the university - both as an organization and the University.

Those test results show that the basic components of organizational culture in the National Defense University are the symbols, means of communication, rituals, values, myths and taboos. Specific components of organizational culture are also the areas where changes are taking place. In this context, the existence of various components of organizational culture is reflected in the empirical typology proposed in the bibliography.

The analysis of the empirical data can be concluded in the following manner: there is a clear distinction between the academics, administrative staff and students,

which is a characteristic feature of changes in the organizational culture of the NDU. The change results from the specific organization, that of a military-civilian university. It should also be pointed out that the basis for this identified in the course of the research process is the issue of waging the differences and the information flow of within the university. It can be concluded that the division established as a result is quite natural, and the existence of such subcultures in the NDU is very important, indeed crucial for the functioning of the university. Eliminating one of these subcultures could have disastrous consequences for uninterrupted existence and development of the university as an organization, as these subcultures are complementary and ensure the proper functioning of the university.

The analysis clearly shows that there are different motives that encourage participants to study at or work in the university. Among the most repeated themes in the survey results was the prestige of the university, interest in teaching, research, professional development opportunities, but also the convenient location of the university. It may be presumed that the National Defense University is an institution that is attractive in many ways, both as a place of work, as well as a place to gain new experience and knowledge, which can be translated as being a positive assessment of the relationship with the external environment. It shows the characteristic of the changes taking place in the organizational culture of the National Defense University.

The study shows that the factors that form changes in the organizational culture of the National Defense University include: type of environment, the characteristics of the organization, the characteristics of participants in the organization, type of organization. The most important factor that has been recognized as either important or very important was changes in the legislation in the field of higher (academic) education. The effects show that an equally important factor influencing the changes in the organizational culture of the university are: an openness to the civil students, changing the nature of the university into a civil-military one, the ERASMUS programme and changes in the organizational structure of the university. Simultaneously, it is worth mentioning that in assessing the changes that occurred in the period of 2010-2012 there were changes in the organizational structure of the NDU, the creation of the position of the Rector-Commandant, changes in programs and the quality of education. Survey respondents also pointed to the role of the economic and social crisis as a factor in the process of change in the organizational culture of the NDU. All these mean that the respondents are ambivalent about the changes, it may be the result of the lack of transparency of actions taken, uncertainty about the future of NDU.

Results also shows that we can form predictions about further changes that may occur in the organizational culture of the National Defense University in the second decade of the twenty-first century. It appears that the main changes will occur to modifications of the direction of the university: improving the quality of education,

which is mainly due to the students' needs, and their expectations for the course and the quality of teaching. What is more, assumption can be formed that the change in the quality of education will be reflected in the process of opening the university towards the outside world, which will significantly increase its prestige. It can be also treated as certain that the direction of changes that the university undergo will continue the development of international cooperation and contacts, particularly in the framework of the ERASMUS programme. This is a desired Course Of Action and is the result of opening of the University to civilian students.

Seeking answers to the researched problem, it is clear that the characteristics of changes in the organizational culture of the National Defense University are: communication styles, the type of organizational climate, organizational culture type, the presence of subcultures, the components of organizational culture (symbols, means of communication, rituals, values, myths and taboos), the type of environment, the characteristics of the organization, the characteristics of participants in the organization, type of organization and the relationship with the external environment. All this allows one to isolate and identify the characteristic culture of the university, as well as to identify changes in the University.

It seems that empirical data may be used in practice. In the author's belief, a developed direction of change should aim to improve the work and efficiency of employees in the National Defense University. Additionally, the appropriate design of changes in the quality of education, especially in training programs will certainly respond to the labor market and the interests of potential students. Last, but not least, what is has an important role in the changes is the matter of adapting to the needs of the university education of civilian students and (most importantly) forming the desired image of the university in civilian academic society.

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THE MILITARY PARTICIPATION OF WOMEN IN THE POLISH ARMED FORCES

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Abstract

Article presents the problem of women's military service in the Armed Forces of Poland. It shows the proportion of women in the military service, in a historical perspective, as well as today. The article announces the silhouettes of women - soldiers serving in the military corpuses in the period of I and II World War. It presents quantitative participation of women in contemporary Polish army, focusing on issues such as the number of women in the various types of armed forces and occupational groups. Moreover, as the criterion of analysis has been also considered ranks of women - soldiers, years of seniority and role of command, participation in missions abroad, and women in the service of the candidate.

Key words – women in army, women military service, military participation of women

Introduction

The following article is devoted to the issue of women's military service and its goal is to present their military participation. The main issue tackled by this piece of work has been presented in the form of a question: How has the participation of women in the structures of the Polish Armed Forces been, evaluated for the period up and till 2012? In order to solve the aforementioned problem the author applied a monographic method which allowed for the finding of answers for the following detailed questions:

- what was the course of women's military service in the modern history of Poland?

- what was women's share in the Armed Forces in the years 1989-2012?

- what is women's share in the military operations carried out abroad?

For centuries the army was exclusively a man's realm, and the presence of women was visible only in situations of utmost necessity, e.g. in face of danger or war, mainly when the men's personnel was insufficient. Women's participation in the Armed Forces was irregular and was not common. As it is aptly noticed by

K. Obuchowska: *the history of the army and military affairs are perceived by societies as the war of fighters, knights or soldiers, all of them being men. In historical books it is difficult to find female examples. It is necessary to look into specialist literature to learn about heroines other than Emilia Plater*¹.

It was in the 15th and 16th century when women for the first time started to seek the status of regular army members as the sisters of Mercy. The first military hospital with both male and female personnel was created in 1653 in Great Britain. However, the first female troops appeared during World War I². At that time women were orderlies and nurses; also they performed auxiliary functions and took an active part in fighting. From that moment one could see women's organized participation in fighting being visible in armies of many countries.

Military participation of women in the historical perspective

In Poland the attempt to have organized participation of female personnel was visible before World War I, when women, who belonged to different organizations (rifle squads, Union of Polish Youth), received basic military training. At that time there was an opinion that women's military service can be realized in the medical service, intelligence and communication service. Thus, such tasks were realized in Legions, the Polish Military Organization, as well as the Voluntary Legion of Women. As an example one can take Maria Curie-Skłodowska, famous for her various acts, who served in medical service on the Western Front during World War I.

Post-war legislation decided on the ban of women's military service which evoked protests from the then female organizations, mainly of The Committee of Female Military Training. As a result, the problem of women's engagement in military affairs had to be tackled by the then government, the best proof for that is the speech delivered by Józef Piłsudski in Vilnius in 1921 where he suggested: *Gentlemen, I will tell you what I am thinking about. In my opinion women should be involved in military service. It is not democratic that only men serve in the army and women not. I have already convinced the General Staff and the Ministry of Military Affairs, which had been reluctant, and I hope to carry this out in the Sejm.*

A few years later, the Marshal recommended that the State Office of Physical Education and Military Training (Państwowy Urząd Wychowania Fizycznego i Przysposobienia Wojskowego) organized a department of Physical Education and

¹ K. Obuchowska, *Armia – organizacja męskiej dominacji*, [in:] *Kobiety w grupach dyspozycyjnych społeczeństwa. Socjologiczna analiza udziału i roli kobiet w wojsku, policji oraz w innych grupach dyspozycyjnych*, eds. K. Dojwa, J. Maciejewski, Publishing House: Wyd. Uniwersytetu Wrocławskiego, Wrocław 2006, p. 308.

² H. Kaczorowski, *Socjologiczny kontekst funkcjonowania kobiet w wojsku* [in:] *ibidem*, p. 191.

Military Training for Women, at the same time employing there women³. On the 9th of April 1938, the Sejm passed a bill on common compulsory service, including regulations concerning the military service of women. From that moment they started to appear quite numerously in the military sphere, and the functioning women structures were given their final shape with the name Organizacja Przysposobienia Obronnego Kobiet (Women Military Training Organization), accepted in 1939. Its command was in the hands of Maria Wittekówna („Mira”), who was the first woman in the Polish Army commissioned to the rank of Brigadier General⁴. She was also the leader of the Auxiliary Women’s Service (Pomocnicza Służba Kobiet) which was being organized at that time, and which in 1942 was upgraded to the Military Women’s Service (Wojskowa Służba Kobiet) and in 1944 all its members were given military ranks. At that time women constituted of 10% of Armia Krajowa (AK) (Home Army) and were present in all its structures. The most active women served in communication services holding even the top posts. As an example one can take Janina Karasiówna „Bronka” as well as Emilia Malessa „Marysia”.

However, women’s participation was not limited to service in communication; they were also active in the distribution of press and AK’s materials. The Main Office of the AK Headquarters (Kancelaria Główna Komendy Głównej AK) was run by – Janina Bredel „Marianka”. Central AK distribution was lead by Wanda Kraszewska-Ancerowiczowa „Lena”, having at her disposal an efficient team of women working as distributors. Women formed a unit called DYSK (Dywersja i Sabotaż Kobiet) / (Diversion and Sabotage Women) with the leadership of Wanda Hertz „Kazik”. They also created Minerva Patrols, participating in the blowing up of different objects as well as supporting underground quartermaster units.

Women also left a mark of their participation in Warsaw Uprising, where in special platoon of channel communication they constituted 60% of the group. After the fiasco of the Warsaw Uprising over 2 thousand women were taken captive by Germans, which was a European sensation, and the death toll among AK female-soldiers is estimated as 5 thousand victims. The role of women in the Home Army (AK) is also emphasized by the number of honours awarded to women: ‘[...] in area III (Lviv) women received 20% of the Cross of Valor decorations, 40% of the Silver Cross of Merit with Swords, and 50% of the Bronze Cross of Merit with Swords’⁵.

The most significant mark of women’s participation in battle during World War II is connected with the existence of the Emilia Plate 1st Independent Women’s Battalion (1. Samodzielny Batalion Kobiety im. Emilii Plater). The

³ *Wojskowa służba kobiet a restrukturyzacja Sił Zbrojnych*, Rada ds. Kobiet w Siłach Zbrojnych, Agencja Wydawnicza ULMAK, Warsaw 2002, pp. 22- 23.

⁴ *Odślonięcie posągu gen. bryg. Marii Wittek*, source: <http://www.mon.gov.pl/pl/arttykul/2900> [date of access: 24.07.2012].

⁵ A. Jędro, *Zmiana pozycji zawodowej kobiet w służbie wojskowej w ciągu lat* [in:] *Kobiety w grupach...*, op. cit., p. 187.

members of this battalion, colloquially called 'Platerówki', became the symbol of the fight of the Polish women for the liberation of the country from under of the Nazi occupation, although they constituted of only a percentage of all Polish women actively participating in the war. After the end of the War, the Emilia Plater Battalion was dissolved by the order of the Commander-in-chief, Marshal Michał Rola-Żymierski. Some of the women were settled in a military village in Zaplin Dolne, which was later officially given an administrative name Platerówka⁶.

After the War, the issue of women's military service did not exist in the whole of the Polish Army. The same situation was observed in the whole world. The change of policy concerning the engagement of women in the armed forces appeared as late as in the 1970s, accompanied by the wave of feminism flooding the present world. It started in the US Army. Earlier the conscription of women was caused mainly by the need to replace men on secondary posts so that they could take part directly in fighting. In the 1970s there was a shift in the perception of women and their role in society and in family as well as a change of consciousness of women themselves evoked by claims concerning new professional perspectives for women put forward by feminist movements. It resulted in a number of bills concerning the equality of sexes and a ban of sexual discrimination. Moreover, the reason why women were called into the Army was to relieve military service from an excessive physical exertion as well as take advantage of the positive influence of women's military service on the image and position of the Army in society⁷. Furthermore, a very important determinant was the demographic problem, and more precisely the increasing demographic decline, which forced many countries to accept women in military positions.

The predisposition of women can also be significant here. According to A. Dębska, in face of the new challenges that organizations had to meet after 1989, male personnel turned out to be not very competitive due to the following factors:

- lower demand for physical strength on the present battle field;
- demand for high level of education;
- new social competences such as emotional intelligence, communication abilities;
- openness to changes and ability to adapt to new conditions;
- 'inner-direction' and self-development.

The constant entrance of women into the army and the resulting new problems concerning their integration in the army was the incentive to create in 1976 a special body – NATO Committee on Women in the NATO Forces (Komitet ds. Służby Wojskowej Kobiet w Siłach Zbrojnych NATO).

In Poland a new chapter started in 1988 when among the female students of medical universities there was recruitment for service in the medical corps to the posts of doctors, pharmacists and psychologists. The formal status of women was

⁶ Ibidem, pp. 181- 189.

⁷ A Skrabacz, *Wojskowa służba kobiet w wybranych armiach świata*, AON, Warsaw 2000, p. 10.

the same as the status of men, but one cannot say the same about the informal status. The different way in how women were perceived and treated was influenced by a number of factors such as: lack of an exclusively military education, lack of possibility to refer to experiences common for the rest of the military fraternity, and most of all, the whole set of conditions related to the differences in gender⁸.

The situation started to change for the better since the moment when women received the possibility to apply for places at military universities. It was caused by the turning point in the history of the Third Republic of Poland namely the Polish accession to NATO on 12th March 1999, and consequently the accepting of the military standards applicable in the Alliance, including the increase of women's participation in the Armed Forces.

Women's military participation in the present Army

At the first stage of the deliberation it is worth thinking about the way the participation of women in military service changed during the time span of 20 years, thus from 1989 until 2012. The analysis of statistical data allows one to conclude that at this period of time the percentage increased from 0,1%⁹ at the beginning of the '90s to the 2,31%¹⁰ observed presently.

Since the beginning of the 21st century the participation of women has systematically increased. After 1999 they received the right to serve in all personnel corps, not only in medical and musical ones, as was possible earlier. Despite the increasing tendency, the percentage of women serving in the army managed to exceed 1% by the end of 2007. The professional personnel at that time amounted to 78 555 people, thus the women's share was 1,22%. A year earlier, the percentage was 0,99% of all soldiers¹¹.

At the end of 2001, thus just after the moment when women were accepted in military schools, their participation was insignificant, amounting to 0,36%, which constituted 303 women, while professional personnel were more numerous at that time with 83 817 soldiers. As a result of reforms carried out in the army the number of personnel was reduced, concerning both sexes, thus the general number of soldiers was also lower¹².

⁸ A. Jędro, op. cit., p. 189.

⁹ *Udział kobiet w systemie bezpieczeństwa państwa*, Materials from a Conference organized under the patronage of Minister Izabela Jaruga-Nowacka, CBW, Warsaw 2003, p.54.

¹⁰ *Rada ds. Kobiet w SZ RP – statystyki: stan na 01.07.2012 r.*, source: <http://www.mon.gov.pl/pl/strona/365> [date of access: 24.07.2012].

¹¹ Data provided by the Personnel Department of the Ministry of National Defence, quoted after: B. Drapikowska, *Kulturowy model kobiecości a funkcjonowanie kobiet w wojsku*, Uniwersytet Łódzki, Łódź 2010 [Master's Thesis], p. 20.

¹² *Ibidem*, p. 21.

In years 2003–2006 one could observe a change of half a percent, i.e. from 0,52% in 2003 to 0,99% in 2006. A year later there were 962 women in the Polish Army. The most numerous was, as usual, the officers corps with 550 women, which constituted over half of the women serving in the army overall. Moreover, there were 256 female students in military schools as candidates for professional soldiers out of whom there were 209 candidates for officers and 47 for noncommissioned officers¹³.

At the end of 2008 there were 1153 women in the Polish Army, which constituted 1,43% of the total number of soldiers. Most of them belonged to the corps of professional soldiers, where over half of the women served i.e. 638 persons. In the corps of professional NCOs the number of women reached 424 persons, while in the corps of private professionals, the number of women was 91. Most women served in the Land Forces, more than twice as much as in the next most populated (with women) force i.e. the Air Force and over four times more than in the Navy¹⁴.

In 2009 there were 1502 women in the army, with 779 in the officer's corps and 583 in the noncommissioned officers corps; while among privates there were 140 women and additionally 330 candidates for female soldiers studying in military schools. The percentage of women's participation amounted at that time to 1,92%¹⁵.

If we shift our deliberation to the years 2010/2011, we can notice that the biggest female representation was in the Land Forces (794), followed by the Air Force (347), and the smallest number served in the Navy (168). The corps with the highest number of women was the officer's corps with 869 women while the corps of NCOs had 660 women, and finally private corps 222¹⁶.

The personnel representation on 1st July 2012 shows that still the largest as far as women are concerned was the officer's corps (912 women). A smaller one is NCOs corps (670). Still the smallest representation is in the privates corps with 551 women¹⁷.

However, it should be noticed that the index was doubled in comparison to the previous year. This tendency stems from the reorganization process in the Polish Army which was commenced in 2007; namely, earlier the corps of private professionals was not very accessible for women because the personnel constituted mainly of men after compulsory conscription service or basic military service. After the creation of the National Reserve Forces women have a better possibility to serve as professional privates, which is reflected in the present statistical data.

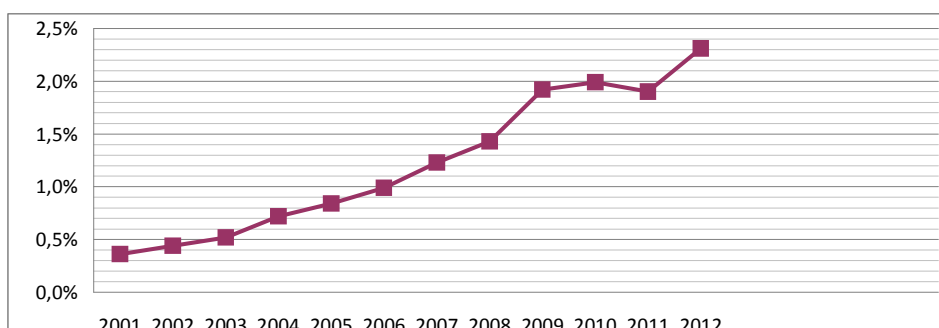
¹³ Ibidem.

¹⁴ Ibidem.

¹⁵ B. Szubińska, *Wojskowa Służba Kobiet*, source: <http://www.wojsko-polskie.pl/articles/view/14332/Wojskowa%20s%C5%82u%C5%BCba%20kobiet.html> [date of access: 24.07.2012].

¹⁶ *Wojskowa Służba Kobiet*, source: <http://www.wojsko-polskie.pl/wazne-dla-zolnierzy/abc-sluzby/16424,wojskowa-sluzba-kobiet.html> [date of access: 24.07.2012].

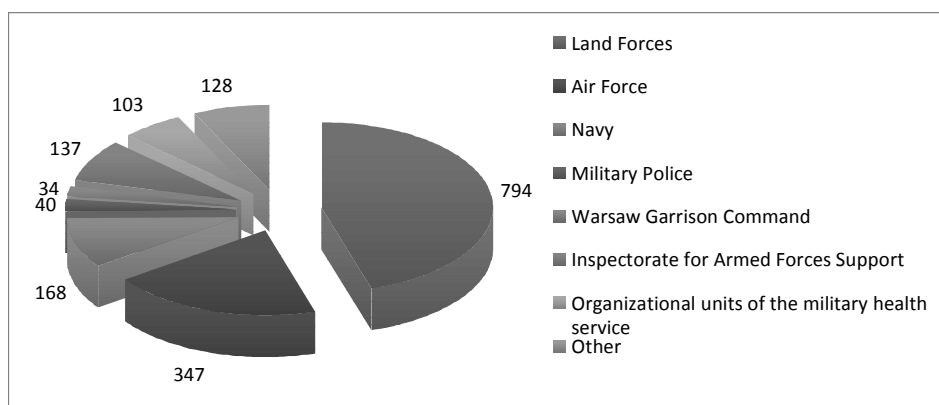
¹⁷ *Rada ds. Kobiet w SZ RP...*, op. cit.



Source: own elaboration.

Graph 1. Percentage participation of women in the personnel of the Armed Forces in years 2001–2012

Moreover, it should be stated that many women are still in reserve or at the military's disposal as well as in the organizational units of the Ministry of National Defence, which might strengthen the stereotype that women in the Army are mostly associated with administrative issues, in other words 'Gala uniform, coffee and documents'. The participation of women in other entities is presented in graph 2.



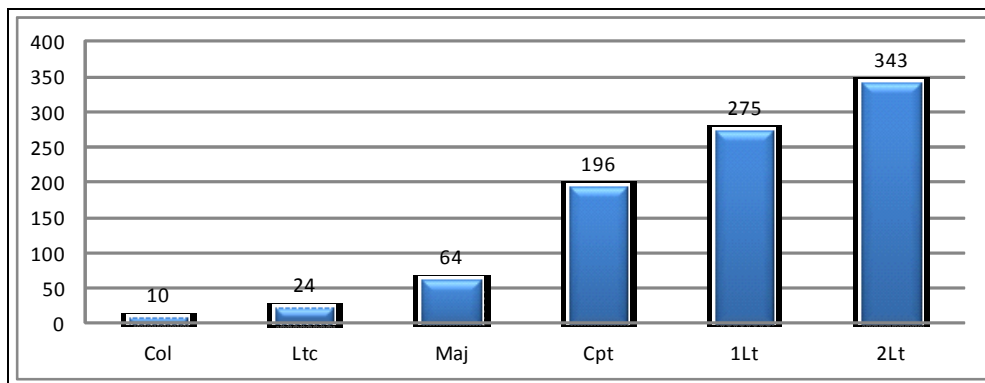
Source: own elaboration on the basis of *Wojskowa Służba Kobiet*, <http://www.wojsko-polskie.pl/wazne-dla-zolnierzy/abc-sluzby/16424,wojskowa-sluzba-kobiet.html> [date of access: 24.07.2012].

Graph 2. The number of women-soldier in the Polish Army according to personnel pillars (data on 1st January 2012)

Taking into consideration the state of professional female soldiers, on the basis of the corps they serve in, the medical corps is still the most numerous, where 432 women serve. On the second position there is the logistics corps where the number of women reaches a total of 253, on the third position is the signals and IT corps having 236 women in its 'manpower potential'. On the next position as far as the number of women is concerned there is the overall-military corps (181). The other

corps are much less numerous. The least representative corps include: financial (18), rocket and artillery corps (27), radio-technical corps (27), and Military Police (29), as well as intelligence and electronic warfare (39)¹⁸.

Following the criteria of military ranks given to women in the professional officer's corps, the analysis reveals that most women have the rank of Second Lieutenant (343) and First Lieutenant (275). The highest military rank possessed by a woman is the rank of Colonel which has been given to 10 women, while 24 female officers perform their duties at the rank of Lieutenant Colonel. More precise data concerning the issue is presented in the graph below.



Source: own elaboration on the basis of *Rada ds. Kobiet w SZ RP...*, op. cit.

**Graph 3. The state of women-soldiers personnel according to military ranks
(data valid on 1st July 2012)**

Undoubtedly, one can observe a direct proportional interdependence between the military rank and the group of women representing the rank i.e. the higher the rank the fewer women serve in the rank. It is absolutely understandable, since taking into consideration the short history of military participation of women, a soldier is not able to reach such a high position in the military hierarchy.

Carrying out the analysis concerning the age of women, it turns out that in the army most women are 25 to 29 years old. There are also relatively many women younger than 25 years old, as well as those who are between 30 and 34 years old. In 2008 the most common age of female soldiers was 27 years old (180) and 28 (106). In 2010 - 40% of the whole female personnel contingent were not older than 30-years-old. While only 1,3% of women, meaning 24 people, reached the age of 50-years-old and more. The situation remained unchanged until today.

A vital issue from a statistical point of view is the participation of women in the performance of command functions. In 2008 there were 256 such women, which constituted 1,62% of all commanders. The post of unit commander, at the rank of Colonel, was performed by only one woman in the army, which constituted

¹⁸ *Rada ds. Kobiet w SZ RP...*, op. cit.

1,2% of all people at this post. Women constituted 5% of all platoon commanders, which in absolute value was 152 people. At that time 35 women were squad leaders which constituted 0,9% of people performing the function. However, it is worth emphasizing the fact that the data was doubled by the end of 2010, because out of 1751 women serving at that time, over 1/3, i.e. 482 women served in command posts (300 officer ones, 182 noncommissioned officer ones), while the most frequent post was the platoon commander (261)¹⁹.

In 2012 the number of female commanders increased to the absolute value of 458. Still women represent most frequently the post of platoon commander – 229 women. The function of a company commander (or equal) is performed by no more than 7 women²⁰.

Preparing statistical data concerning women's military service, one should not forget about the candidate service. At the end of 2008 military schools provided education to 511 graduates. Most popular among women were military academies i.e. Military Academy of Land Forces (WSOWL) as well as Polish Air Force Academy (WSOSP), whose female graduates constituted almost half of all female students of military schools. Almost every fifth female candidate for military service was educated in military academies, i.e. the Polish Naval Academy (AMW) and the Military University of Technology (WAT). On the other hand, over 1/3 of female graduates received education in schools for non-commissioned officers, presently there are eight such schools (Wrocław, Poznań, Toruń, Zegrze, Dęblin, Koszalin, Ustka and Łódź).

In 2010, out of 4500 candidates applying to military schools, in four schools of this type, 7% of all candidates were women, which in absolute values gives 319 people. More precise data concerning candidate service is presented in Table 1.

Table 1

Number of candidates from the graduates of secondary schools for the I year of military full-time studies

School	Limit of places	Number of candidates	Including women	Taking exams	Including women	%	Number of students accepted	Including women	%
WAT	169	1707	290	902	142	15,7	169	21	12,4
AMW	40	527	106	212	43	20,3	40	8	20,0
WSOWL	55	1789	86	798	86	10,8	55	4	7,2
WSOSP	45	550	48	237	48	20,2	45	11	24,0
In general	309	4573	530	2149	319	14,8	309	44	14,0

Source: Rada ds. Kobiet w SZ RP..., op. cit.

¹⁹ *Wojskowa Służba Kobiet*, source: <http://www.wojsko-polskie.pl/wazne-dla-zolnierzy/abc-sluzby/16424,wojskowa-sluzba-kobiet.html> [date of access: 24.07.2012].

²⁰ *Rada ds. Kobiet w SZ RP...*, op. cit.

Data valid on 1 July 2012 indicates that military schools of different type provide education to 377 female candidates for soldiers. Most female students are in medical universities (106), slightly fewer women study at WAT (95). The rest of the women study at WSOWL in Wrocław (68); WSOSP in Dęblin (58); and at AMW (50)²¹.

Women in military involvement abroad

The quantitative analysis leads to a conclusion that the number of women taking part in such missions amounts on average to 50 people yearly. This constitutes 1% in relation to the number of male soldiers²².

At the beginning women mainly served in medical support of the Polish Military Contingent (PMC). It was connected with the needs of the Armed Forces and the fact that only posts with medical specialty were available for female soldiers. During a mission they received different posts. A female officer could be responsible for medical groups, lead laboratories or be the commander of a medical group. Those who served in the rank of warrant officers held the posts of section commanders and as female NCOs they were paramedics or nurses.

The situation changed after 2003, when the female graduates of military schools representing different corps entered the army. The corps included inter alia: overall-military, radio-technical, rocket and artillery, logistics, defence against weapon of mass destruction, military police, ICT, air force and navy. Due to that, the scope of posts which could be assigned to women was extended, since women had other qualifications useful during a mission. The most popular include: platoon commander, deputy of company commander, telegraphist – telephonist, liaison officer, consultant for psycho-prophylaxis, psychologist, legal advisors, head of office.

In accordance with the ‘oldest’ data concerning the participation of women in peace and stabilization operations taken from a report entitled *Służba wojskowa kobiet w SZ RP – 2006 r.*, (*Women’s military service in the Polish Armed Forces – 2006*) the percentage of women sharing the difficulties of the soldiers’ profession outside the borders of our country until 2004 looked as following in each particular PMC²³:

- PMC KFOR – 8 women, which constituted 0,66% of the whole contingent;
- PMC EUFOR/SFOR – 1 woman, which constituted 0,1% of the contingent;
- PMC UNIFIL – 16 women, which constituted 0,8% of the contingent;
- PMC UNDOF – 17 women, which constituted 0,6% of the whole contingent;

²¹ Rada ds. Kobiet w SZ RP..., op. cit.

²² *Służba kobiet w Siłach Zbrojnych RP – raport za 2006 rok*, source: <http://www.mon.gov.pl/pl/artykul/3250> [date of access: 24.07.2012].

²³ Ibidem.

- PMC Iraq – 31 women, which constituted 0,04% of the contingent;
- PMC Afghanistan – 2 women.

The participation of women in overseas missions in 2007 amounted to 38 people and in particular contingents it was as follows:

- KFOR – 2 women;
- EUFOR – 2 women;
- UNIFIL – 2 women;
- UNDOF – 5 women;
- IRAQ – 21 women;
- AFGHANISTAN – 6 women²⁴.

Moving the point on the time axis to the year 2011, one can calculate that 111 women were deployed to serve abroad. Most of them (97) were appointed to serve in the 7th and 8th rotation of PMC Afghanistan (57 officers and 40 non-commissioned officers). While in PMC KFOR in the 12th and 13th rotation there were 9 women (5 officers and 4 NCOs). The remaining 5 women (2 officers and 3 NCOs) served in Bosnia, supporting the composition of the 12th rotation.

A year later – in 2012 – the number of women sent on missions increased and reached the total number of 140 women. Most of the women served in PMC Afghanistan (120). The rest supported the personnel of PMC KFOR (18) as well as PMC EUFOR (2)²⁵.

The data indicates that the participation of women in peace and stabilization missions is marginal, however one can notice the tendency to broaden the scope of posts held by women during missions, in accordance with the experience gained during military service.

Institutions responsible for the formation of contingents refer to different reasons for such a phenomenon. Firstly, it is the lack of candidates with the required qualifications, necessary for the Armed Forces in the region of a mission. Secondly, it is the lack of adequate sanitation – the necessity to provide separate toilets and bathrooms. Another reason is also the dangerous character of most of the missions and the intention to protect women against ‘extreme life conditions’. Due to the realization of the UN convention 1325 concerning the guarantee of women’s participation in missions supporting peace and security, there are no obstacles during the candidates’ recruitment process for women interested in military contingents²⁶.

However, numerous stereotypes connected with the gender which are present in societies, stating e.g. that women are not aggressive enough to be as effective in battle as men, can be a barrier. Such a stand is also accepted by a famous American anthropologist M. Ghiglieri, which he presented in his book *The dark side of man*. In

²⁴ Data presented by Col Beata Laszczak during conference entitled *Służba Kobiet w formacjach mundurowych w XXI w.*, organized by the Central Library on 5 March 2008.

²⁵ *Rada ds. Kobiet w SZ RP...*, op. cit.

²⁶ *Służba wojskowa kobiet...*, op. cit.

his opinion aggression is programmed in our DNA, but there are important differences between men and women, namely that only the male part of mankind is equipped with the tendency to aggressive behaviour which is demonstrated by the use of violence.²⁷ It is not true, however, that women do not manifest aggressive behaviour. Females more often get engaged into verbal aggression, rather than physical as is in case of males. This is how it happens except in one area in which women are unbeatable, and this is the protection of their own children. The level of aggressiveness in this situation is extremely high and can appear in all possible variations²⁸.

Nevertheless, it turns out that the Armed Forces get engaged in peace missions during which the personal abilities stereotypically assigned to women are more useful than the tendency to aggression. *Women are good at combining military training with a conciliatory attitude, looking for compromise solutions through negotiations, ability to show empathy to the victims of violence, and their presence reduces tension, while the presence of men in uniforms is a challenge for other men, which can lead to an escalation of a conflict*²⁹.

Women participating in missions are treated with kindness by their colleagues, which can be proved by the words of the women themselves:

– ‘as far as the mission is concerned I have experienced great kindness from my soldier-colleagues, they were really helpful. I went on the mission with my fiancé at that time and now my husband, so it was much easier for me having him at my side, I did not miss my country and family so much’³⁰.

Moreover, it is worth mentioning that the equipment provided to women taking part in missions is the same as for men, i.e. shaver and men’s underwear. In the article *W czółenkach po poligonie (On the training area in high heel shoes)* we can read: ‘Men’s underwear and shaver – this is the part of a set given to Polish female soldiers leaving for Iraq. Luckily men do not receive women accessories for intimate hygiene’³¹.

Conclusion

For many years women faced barriers which stopped them from participating in military service. The obstacles were of a formal-legal character, that is a lack of proper law regulations, but they were also connected with numerous stereotypes

²⁷ M. Ghiglieri, *Ciemna strona człowieka (The dark side of man)*, Wydawnictwo CiS, Wydawnictwo WAB, Warszawa 2001, quoted after: M. Adamkiewicz, *Wymiary śmierci bitewnej* [in:] *Edukacja Humanistyczna w Wojsku*, Dom Wojska Polskiego, No. 2/2005, pp. 51-58.

²⁸ A. Skrabacz, *Wojskowa służba kobiet...*, op. cit., p. 17.

²⁹ A. Paczeński, *Równość płci w siłach zbrojnych krajów europejskich*, [in:] *Kobiety w grupach dyspozycyjnych...*, op. cit., s. 334.

³⁰ B. Drapikowska, *Służba wojskowa kobiet w Wojskach Lądowych Sił Zbrojnych RP. Analiza socjologiczna*, Uniwersytet Łódzki, Łódź 2008, p. 41.

³¹ *W czółenkach po poligonie*, source: <http://wiadomosci.onet.pl/1346526,2677,kioskart.html> [date of access: 24.07.2012].

functioning in the society, according to which women were seen as weak and not aggressive enough to serve in the army. However, very often it turned out that in extreme danger, when there were not enough men, the army turned to women asking them for support, and the women themselves felt the patriotic duty to protect the country – then, in critical situations no one referred to the issue of physical weakness.

The rule was confirmed in many countries including Poland where during World War I and World War II there were female soldiers. Women's service during World War I was led under Polish Military Organization and Voluntary Legion of Women and it was realized as part of medical service, intelligence and communication³². An analogical situation was observed during World War II, when every tenth soldier of the Home Army (AK) was a woman. At that time they realized their tasks first as part of the Women Military Training Organization, then in Auxiliary Women's Service, and finally in Military Women's Service. However, the most vivid example of female military activity during World War II was the Emilia Plate 1st Independent Women's Battalion.

In spite of the fact that during World War II many women proved their predisposition to military service, it was quickly forgotten and the previous state of being and habits returned, although the then authorities showed sign of approval for women in the army. A good example is D.D. Eisenhower who was convincing the world about the usefulness of women in the military profession; he said that he was against the service of women in the army until the time when he saw it in London, he got convinced then, that they were excellent in different posts [...] at the end of the War even the most stubborn people were convinced, which was expressed by the demand for more numerous women's contingents³³. The memory was refreshed by American feminists who took up arms as the first ones.

The Polish Army appreciated the usefulness of women in regular service only on the verge of 21st century, although nobody is able to decide to what extend it stemmed from breaking the internal stereotypes and to what extend it was caused by the NATO requirement for standardization, which did not allow sexual discrimination concerning access to military education. Accession to NATO forced the country to open the guarded gates of military units for women and enable them to realize careers professionally in uniformed formations. What is more, it forced the gradual adjustment of until that point masculine military premises to the presence of women and their service, as well as soldiers' socialization for a co-educational army.

The participation of women in 2012 reached the value of 2,6% and one can hope for its further increase. Women's presence in the army is the sign of changes in the military area. At the beginning it was a traditional institution, where the

³² *Wojskowa służba kobiet a restrukturyzacja Sił Zbrojnych*, Rada ds. Kobiet w Siłach Zbrojnych, Agencja Wydawnicza ULMAK, Warsaw 2002, pp. 22- 23.

³³ D. Eisenhower, *Krucjata w Europie*, Wydawnictwo Bellona, Warsaw 1998, p. 131.

number of women was very small, and their role was restricted to auxiliary activities. As the time passed, the army started to change its image: resembling modern organizations, or companies copying the model of western corporations. The rules for recruitment as well as shifting the issue of gender on to a secondary position resulted in an increase of the number of women in the army. More and more often women were able to hold posts of high importance for the Armed Forces and women have become more and more visible³⁴.

The process is much more clearly visible in the armies of such countries as the USA, Great Britain, or even the Czech Republic or Albania. In the Polish Army, the process is slower. However, as a result of social changes, it is unavoidable and it can be forecasted that within the next several years it will be also visible in the Polish Army, and the indicators seen so far will systematically increase, both in a quantitative dimension – greater women's participation in the army, as well in qualitative dimension – a better position of women in the military hierarchy as well as command.

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³⁴ Moskos Ch., *Soldiers and Sociology*, United States Army Research Institute for the Behavioral and Social Sciences, 1998, quoted after: Dębska A., Kloczkowski M., *Kobieta w wojsku. Wyzwanie dla wojska i socjologii* [in:] *Socjologiczne aspekty bezpieczeństwa narodowego*, Wydawnictwo Uniwersytetu Wrocławskiego, Wrocław 2001, pp. 78–79.

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COMPARATIVE ANALYSIS OF THE OPERATING MODELS OF THE PRESS AND INTELLIGENCE OFFICERS

Monika LEWIŃSKA, M.A.

Abstract

Information resources possessed by the spokesman of a particular institution are decisive factors determining the competent and effective execution of their activities. The everyday work of a spokesman focuses on the collection and skilful selection of information which is being consecutively processed and disseminated. Firstly, the legal acts regulating the responsibilities of the spokesmen and public information officers (public affairs officers) in the national defence sector (military press officers/representatives) do not include directives related to the problem of the press teams (public affairs teams) gathering the information. Moreover, there is a lack of specific guidelines on methods, techniques and tools that are applicable in this field of interest.

Considering the above mentioned facts, this publication is an attempt to answer the question: can the informational model used by the spokesmen or press officers be integrated with an analogical model of the intelligence officer's or analyst's?

Key words – spokesman, press officer, intelligence officer

Role and Responsibilities of the Press Officer, a Spokesman in Light of the Legal Acts of The Ministry Of National Defence.

A **spokesman (media representative)** of a certain institution or (organizational) entity is a person responsible for contacts with journalists as well as for overall information related to the represented organization which is being transferred to the media. An additional role of a press officer (military spokesman/public affairs officer) is also the contribution and management of the information strategy being used for media relations. What is more, by participation in the process of the execution of this strategy, representing of an institution or unit, influencing the public opinion, transmitting the information on the conducted activities (both positive and problematic), the spokesman also shapes the picture of his parent organization. Above all, to fulfill their obligations professionally, the press officer (PAO) must be extremely well-oriented in all functional aspects of a unit: be familiar with its objectives, goals and operational strategy.

The legal acts regulating the problems of the functioning of the spokesmen in the Polish institutions of government administration, including the Ministry of National Defence and its subordinated military units, were introduced in the first decade of the twenty-first century. A pioneer act in this specialist field of interest was the Parliamentary Statute dated 6th September 2001 regarding access to public information, which defined the term “*public information*” and provided to all national administrative institutions the mandatory, common policy of informing the public about their activities.

As a result of this, the citizens of our country gathered an acceptance for control over the management and spending of the public finances. The most significant consequence was an increased interest of media representatives in the activities of public administration.

Based on this legal act as well as on postulate of transparency in public life the journalists demanded specific and comprehensive answers to addressed questions within a shortest possible timeline. The first few months of the functioning of the statute showed how essential was the area of information for the public and media. It led to the creation of the subsequent directive document - **Decree of the Council of Ministers (Cabinet) on the organization and responsibilities of spokesmen in the units of government administration**, dated 8th January 2002. This act referred to the previously mentioned statute on access to public information as well as applicable articles of the Statute dated 26th January 1984 – the Press Law.

The document regulated the working positions of the press representatives (spokesmen) of the Government of the Republic of Poland, ministers, and governors, as well as remaining central administration offices. In the Decree the obligations of spokesmen were briefly defined: above all a public representation of activities of the governmental administration institutions and organizer of the contacts with the public for those institutions, executed their role by use of mass media. In the scope of responsibility of the spokesmen of ministers and governors the following had been included:

- *Explanation of activities, initiatives and programmes conducted by ministers/governors with special emphasis on issuing statements and public presentation of ministers' and governors' work;*
- *Presenting the ministers' and governors' stance in cases related to the activities of specific institution of government administration;*
- *Commenting on the events on both the international and national scene related to the field of interests of the government or particular minister;*
- *Responding to press publications and contents of the radio and TV as well as to materiel disseminated (published) in other mass media, connected with the activities of a minister or the government and the entities under subordination to the particular institution of government administration. This includes reaction to animadversion (critique) and press intervention.*

– *Transmitting the official statements for publication in the mass media, based on procedures and regulations in separate acts of law.*

It was the Minister of National Defence's Decision N° 298/MON dated 1st August 2006 on the press service in the Ministry of National Defence that was the first document of the sort in the Ministry. The document was subsequently updated in April 2007 (upon Decision N° 171/MON) and in April 2008 (Decision N° 198/MON). This decision was a milestone because it formed the press service of the ministry with the Public Information Department as a supervising authority. It described in detail a structure and method of manning the press (relations) branches and sections in the military units as well as the competences and scope of responsibility of press officers (military spokesmen). Upon this decision it was defined that the majority of positions will be manned by military personnel – officers possessing appropriate abilities, knowledge and specific military rank. Exceptions were made only for some units under the direct supervision of the Minister of National Defence, where civilian employees were accepted for the positions of media representatives (for example – in the military schools). The particular phrase of the document appeared to have a ground breaking value. It was sanctioning press officers (military spokesmen), spokesmen of the military units, as advisors and Subject-Matter-Experts in terms of the informational policy of the ministry¹. Thanks to that notation, a press officer was authorized to contact directly with the unit's commander and decisive personnel as often as it was necessary for the sake of the conducted activities.

Lessons learned from the past few years (of existence) allowed the ministry to amend as well as broaden the scope of the document. These led to the publication of the Minister of National Defence's **Decision N° 203/MON dated 31st May 2011 concerning the press service in the ministry of national defence**. The general principal of the press officers' responsibilities were detailed in Annex 1 to that document:

1) Creation of a positive public image of the military through the active and continuous informing, within given competences, the public opinion through the exploitation of the mass media and internet services, on all matters related to the functioning of a unit or organizational entity;

2) Conduction of current and periodical analysis of the media for the commanders as well as introducing the conclusions and proposals related to the picture of the military in the media;

3) Encouraging (inspiring) the journalists, in conjunction with the Director of the Public Information Department, to inform about the most important projects being realized by an organizational unit (cell/entity);

4) Organizing the briefings and meetings with journalists as well as preparing commanders for participation in those meetings;

¹ Decree of the Council of Ministers (Cabinet) on organization and responsibilities of spokesmen in the units of governmental administration, dated 8th January 2002.

- 5) *Organizing and supporting the journalists' visits to military units;*
- 6) *Answering the journalists' questions;*
- 7) *Reaction to press criticism;*
- 8) *Representing the commanders in the media;*
- 9) *Updating the websites of the Services of Polish Armed Forces internet portals with information related to the represented unit or organizational cell;*
- 10) *Preparing informational materiel related to the field trainings and live exercises;*
- 11) *Organization, based on information gathered from the supreme press cell, of an internal information system consisting of informing the commanders, soldiers and civilian employees of a particular organizational unit (cell) of the defence sector which are mentioned in § 2 p. 7-8 of the Regulations, on all activities realized within the ministry, Armed Forces Services and, above all, on decisions imposing an influence on the conditions of work and service made by a directing staff;*
- 12) *Development of the photographic and audio-visual database of the defence sector's organizational unit (cell), day-to-day transfer of such data to the Public Information Department in order to make it available to the requesting organizational units (cells) of the ministry;*
- 13) *Conducting educational activities for the military personnel and civilian employees of a respective organizational unit (cell), mentioned in § 2 p. 7-8 of the Regulations, in the scope of contact with media representatives, especially for the event of participation in the military exercises. These activities are to be consulted with the Director of the Public Information Department and executed in accordance with his directives and guidance;*
- 14) *Developing, based on press services' human resources, the press information centres during military exercises, including international ones.*
- 15) *Whenever possible, issuing informational bulletins for dissemination in local communities;*
- 16) *Cooperation (preparation of information) with the Military Institute of Publishing in Warsaw;*
- 17) *Participation in the crisis-response communication.*

The above mentioned content of the tasks and responsibilities does not contain a very important element of a spokesman' work which is a permanent (continuous) gathering, collection and processing of information. Legislators assumed as an imperative that a press officer, spokesman, is well-oriented in all current matters related to the unit and the national defence sector. Additionally, the spokesperson conveniently operates in a broader political and social content. However, the reality is usually less optimistic and a press officer must constantly verify the obtained information to fulfil his or her obligations. What is more, this is to be conducted at a variety of levels: firstly, the data about a parent unit where the person is employed, then facts related to the supervising institutions (Ministry Of National Defence, central administration), information about the partnering or equivalent

(equivalent) units and organizations and, finally, the gathering of general knowledge, broad and touching the political spheres and even social subjects. Only in such a complex “informational content” can a press officer or spokesman reliably perform his or her duties and shape the media relations and desired picture of the (represented) unit (organization).

Open Sources of Information

At first, to properly define the open sources of information, it is to be related to the military intelligence area and its classification and terminology.

Intelligence, in the Polish Armed Forces, is defined as the “knowledge about the activities and capabilities of the current or potential adversary necessary to conduct combat operations and knowledge about the area of operations, its weather and climate conditions. Consequently, the intelligence activities are the “combined activities consisting of collecting, processing and disseminating data about an adversary and area of operations which are essential for preparations and the conduction of combat operations or other forms of military operations”. Intelligence can be conducted in order to support the decision making process. Such intelligence activities are defined as “situational intelligence”. Additionally, intelligence can be provided to support the kinetic engagement and these are called “target reconnaissance” also known as “targeting”. What is characteristic is the terminology concerning the facts, information and reconnaissance data, applied in military intelligence. Facts are known as so-called entry data, which during the processing (e.g. integration or change of format) can become information. Subsequently, the latter are defined as a “*description of the occurring state in a given point in time and space; by its nature the information is unequivocal (laconic) and can relate to the past of current events*”. Information which is a subject of further elaboration (eg. in order to form conclusions or find comparisons/similarities) becomes intelligence data. Such data is a very important product of work of officers and intelligence analysts and can be exploited by the commander for assessment of the situation, decision making and, eventually, in obtaining the upper hand (advantage) over the enemy.

Facts and information that can later be exploited as sources of intelligence data are collected through the so called “sources” or “institutions (agencies)”. The “Source” is a person or item the information can be obtained from. For military intelligence the sources can be, for example, the surveillance sensors of the Unmanned Aerial Vehicle or communication and electronic systems which will collect signals of existing information. On the other hand, the institutions (agencies) are organizations aimed to gather, collect and process the information. This last element is a factor that distinguishes the agencies from sources which do not process facts and information in an independent manner but their sole influence is only a change of information format.

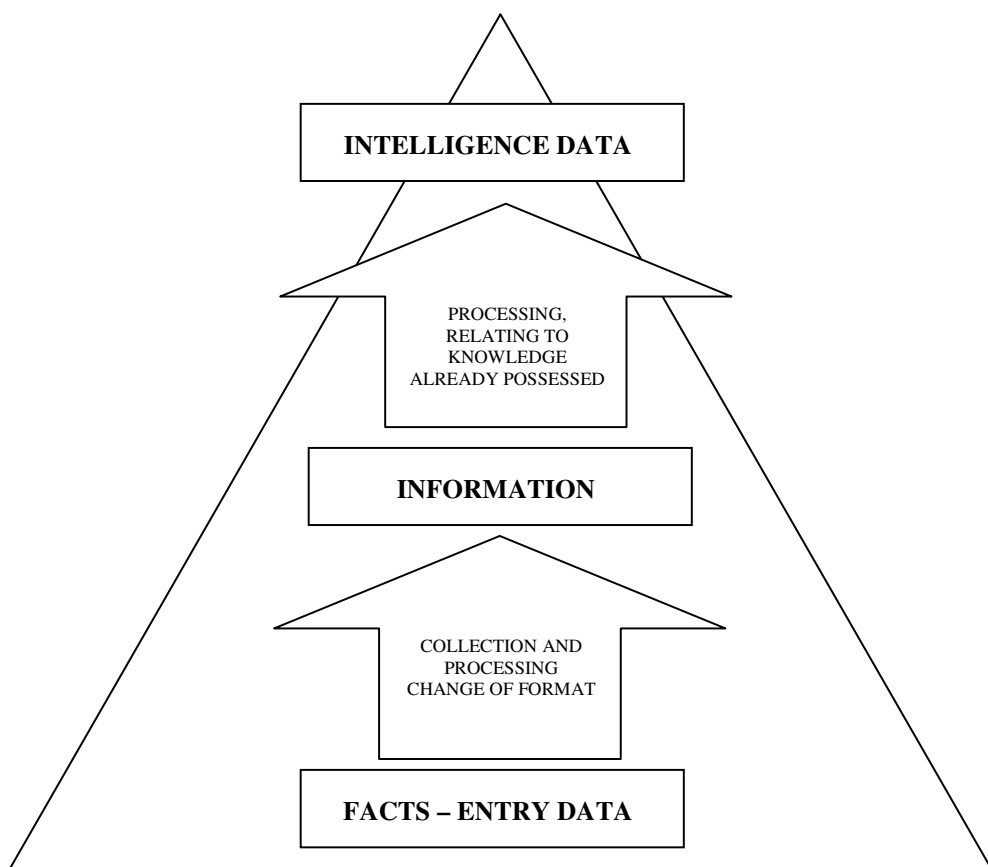


Fig. 1. Relations between facts, information and intelligence data²

Sources and institutions are classified based on the criteria of the capability to direct them and influence their activities. Consequently, the sources are determined as directed sources, not directed sources and random sources. Due to sources' abilities, intelligence operations are divided to the following genres:

1. *Accoustic Intelligence – ACINT*
2. *Human Intelligence – HUMINT*
3. *Imagery Intelligence – IMINT*
4. *Measurement and Signiture Intelligence – MASINT*
5. *Open Source Intelligence – OSINT*
6. *Radar Intelligence – RADINT*
7. *Signal Intelligence – SIGINT*

² Ibidem; str. 8;

The above classification clearly indicates what are the open sources of information. At first, they are not directed sources which means that intelligence specialists do not have a possibility to influence sources' activities and cannot task them. Moreover, these are the open sources of information which form a foundation in one of the known types of intelligence activities – Open Sources Intelligence – OSINT). This type of intelligence is based on collecting of information from the publicly available sources such as radio, TV or the Internet.

The “NATO OSINT Handbook” mentions the division of open sources of information into four (basic) categories:

- Open Source Data (OSD); unclassified information in a raw (pure/unprocessed) initial form including printouts, verbal information, depicted or written summary of certain events (comment), satellite imagery, records from the trade lines, unprocessed photographs and fragments of letters, memoirs, personal diaries, etc.

- Open Source Information (OSIF); the data which were initially processed (e.g. editing correction). These data include information gathered from the books, press relations, auditions, reports, summaries, etc.

- Open Source Intelligence (OSINT); single-sourced intelligence activity consisting of purposely obtained information, in most cases in response to a particular request.

- Validated OSINT; verified, single-sourced, unclassified intelligence materiel with a great deal of credibility that was obtained based on open activity but additionally confirmed (e.g. by multiple TV stations or agent who possess an access also to other sources of information).

The authors of “Analiza informacji” propose other division of open sources of information:

- Media (daily press, weekly and monthly magazines, radio, TV, the Internet).
- Statistics published by governments and official institutions (statistic data, reports, budgetary data, minutes from official hearing before parliamentary commissions, projects of legislations, press conferences, public speeches of politicians and high-profile officials' speeches and orations).

- Academic and professional materiel (results of scientific conferences, symposiums, scientific publications, dissertations and lectures;

- Commercial data (databases and articles available on a commercial basis).

- “Gray literature” (newsletters, working papers, discussion papers, results of studies, market researches, etc.).

The open source information provides a very firm foundation for other reconnaissance and intelligence activities and thanks to systematically collected OSINT information the majority of military activities are possible: from peacekeeping missions to combat operations. Thanks to publicly available information, the specialists can obtain information on the history, culture and heritage of a particular state or community as well as extremely useful data about the infrastructure, transport, climate

conditions, natural deposits and commercial (merchant) prospects, as well as economical, political, diplomatic conditions. OSINT and so-called Information Operations are even being named the “new strength of NATO in the XXI century”. What is more, the three most important tendencies in the functioning of OSINT were named in the same document: 1) the increasing role of the Internet as a tool of dissemination and exchange of unclassified information, 2) the “explosion of information” phenomenon and 3) the degradation (or even complete disappearance) of some previous areas of open sources of information.

Working with Information

From the specialist point of view, both the officer, intelligence analyst and press officer (military spokesman) do similar work with information. As the supporting argument serves the fact that the classic intelligence (analytical) cycle in both cases is structurally identical. Moreover, the principal rules of intelligence formed for analysts can be successfully compared to the spokesman’ work.

Intelligence Cycle

The classical Intelligence Cycle is defined as a combination of the four repeating operational areas which are “*conducted rather parallel that in a prematurely defined sequence*”. The activities sequence is cyclic by nature as the intelligence data are to be constantly updated and verified.

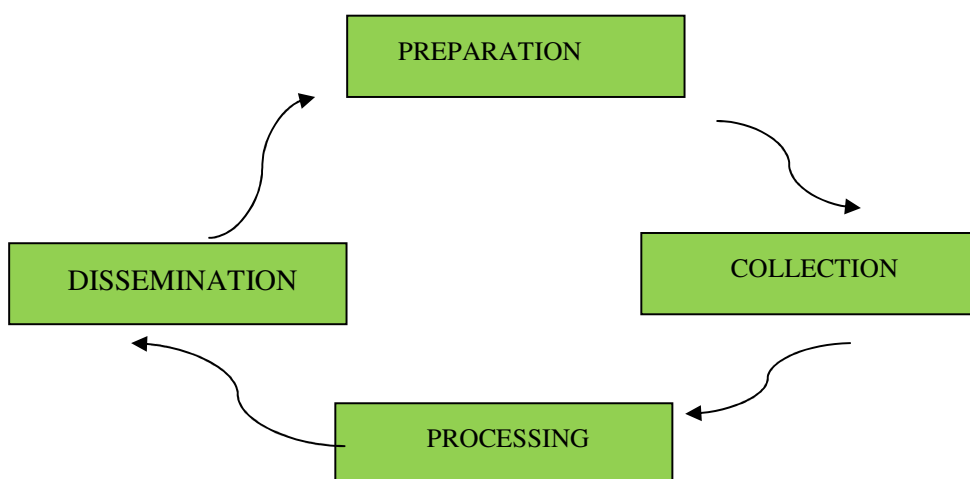
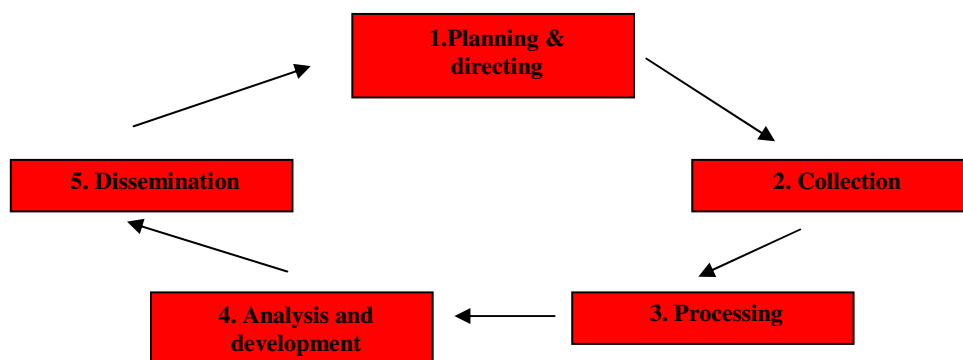


Fig. 2. Classic Intelligence Cycle³

³ Ibidem.

In the newer positions there are more developed Intelligence Cycles, such as the cycle shown below consisting of five operational areas:⁴



Had the mechanisms of the Intelligence Cycle been related to the press officer' (spokesman') activities, we would have the following comparison list:

INTELLIGENCE ANALYST	SPOKESMAN
DIRECTING	
Receives the commanders' priority request for information (e.g. intelligence assessment preparation, development of a report or prognosis. The area of interest and the entry data are provided.	Receives a request for development of the particular media product (e.g. an article, statement). Particular issue is detailed as well as the entry data.
COLLECTION	
Utilizes the execution elements of the intelligence system and all sources available to the staff cells (institutions) in order to obtain and provide information necessary for further processing of the intelligence messages.	Collects information in a well-thought-out manner to develop the analytical product. Exploits the methods of access to the open sources of information and communication channels.
PROCESSING	
Performs, in a manner directed in the procedures, a variety of activities which may be applied simultaneously in the sequence. As a result, the new information content in terms of quality and structure is created and adjusted to the individual or group user requests	Collects the data, assesses them and conducts analysis with the use of a variety of methods of analysis, integrates the data, standardizes the forms of dissemination, interprets the information and creates the final medial product (document).
DISSEMINATING	
In a timely manner expedites the intelligence messages in the respective format with the exploitation of the communications compatible with those used by the requesting users	Provides or makes the medial product (document) available to the persons or authorities possessing the rights to exploit it in the process of informing and, when authorized, disseminating it using a variety communications channels.

⁴ K. Lidel, P. Piasecka, T. Aleksandrowicz, Analiza Informacji, Warszawa 2011r.

Similarities in activities in every stage of the Intelligence Cycle and the cycle of the spokesman's work may be surprising, yet it is relatively simple to explain. All work with information involved will be, in general, simplified to these stages: directing (planning), collecting of information, processing (to include analysis and interpretation) and, finally, disseminating (sharing). The journalists operate in a similar manner to economic analysts or professional researchers. Differences appears in details, for example: 1) the product of analysis (document) is of a different character than the media product because they are constructed based on different and very strict directives; 2) methods of collection and processing of data – those which are done by an intelligence analyst are far more complex than those which are at the spokesman's disposal; 3) the dissemination of the results of the intelligence analyst's and spokesman's work is also different. Below are shown the characteristic of each activity within the Intelligence Cycle and provide a more detailed overview of the similarities and differences occurring in the work of both types of specialists.

Directing⁵

The first stage (phase) of the Intelligence Cycle consists of the *„planning of the process of collecting the information, including the determination of the need of intelligence and the organization of activities such as issuing directives and orders to the units or information collecting agencies as well as the constant monitoring of their effectiveness”*. This initial stage of work remains in direct conjunction with the commanders (supervising staff) for both the intelligence analyst and press officer (spokesman). It is the deciding person, for example the unit's commander or the team chief, whose responsibility it is to determine the Course Of Action (direction) and plan the analyst's and press officer's work. Consequently, (the commander/chief/supervisor) directs the activities based on appearing requests for information. The commander can provide to subordinate personnel certain facts, evidence and arrangements (so called entry data) which are to be subsequently narrowed down. He can also provide guidance related to the further steps of work, for example by indicating the preferred methods of collection of the following information, asking the questions directing subsequent activities or by verifying the facts.

The example illustrating the activities of the press officer (spokesman) which are (done) in conjunction with the Intelligence Cycle, is practically any problematic situation attracting the attention of the media and which is potentially dangerous for the public image of the unit. When, for example, in a unit the problem with

⁵ Directing is defined as an activity deciding about other people's behavior. Directing is a process of freeing the potential of the subordinated staff during execution of projects as well as assigning the desired goals. Therefore the term "Directing the potential of intelligence" is in use.

massive food poisoning of the soldiers and civilian employees (serious abdominal diseases) occurs, there is a real threat that such information will be captured by the media and be negatively interpreted. It can be foreseen that one of the first actions generated by the media will be the attempt to accuse the unit as being guilty of its personnel health problems – specifically the canteen of the unit. Of course, highlighting such a thesis within a very short time will cause a crisis of the unit's image in the public opinion. The correct commander's response to this situation will be an immediate tasking of the press officer to initiate the Intelligence Cycle. In such a case, directing and planning will be focused on the: 1) asking a sequence of detailed questions, 2) determining the time of response preparation; 3) assigning the tasks to the appropriate sources (e.g. organizational cells of concrete personnel connected to this particular situation).

At the stage of direction the target of conducted activities is crucial for both the analyst and press officer (spokesman) whose focus will be narrowed to the verification of the entry data and their supplementation with as detailed information as possible. Of course, the long-term objective of those activities will be the media or analytical product, characterized during the subsequent steps of the Intelligence Cycle.

For the stage of the direction of the analytical cycle, there is an interesting phenomena that this action is not finished and it is protracted for almost as long as the intelligence activity itself. The reason is, that during the process of analysis the new questions emerge (needs for information), which are often more precise and the commander's obligation is a sustained and dynamic response to the changing situation which means – concentrating on sustained direction.

Collection

Collection is certainly one of the most demanding stages of the analytical work, defined in military intelligence as: "exploitation of the sources and units' possibilities by the staff intelligence cells and providing the obtained information to processing units in order to develop the intelligence data". There are two aspects of information collection which are of the greatest priority:

- a) exploitation (utilization) of possibilities of sources or institutions by the respective intelligence cells;
- b) providing, in a timely fashion, the information for further processing into the intelligence data.

In the first aspect, the knowledge of the method of obtaining an access to the sources, informational channels and ability to distinguish, at a very initial stage, the crucial information from those of less importance, significantly increases the intelligence analyst's and spokesperson's chances to take appropriate actions. Of course, an intelligence officer/analyst possesses the greater spectrum of

possibilities because the appropriate acts of law or directives allows him to exploit both OSINT sources as well as remaining sorts of intelligence. Moreover, an intelligence officers works alone only occasionally – usually they are within a team and in cooperation with the respective intelligence cells/organizations.

On the contrary, a press officer (military spokesman) most frequently works on his own or with a very small team (2-3 people). He must, therefore, possess a thorough knowledge of directives (regulations) to keep from violating his authority. Narrowing down his operations to open sources of information, he focuses mostly on the media, publications of institutions and administration offices, Subject-Matter-Expert's (e.g. academic materials) and commercial materiel as well as on so-called "gray literature".

Traditional media (the press, radio, TV) are a fundamental and very significant source of information. A daily media review is an obligation of every spokesperson to whom new technologies are nowadays a great support. Thanks to them, the media monitoring is reduced to several minutes of a searching process through the available databases with pre-defined "passwords" or "keywords". The results of such electronic monitoring allows to immediately unveil if the particular media station or text mentioned a concrete topic. If so, what was its context, what time of the day, etc. Monitoring of the media is an absolute foundation of the press officer's work as well as a perfect initiation of subsequent information processing (analysis and interpretation).

The Internet is of priceless value as it contains not only the official websites of the significant media information services but also the majority of less official, yet very valuable content. These are the social services also know as "social media" such as blogs and internet forums. These are an extremely important source of information about current trends, tendencies and relationships. It is worth underlining, that with today's enormous interactivity offered by the Internet, every user can, at least for a moment, become a journalist. This means that the information spreads on the Internet far faster that with the traditional media. Officially published materiel (official publications) of the offices or institutions are the mandatory material for the press officer (spokesman). The data contained in these publications are very often thorough and detailed, written with specified and professional terminology, which makes them difficult to understand, however, their credibility is very high. **The Subject-Matter of Experts and professional materials** (publications) and, sometimes, commercial materials possess similar features. It is certainly not an easy task to collect the information from all of the above mentioned sources on one's own, not to mention gain their correct interpretation. In the case of the defence sector, the Public Information Department suggests that the press officers should develop and systematically update their lists of experts (catalogues), which in fact are the lists of contacts (persons known to have useful knowledge in various areas), to use as auxiliary assets when necessary. This is an efficient method of providing a sound benefit. The commercial data and

so-called “gray literature” are being exploited to supplement all remaining sources of information as widely as the units’ financial situation allows. The “NATO OSINT Handbook” mentions also that within the OSINT category there is unclassified source intelligence activity focusing on the directed collection of information, most often in answer to a particular request. It is also a very often used method of collecting the information.

The following aspect is underlined in the second phase of the Intelligence Cycle: that is “*providing, in a timely fashion, the information for subsequent processing into intelligence data*” is a priority also in the spokesman’ activities. Information loses, as the time passes by, their value very quickly. This increases parallel to the development of the media and the Internet, where within minutes the particular information can be questioned or even contradicted. Both the intelligence analyst and spokesman will pursue the maximum shortening of time necessary to collect the information from the sources and disseminate it for processing.

Using the previous example of a hypothetical crisis situation in a unit (massive food poisoning of soldiers and civilian employees), it can be stated that the collection of information will be mostly based on single source intelligence activity, which is the interrogation of the workers and soldiers in order to discover the reason of disease. At the same time, the press officer/spokesman should collect all available material which may be useful in questioning the existing thesis, for example the menu, list of food products available at the dining facility during that particular day as well as certificates, evidence, documents confirming the quality of products used for consumption, opinions of the medical doctors, canteen workers, food providers (contractors), and so forth. What is an essential activity is a constant monitoring of the media within the scope of the unit’s situation. It may happen, that before the information will be collected by the press officer and the common line of informing policy will be agreed with the unit’s commander, the media can be already providing the news with information that they have received as well as forming certain thesis. Therefore, the importance of a timely manner of providing and processing the information is to be especially underlined.

Processing

Processing is defined as „*part of the Intelligence Cycle, in which the collected information are transferred into intelligence data (information is assessed and supplemented with comments/remarks)*”. The publication mentions also the phases of information processing: 1) collation, 2) assessment of the source’s credibility, 3) analysis and integration and 4) entry data interpretation. The authors of “Analiza Informacji” narrow the processing of information to rather the “*change of format of the informational content into a integrated (package), independent from the specifics of the information's origin and useful for analysing personnel*” (translation and transcription changes, conversion of the picture and audio to texts,

indexing of the data, etc.). With this definition, the analysis and development of information is being derived from the Intelligence Cycle.

Within military intelligence, during the first stage (phase) of processing – **collation**, the formal issues are being emphasized. These include, but are not limited to, the procedures for receiving and collecting the incoming intelligence reports (e.g. assigning identification numbers and registration of the subsequent incoming information, placing each piece of information to its respective category or group, etc.). This attention paid during the employment of such precise procedures is of paramount importance in operations conducted by multiple intelligence teams and cells in order to avoid internal incoherence and errors. A press officer, spokesman, as previously mentioned, usually conducts their work independently or within a small team, additionally under an enormous time pressure. As a result of this, the phase of the practical collation of information is short and less formal (de-formalized). However, the objective of this phase for both the intelligence analyst and the press officer (spokesman) will be identical: the arrangement of the current sequence of events.

The second phase of the information processing is the assessment of the sources' and information's reliability (credibility). It is obvious that the OSINT is of such a sort of intelligence which, in comparison to others, possesses the lowest assurance and credibility. Any officer, intelligence analyst, will pursue the validity of the data collected in this way by other “closed” sources of information. The press officer possesses, however, access only to open sources of information and therefore his or her assessments must be conducted in another manner. The thesis could be establish that the more easily accessible the information is, the more endangered is its validity. Consequently, amongst a variety of open sources of information categories, the greater reliability would be represented by offices, institutions and organizations developing the subject-matter of experts and professional materiel, subsequently the companies generating commercial publications and so-called “gray” literature and ending up with the media and broadly disseminated news (messages). On the other hand, within the media there are the programs/stories which can also be assessed under the same angle, for example daily news services such as “Fakty”, “Wiadomości”, “Wydarzenia” and they will possess a significantly higher level of reliability and validity of information than the publicist of entertainment programs. It is worth underlining, that during the assessments of the source's and information's reliability, the specialist's personal experience increases during the present cooperation with the source.

Military intelligence directives strictly indicate that the source's credibility and the information validity cannot be considered jointly: not in all cases will the absolutely credible source provide us with completely reliable information. (On the contrary,) It may happen that an unreliable source of information will provide highly probable information. To mark those two, extremely significant indicators, the standard alphanumeric system is used:

Standard assessment criteria of the source's credibility and information reliability⁶

SOURCE'S CREDIBILITY	INFORMATION RELIABILITY
A. Entirely reliable.	1. Confirmed by the other sources.
B. Usually reliable.	2. Probable.
C. Acceptable reliability.	3. Possible.
D. Not always reliable.	4. Doubtfull.
E. Unreliable.	5. Not probable.
F. Certainty that it cannot be determined.	Probability cannot be validated (confirmed).

After the phase of assessment of a source's and information's validity the subsequent activity is the phase of **information analysis and collation**, which is so crucial for some specialist to be treated as an independent stage of this process. During the analysis *"the information is validated for the purpose of distinguishing the facts essential for further interpretation"*, which means, directly speaking, that the information is assessed during this phase by the specialist as valuable (information of a high quality) and forwarded for further processing or classified as not valuable and dismissed.

Probably, the biggest difficulty at this stage of work is the massive amount of this information. The available data contains both those "valuable" (of a high quality) as well as those completely unnecessary, deceiving and contaminating the process of communication and the collection of the valuable information.

In 2011, the British BBC published the results of scientific research conducted by the University of Southern California⁷. During the experiment, an attempt was made to assess the quantity of information collected by humanity in the period from 1986 to 2007. The final amount was 295 exabytes, which is equivalent to 1.2 trillion standard capacity Hard Disk Drives (HDD's). According to Doctor Martin Hilbert's suggestive example, with such a quantity of the collected data included in books, the entire territory of China could have been covered as many as thirteen times. Considering the national (Polish) reality, the statistics from 2008 can be mentioned, which says that only from the Polish Press Agency about 900 pieces of information are released, which gives about 6300 weekly and a monthly average amount is approximately 25200 pieces of information⁸.

The value of information is a relative term, which is very strictly dependent on demands in a concrete (particular) situation (circumstances). For example, for the journalist selecting tens (dozens) or possibly (even) hundreds of pieces of information daily, making choices of material for the next issue (number)/publication/program, the priority will be the so-called media potential of the information.

⁶ Ibidem, str. 24.

⁷ <http://www.bbc.co.uk/news/technology-12419672>.

⁸ M. Chyliński, S. Russ-Mohl, Dziennikarstwo, Warszawa 2008r.

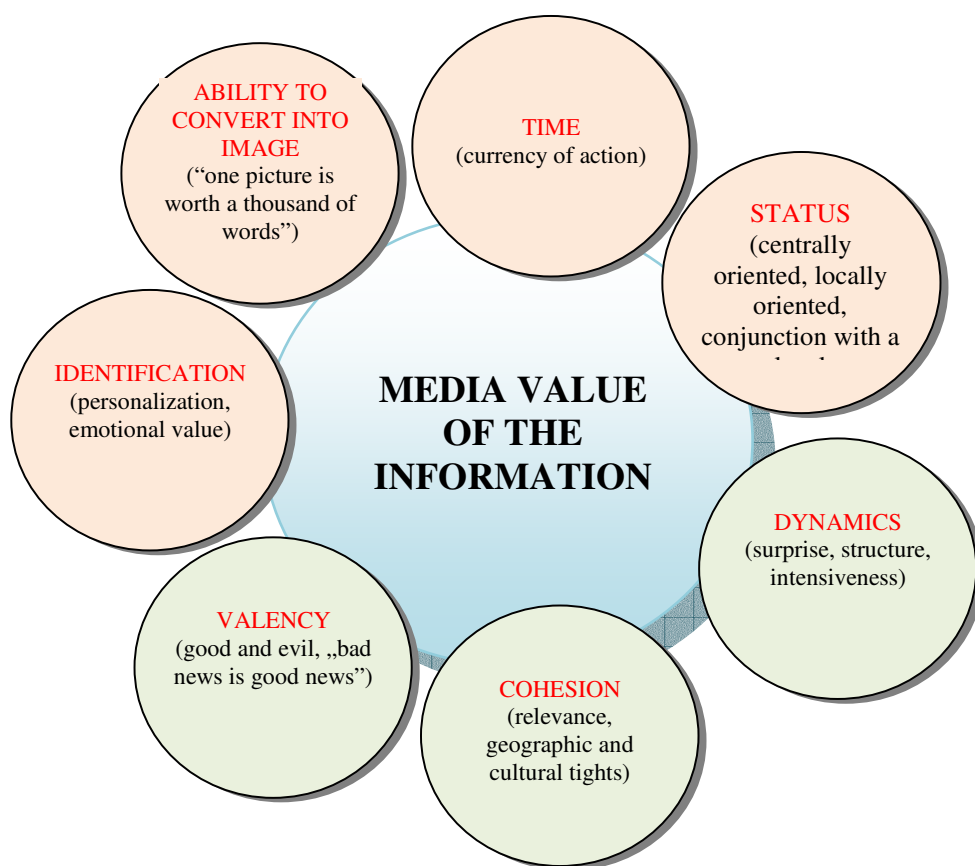


Fig. 3. Factors of the media-valuable information⁹

From the press officer's point of view, both the information possessing the media value as well as any other information with direct or indirect connotation to the parent unit will be valuable information. Contrary to this, for the intelligence analyst both priorities may be of a second-rate or even tertiary category.

The last phase within the processing stage is the interpretation, based on the „*logical assessment of the processed information and comparison of its meaning to the current state of knowledge*”¹⁰. The spectrum of the interpretation of all intelligence data is being considered and compared, often with the employment of a variety of methods and techniques of analysis, which finally leads to concrete conclusions, assessments and prognosis.

When interpreted in a correct manner, the intelligence data ultimately developed is the final product – in case of the intelligence officer it is an analytical

⁹ Czynniki wartościowej medialnie informacji; M. Chyliński, S. Russ-Mohl, Dziennikarstwo, Warszawa 2008.

¹⁰ Rozpoznanie wojskowe; 25; SGWP 1531/2001 (jawne); Warszawa 2001.

product, for example prognosis or a report while in case of the press officer – a media product, for example an official statement or stance on a particular issue. The interpretation of the intelligence data developed by the specialists ought to be exploited by the commander in the assessment of situation, decision making and, finally, to obtain informational supremacy over a potential adversary (opponent).

The processing of the information shown in the previously mentioned example of a crisis situation in the military unit, which was connected with a group food poisoning of soldiers and civilian employees will consist of the following activities:

1) hearing of all information collected to-date about this particular issue in order to establish a sequence of present events and to answer the key questions: “How it would have been possible that the food contamination occurred?” and “Is the thesis about unfresh meals served by the dining facility true?”

2) assessing the credibility (validation) of the collected information and the reliability of the sources of information.

3) analysing the collected data, out of which the most valuable items appears to be, for example: a) certificates confirming that the food products used by the unit’s dining facility were fresh; b) information obtained from workers, saying that all sick soldiers and civilian employees participated in the same off-duty private reception.

4) data interpretation resulting in rejecting the media thesis, suggesting the “guilt” of the unit’s mess, with use of solid arguments.

Dissemination

The last stage of the intelligence cycle – dissemination, is defined as „*the distribution of information or intelligence data to the users in a correct format through appropriate means of communication and in a timely manner*”. According to the Authors of “Analiza informacji”¹¹, this capability is: “the presentation of the product of analysis in an appropriate timeframe, format and by respective centres to those (users) to whom it is necessary”.

Both definitions underline the importance of a timely fashion, the appropriateness of format and of the dissemination process. The time requirement criteria is reasoned by the fact that when the information is provided too late it is usually of minor value, does not contribute significantly and certainly does not support the (process) of achieving supremacy. An appropriate format determines the information’s usefulness. If the data was not understood correctly by the receiving user, due to for example, its incorrect format, then the entire analytical process fails in its objective.

¹¹ Ibidem, str. 26.

Considering the final product of analysis conducted by the intelligence and press officers, the primary difference is classification. An intelligence officer will, in most cases, develop and disseminate classified information while the press officer will produce and distribute only releasable information. Of course, at this stage of data interpretation, their (press officer) responsibility is to take into consideration so called “sensitive information” to include the personal data or information that could have been exploited against one’s personal situation or endanger the public reputation of the parent unit. Usually, prior to dissemination, the content is consulted with the commander or assigned persons/authorities, in order to establish the best line and strategy of the informational process.

The remaining policies (principles) relating to the dissemination of the information within military intelligence can be entirely implemented to the process of dissemination of information within the spokesman’s work:

- **Clarity** (the facts should be presented precisely and clearly separated from comments [interpretation]).

- **Comprehensiveness** (a report, similarly to a media release, ought to contain only need-to-know information for the user).

- **Standardization** (there are detailed directives for the process of development and dissemination of reports as well as media releases. Thanks to them, the time of communication between sending authority and receiving user is reduced).

- **Validation (Assessment of Credibility)** (information contained in the report should be numbered with appropriate alphanumeric markings while in the media release it is recommended only to provide absolutely reliable and validated information but, in case of doubts, the level of information credibility can be (additionally) determined).

- **Urgency (punctuality)** (the time pressure in both cases is enormous. The information should be disseminated without unnecessary delays).

- **Complexity** (can be understood in both aspects. At first, the information should be complete – contain answers to key questions. Secondly, the information should be transferred to all persons/institutions/cells for which it is essential).

- **Regularity** (When the situation dictates, the report, similarly to the media releases, should, at every step of the situation's development, be prepared and disseminated regularly).

- **Security** (the supreme rule of sources' security (safety) ought to be applied. In the case of intelligence information, paying attention to the appropriate security classification. In the case of media information, focusing on sensitive issues, targeted against persons or institutions).

The last stage of the Intelligence Cycle in the example considered above of a crisis situation will be concentrated on preparation of the official statement in which the spokesperson will mention the arguments challenging the thesis of the media, saying that the food poisoning of soldiers and civilian employees had been,

allegedly, caused by not fresh meals served by the unit's food service. The statement, after authorization of the unit's commander, should be expeditiously transmitted to the public, for example by publishing it on the unit's internet website and with further dissemination to press centres, and editors which expressed an interest about the situation in the unit.

Intelligence Policies

Similarities between the work of an intelligence analyst/officer and press officer/military spokesman, is present not only in the structure of the Intelligence Cycle (analytical cycle) but also in the general policies of preparation and execution of analytical activities. These are the following:

THE POLICY	INTELLIGENCE OFFICER'S WORK	MILITARY SPOKESMAN'S WORK
CENTRAL DIRECTING (MANAGEMENT)	Intelligence must be directed by the respective supervising authorities in order to eliminate unnecessary repetition of efforts and the necessity to provide alternate support and economical exploitation of the possessed assets.	The Public Information Cell's work must be directed by the commander, who determines the Courses Of Action. Additionally, supervising staff should consider the directives of the higher echelon (e.g. Press Information Department of the Ministry of National Defence).
PUNCTUALITY	The most accurate and reliable pieces of information are useless if not provided to the user in a timely manner. The information flow must function smoothly.	The most accurate and reliable pieces of information are useless if not provided to the user (journalists, public opinion) in a timely manner. Information flow must function smoothly.
EFFECTIVE EMPLOYMENT OF ASSETS	The sources and institutions must be employed in a systematic manner through appropriate tasking which should be based on thorough knowledge about the sources' capabilities	Sources and institutions (OSINT) must be employed in a systematic manner.
OBJECTIVNESS	It is necessary to prevent any attempts aimed at the adjustment of the intelligence data to fit the previously made decisions.	It is necessary to prevent any attempts aimed at adjustment of the information to fit the previously made decisions. Any speculations and dissemination of unreliable information is not tolerable.
AVAILABILITY	Information and intelligence data must be made available	Information is to be made available to the users

THE POLICY	INTELLIGENCE OFFICER'S WORK	MILITARY SPOKESMAN'S WORK
	to all intelligence cells within required timeframe. All information is to be processed by comparison with previously collected data. Intelligence data is of no value if not disseminated to those persons (organizational cells) which can apply it.	(journalists, public opinion) within a required timeframe. All information is to be processed by comparison with previously collected data. Information is of no value if not disseminated to those users who can apply them.
AVAILABILITY	Intelligence cells must remain in permanent readiness to execute the commanders's tasks.	Press officer, military spokespersons, must remain in permanent readiness to execute the commanders's tasks
SECURITY OF SOURCES	Protection of all sources of information is of paramount importance.	Protection of all sources of information is of paramount importance.
SYSTEMATIC VERIFICATION/ VALIDATION	Intelligence data must be constantly validated and, when necessary, updated. During the update process, new information must be taken into consideration and compared with existing knowledge.	Information must be constantly validated and, when necessary, updated. During the update process, new information must be taken into consideration and compared with existing knowledge.

To conclude, the statement can be made that the press officer's, the military spokesperson's work is analogical to the working model of the intelligence analyst officer. However, it can be done with two restrictions. First of all, in intelligence operations, when discussing the press officer, only the OSINT can be taken into consideration. Secondly, a restriction is to be concerned on a level of the security classification of data prepared for dissemination. Considering the military spokesperson's specific field of interest, only the unclassified and releasable information is permitted (to be exploited).

INSTITUTE OF AVIATION AND AIR DEFENCE



PLANNING IN MARKET ACTIVITY BASED ON AN EXAMPLE OF LOGISTIC SUBJECTS

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Abstract

As far as market activities are concerned, we deal with the resolution of problems which arise in neuralgic areas (contacts, feedback) and are responsible for the flow of different kinds of resources (tangible and intangible). In most cases, logistic subjects, treated as formal organisations, take part in the process of solving them. These organisations must be managed to function properly in the market economy. Hence, the nature of management and implementation of its basic functions have been indicated in the paper. In particular, attention was paid to planning as the basis for all activities carried out by a formal organisation. Theoretical arguments have been supported by selected examples, connected, in many cases, with the activities of logistic subjects.

Key words – logistic subjects, planning

Introduction

A basis for the functioning of a modern, global market economy is the activities of logistic subject, often equated with logistics activities. Logistic subjects in a market economy¹, with the use of a system approach, enable the rationalisation of activities in economic processes implemented in logistics chains². This applies, in particular, to the resolution of problems which arise in neuralgic areas (contacts, feedback) and are responsible for the flow of different kinds of resources (tangible and intangible). Thus, logistics is often seen as the integration of activities (actions, processes) related to the flow of tangible resources as well as

¹ See S. Antczak. *Aspekty teoretyczne rynku usług logistycznych* [w:] A collective work under the supervision of Stefan Antczak and Regin Demjaniuk: RYNEK USŁUG LOGISTYCZNYCH. Selected examples. Published: UPH Siedlce 2012, s. 9-11.

² A logistics chain is a set of structured activities implemented in an economic activities process, related to obtaining resources, processing them and delivering a final product to an end user as well as the disposal of the remains after its use (consumption).

data in a logistics chain (from sending to delivery), implemented by logistic operators. That is why logistics, in terms of an objective-structural approach, is often treated as a set of activities related to the management of logistic subjects for the implementation, movement and storage of tangible goods in order to facilitate their flow from the place of origin to the place of processing and throwing them open to an end-user (consumer), including the provision of information and the giving of offers at a suitable level of service and at costs acceptable to the market subjects³.

Besides the definitions themselves, there are also important concepts for the implementation of these activities, based on the realities of the market. They should constitute premises for making decisions, which allow conducting such activities that will contribute to the development and achievement of the intended purposes of the economic subjects functioning in the certain market realities.

The main task of the logistics activity is the implementation of multidirectional, multi-layered and multi-subject coordination as well as cooperation in the process of the flow of resources (tangible, financial, informational, transactional, etc.), which ensures the rational use of inputs, mainly including the costs related to the provision of the desired level of the subject's service (in the first place – economic ones). From this perspective, 'logistics' supports the activities of economic operators to gain benefits (the intended goal which is usually associated with a profit), considering efficiency and cost-effectiveness, providing, at the same time, the right quality and value of the marketing products⁴, implemented within the established costs and with the prices satisfying buyers (clients, customers, consumers) as well as sellers (manufacturers, intermediaries). It is also connected with the achievement of possibly the most profitable relations between the level of service and the level and structure of the related costs borne by an economic subject. These activities should not be just a pure economic calculation, but also a kind of philosophy of operating on a certain market. Its mapping, however, should consist of specific goals and tasks determining the implementation of basic processes related to manufacturing products, providing them to the customers (buyers) in the form of values accepted by consumers, and bringing benefits to the producer. All market activities, including the ones implemented by logistic subjects, must guarantee the accomplishment of these processes, through the appropriate management of particular subsystems (elements), as well as the entire logistics system, providing services in certain market realities and conditions.

³ Por. B. Tundys, *Logistyka miejska: koncepcje, systemy, rozwiązania*, Published: Difin, Warszawa 2008, s. 85-86.

⁴ A marketing product is what you can offer to fulfil a customer's need and/or desire. Ph. Kotler states that it's „what you can offer to fulfil a need and/or desire” (see Philip Kotler. *Marketing Management, Analysis, Planning, Implementation, and Control 8th Edition*. Published: Gebrthner & Ska, Warszawa 1994, s.7). This author states also that 'a product is all that can be offered on the market in order to fulfil a need.' (see Philip Kotler. *MARKETING (Marketing Management, 11th Edition)*. Publishing House REBIS Sp. z o.o., Copyright © 2005, s.409.). Hence, the author indicates that products can include: tangible goods, services, experiences, persons, places, organizations, information, data and ideas (see *ibid*). A product is also anything what can be found on the market, attract attention, be acquired, used or consumed, satisfying somebody's need or desire.

Market activity is carried out by the market, and the economic operators implementing logistics tasks are the safety elements. Taking the degree of their organisations into account, they are organisations⁵. Therefore, they still will be treated as organisations operating in the market, which, pursuing to established action goals, need appropriate management related to their personal resources (often interchangeably referred to as human resources, intellectual resources or human capital).

The importance of management

Definitions of management⁶ are as numerous as the books related to this issue. Some of them are relatively brief and simplified. An example here could be one of the older definitions, in which management is described as ‘a detailed understanding of what is expected of people, and then making sure that they do it in the best and the cheapest way.’ Management is, however, a much more complex process than this simple definition suggests. Thus, it is necessary to adopt such a definition of management, which would allow to get the gist of this complexity, and the consequent pragmatic conclusions, better.

To understand the concept better, the theory of systems is used. It states that all organisations operating in a particular environment (often referred to as marketing environment) use the four basic types of capital (potential, resources): human, financial, tangible and information. Human resources include management competence and labour. Financial resources include cash equivalent and assets

⁵ There are many definitions of the term ‘organisation.’ These are some of them: Organisation is a group of people working together in an orderly and coordinated manner in order to achieve a certain set of goals. (see J.A.F. Stoner, R.E. Freeman, D.R. Gilbert (Jr.), *Kierowanie*. PWE, Warsaw 2001, s.20-21 and 619). An organisation Organizacja (in factual and attributive terms) is ‘a special purpose system, whose organised system means that particular parts contribute together to the success of the whole, and thus achieving the general goal.’ Where: system is a separate part of the reality surrounding us, having some internal structure, and thus consisting of the parts organised according to established rules, which define their reciprocal relations (see W. Kieżun, *Sprawne zarządzanie organizacją*, Oficyna Wydawnicza SGH, Warszawa 1997, s.12-18). Factual (objective) meaning) – an organisation is a certain object, which can be distinguished from the others thanks to its characteristic features. Attributive meaning – an organisation is a trait of complex objects, called organising. Functional meaning – organisation means making the order, in other words, organising. (see T. Pszczołowski, *Mała encyklopedia prakseologii i teorii organizacji*, Ossolineum, Wrocław - Warszawa - Kraków - Gdańsk 1978, s. 150-151). An organisation is a whole, whose components contribute to the success of the whole. (Por. J. Zieleniewski, *Organizacja i zarządzanie*, PWN, Warszawa 1979, s. 274). A organisation is such a whole, which contributes to the success of its parts. (Por. A. K. Koźmiński, K. Obłój, *Zarys teorii równowagi organizacyjnej*, PWE, Warszawa 1989, s. 18). An organisation is a socio-technical system structured in someway, (see F. E. Kast, J. E. Rosenzweig, *Organization and Management: A Systems Approach*, McGraw Hill, New Jork 1970, s.120-121).

⁶ Based on: Ricky W. Griffin. *Podstawy zarządzania organizacjami*. Wydawnictwo Naukowe PWN, Warszawa 1996, s. 36-45, 198-220.

used by an organisation to cover all expenses related to both its current and long-term functioning. Material resources usually include: raw materials, semi-finished products, equipment parts and components, production devices, infrastructure and means of transport, business and production premises with their equipment. Information resources cover all kinds of databases, knowledge and skills necessary for effective management and decision-making. Managers are responsible for appropriate coordination in the use of these various resources to achieve the complex goals of an organisation (Table 1).

Table 1

Examples of the use of basic resources in four different types of organisations

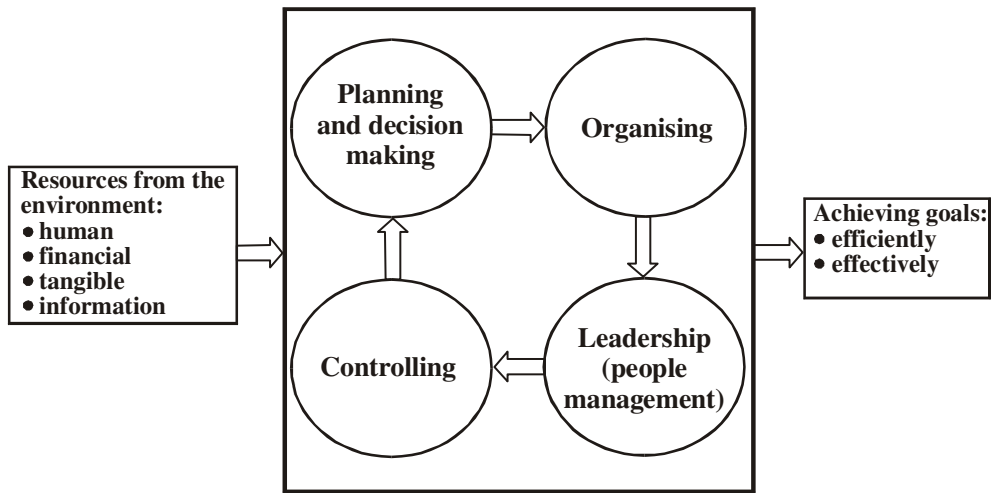
Organisation	Human resources	Financial resources	Material resources	Information resources
PGNiG Group	Managers, executive managers, workers	Profits, shareholders' investments	Equipment and mining, processing and distribution infrastructure	Forecast of gas consumption, abilities to obtain raw materials, global trends
Jagiellonian University	Academic staff, students, support personnel	Government subsidies, grants, college tuition	Teaching and research equipment, buildings, logistics infrastructure	Reports on research and teaching process, government publications
The City of Warsaw	Officials, the police, local authority staff, municipal workers	Revenue from taxes, government grants	Office buildings and utilities, logistics infrastructure, cleaning equipment	Social and economic forecasts, reports and statistics, population censuses
Supermarket	Managers, vendors, customers	Profits, owner's investments	Buildings, car-parks, shelving and shop equipment	Price lists of suppliers, Internet information, competitors announcements

Source: own study based on: Ricky W. Griffin. Podstawy zarządzania organizacjami. Wydawnictwo Naukowe PWN, Warszawa 1996, s. 36.

Combining and coordinating the use of different types of resources, managers perform four basic management operations (also called management functions): planning and decision making, organising, leading people (people management), and controlling (Figure 1.).

Therefore, management can be defined as *'a set (collection) of activities involving planning and decision making, organising, leadership (related to people management) and controlling, which are aimed at an organisation's resources (human, financial, tangible and information) and performed in order to achieve the organisation's goals in an efficient and effective way'*.⁷

⁷ See Ricky W. Griffin. Podstawy zarządzania organizacjami. Wydawnictwo Naukowe PWN, Warszawa 1996, s. 37.



Source: own study based on: Ricky W. Griffin. Podstawy zarządzania organizacjami. Wydawnictwo Naukowe PWN, Warszawa 1996, s. 37.

Figure 1. Schematic representation of the implementation of the basic management functions in an organisation connected with achieving goals from the environment (market environment) resources

In the presented definition, the sense of management as a possibility to provide the efficient and effective achievement of an organisation's (an economic subject's) goals is emphasised. The term *efficient* means the use of resources in a wise way and without an unnecessary waste. Nowadays, a lot of market participants make accessible high quality products that are produced at relatively low costs, and their activity is efficient. *Effective*, however, means being successful in the activities. A lot of products on the market are made in a reliable way, aesthetically and ergonomically, which causes the admiration and trust of their users. It should be noted that organisations (economic subjects) which are successful are both efficient and effective.

Understanding management in the way presented above, a *manager*⁸ is somebody who is responsible for implementing its basic functions. In particular, a manager is somebody who makes plans and decisions, organises, manages and controls human, financial, tangible and information resources. Very often,

⁸ In the subject literature, a replacement term from the English language is used in Polish „menedżer/menadżer” (see Ricky W. Griffin. Podstawy zarządzania organizacjami – op. cit.) It is generally accepted that a manger (also director, executive, administrator, warden) is the manager of a company or its part, or a person taking care of an artist's or a sports person's interests (also an artistic or sports group), organising performances, negotiating contracts, etc. (see Słownik współczesnego języka polskiego. Wyd. WILGA, Warszawa 1996, s.506). The term manager is often used in relation to employed people taking high managerial positions, as well as companies' owners, directly involved in managing them, which often happens in the case of smaller businesses.

managers face various provoking and lucrative opportunities which require not only knowledge, abilities and experience, but also courage to make decisions in market activities. Functioning in an unsettled (turbulent, rough) and dynamically changing environment, they deal with the increasing complexity caused by the globalisation of market activity, internal and external competition, changing government and international regulations. Often, they are also under strong pressure from many factors resulting from expectations of a social, economic, ecological, ideological, cultural, etc. nature as well as resulting from their adverse influences which cause disruptions in the implementation of management functions. In many cases, the results of a manager's work are unpredictable and challenging. However, their skilful recognition, with an understanding and creative use, are a basis and a chance of personal and organisational success.

A lot of factors influencing complexity and uncertainty in management are interdependent of the environment (often related to the marketing environment) in which organisations operate. All resources (human, financial, tangible and information) used for creating products (which may take a tangible or intangible form) come from the environment, and their recognition and understanding is one of the basic prerequisites for the effective and efficient work of every manager. This pattern also applies to logistics activities in which logistics subjects are treated as organisations.

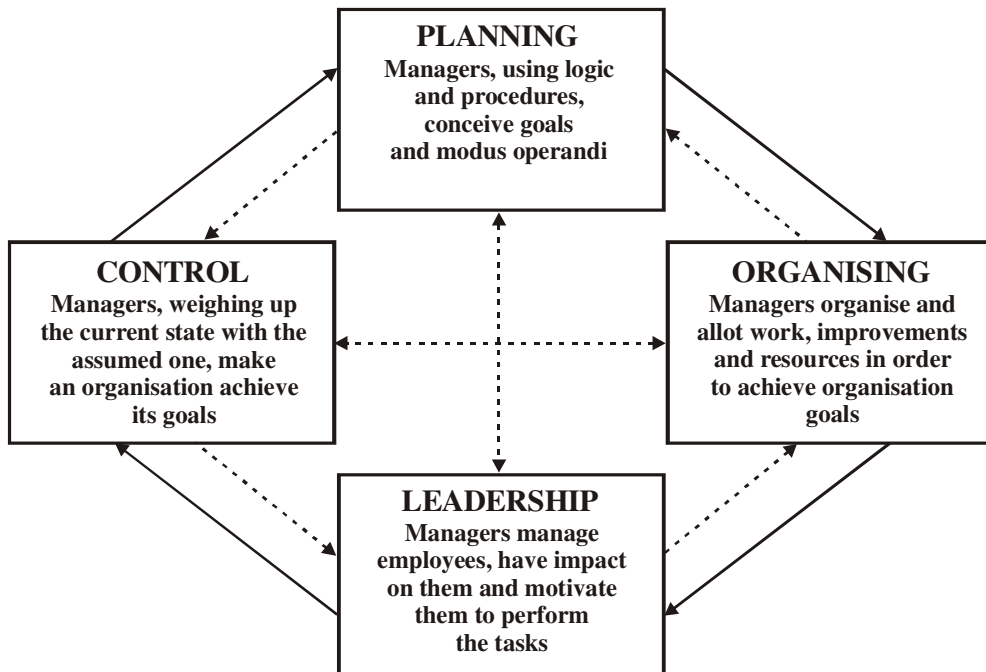
Implementation of a management function

As indicated above, management is associated with the implementation of the four basic functions: planning and decision making, organising, leadership (people management) and control. Griffin, specifying management functions, gives an example of a manager, Herb Kelleher, co-founder and former head of the Southwest Airlines Co.⁹, who created a vision of an efficient organisation and brought it into effect. He paid attention to people working for the company, observed them regularly and analysed the results achieved by them. A lot of tasks carried out in this corporation depended and still depend on the management efficiency in logistics activity. All his actions can be put into one of the four basic management functions (Figure 2.) carried out in time.

Setting goals is a part of planning, creating organisational and functional structures is the result of organising, motivating people is an element of leadership,

⁹ **Southwest Airlines Co.** (Southwest Airlines Company) – founded on March 16th, 1967 by Rollin King and Herb Kelleher, an American low budget airlines, currently operating on 72 routes in 37 states in the USA. There are 3400 flights daily. Popular destinations include: Chicago, Las Vegas, Baltimore, Phoenix, Denver, Houston, Dallas, Los Angeles, Oakland and Orlando. They offer their customers a loyalty programme - Rapid Rewards. The Southwest Airlines fleet consists only of different types of Boeing 737 aeroplanes. It has about 580 planes – the airline is the world's biggest user of Boeing aeroplanes. (see southwest.com).

and observing their and the entire organisation's results and analysing them is an activity related to the function of control. Generally, it can be noted that management functions are not always performed in this order and they are not interpreted as unambiguously as it is presented above (see Figure 2.). It does not always happen that a manager (management) makes plans on Monday, makes decisions on Tuesday, organises something on Wednesday, stimulates (motivates) subordinates on Thursday and controls the results of their work on Friday. In practice, a manager (an executive) can participate simultaneously in some different forms of activities in a particular moment, implementing all or some of the management functions mentioned above.



Source: Own study based on: J. A. F. Stoner, R. E. Freeman, D. R. Gilbert, Jr. *Kierowanie*. PWN, Warszawa 2001, s. 27.

Figure 2. Interdependence in the implementation of organisation management function

Practical experience shows particular cases of managerial work, in which one can see as many differences between them as similarities combining them. The similarities found in most of the situations are related to the stages of particular function's implementation, while the differences are associated with the indication of order and consequences resulting from it for achieving established organisation goals. In Figure 2., the solid lines indicate theoretical assumptions of performing

the particular management functions, and the dashed lines indicate their implementation in practical market activity.

Management plays an important role in every organisation. One of the biggest challenges faced by the management of MTV¹⁰ was to maintain a competitive cutting edge in its video clips network while keeping pace with changing tastes in music, fashion and design at the same time.

Planning and decision-making

In its simplest form, *planning* means setting organisation goals and determining the best way of implementing them. *Decision making* is a part of activities involved in the planning process, dealing with the choice of *modus operandi* from the set of possible (available, acceptable) actions (options) for use at particular time and under given circumstances. Planning and making decisions ensures the maintenance of efficiency in management by providing guidance for future activities implementation. The final result of the implementation of a set of activities in the planning process (of function implementation) is the action plans options. After their analysis and evaluation, as well as making the decision on implementation through endorsing one of the options, a binding plan of action for an organisation is developed. For example, a lot of companies from various businesses belong to General Electric¹¹. The main goal of the corporation is that

¹⁰ **MTV (Music Television)** is the most popular music station in the world. It belongs to MTV Networks, which is a part of Viacom. The programme broadcast by this station can be received via satellite and terrestrial television as well as cable networks. The station was established in 1981 in the United States. The initial licence was to broadcast 180 video clips (approximately two million customers / receivers). Current licence is to broadcast thousands of video clips (approximately one and a half billion viewers in over one hundred and forty countries all over the world). Due to shaping trends, behaviour and fashion, MTV gained a 'showcase' of the mass culture (subculture) and created the so-called MTV generation. The first video clip broadcasted by the station was Video Killed the Radio Star - The Buggles. MTV also helped to promote many music stars, including among others Michael Jackson, Britney Spears, Justin Timberlake, Eminem i Madonna (see Wikipedia. Wolna Encyklopedia).

¹¹ **General Electric** – was officially established on January 11th 1892 by the merger of two companies: Edison Electric Light Company managed by Thomas A. Edison and Thomson-Houston Company managed by Charles A. Coffin. The two companies together owned the majority of key patents in the production area and the use of electricity, which gave them the dominant position on the US market for many years. **General Electric** was in 2009 the twelfth largest company in the world^[1], both in terms of turnover and generated income as well as the market value (\$406 billion in July 2007). The company currently takes the third position in the list of the Largest Companies in the World. Currently, General Electric operates in several business areas: energy, both conventional and atomic; measuring equipment – both industrial and medical; aircraft industry – aircraft engine production and aircraft production lending; aerospace industry – rocket engine and components production for NASA; household appliances industry – production of freezers, vacuum cleaners, etc. – mainly for the American market; chemical industry – plastic production; medical equipment – research on and production of diagnostic equipment (X-ray, C arms, CT scanners, MRI, PET, ultrasound, ECG, ECG stress testing), vital signs monitoring equipment (cardio, multiparameter monitors), apparatus for general anaesthesia as well as ventilators and incubators used in the newborn treatment; banking – both for business and individuals.

each company belonging to GE takes up the first or second positions in its business. The goal provides clear guidance for managerial operations.

If a company is placed out of the strict forefront in its business and shows little possibilities of improvement, the GE management will probably want to discard it. On the other hand, a company placed in the third position and catching up with the competitors effectively can obtain additional resources enabling its movement into the second place. In this way, the main goal and the corporation action plan enable individual managers to dispose of time and resources to achieve the goals of a certain company.

An example of management in practice. J.B. Hunt is not a typical manager or entrepreneur. He does not have a master's degree in management (he left school at the age of 12, was a truck driver for 21 years). The turning point was the idea of the use of deteriorating rice husks as bedding for poultry. To implement this idea, he set up a transport company „J.B. Hunt Transport Services Inc.”¹², which showed the fastest turnover growth in the whole country. Hunt, as the head of the company, also had some basic managerial skills, which most people gain only through long-term education and experience. He also had a lot of ideas in his head, sometimes crazy ones as he noted himself. For example, ‘admiring his new, four-storey building, he imagined skyscrapers.’ He owed his quickly achieved wealth to his great ideas concerning the haulage industry, the use of uniformed, non-union drivers, and planning such routes and cargoes which provided almost full use of the carrying capacity of the means of transport. Another idea was the production of oil from used tires, which was ‘brought to the ground’ by his managers.

In the case of Hunt, the lack of education was an advantage. Being unable to run the company, he had to hire the right people and share the responsibility with them. According to the Chief Executive, Kisk Thompson, even the ideas which ‘uplifted the company were developed in a team, and not only in Hunt’s head.’ His intuition and desire to use every opportunity to do business let him manage, accord power and serve as an example for the employees. He also invested ‘\$15 million in the over-decorated main office, as he believed that artificial palm trees and Italian tiles will attract the right customers.’ At the same time, he was a scrooge (he bought all tires from one supplier to save half a cent per mile). Taking his social background under consideration, his most surprising managerial attribute was the ‘ability to execute tight actions on the basis of a precise schedule and careful planning.’ These features were essential in the completion of the project - Quantum¹³. The concept was to provide rail-car combined transport, in which the Santa Fe Pacific Corporation¹⁴ was the rail partner. He made the decision to cooperate with the railway, rather than fighting it as the biggest competitor to road

¹² **J.B. Hunt Transport Services Inc.** – American transport company founded by JB Hunt.

¹³ **Quantum** – (lc. quantum from quantus ‘how much, how many’) specified number or amount of something.

¹⁴ **Santa Fe Pacific Corporation** – international rail corporation.

transport, when his average 20 percent profit margin began to decrease in 1990, and the increase in labour costs, excess in transport potential in the business and the stagnation of transport fees meant its further decrease. Instead of fighting the biggest road transport competitor – railway, Hunt started the cooperation taking the cargoes and delivering them to one of the Santa Fe headquarters in California, Chicago, Kansas City or Fort Worth.

Trailers were loaded onto railway platforms in Santa Fe, they were transported to another headquarters, then they were attached to Hunt's other trucks and transported to the destination. The whole concept was received with a grain of salt in the transport business, soon, however, other companies hurried to use the combined transport, which confirmed that this time Hunt had 'hit the jackpot'¹⁵.

Organising as the coordination of activities in the use of resources

The basis for the implementation of organisational activities is an approved (by the management, shareholders, manager) organisation action plan. Organising means all kinds of activities related to the tasks set for the organisation members (staff, crew) and to the indication of necessary resources (financial, tangible and information) allowing the implementation of the action plan.

Example: for a demonstrative presentation of the way a manager implements it, let's consider the following scenario. We have the financial resources of 300 000 PLN and three subordinates who will implement an action plan. One of the possible solutions is to assign an equal amount of money (100 000 PLN) to each of them and to establish identical direct subordination. In another option, it is possible to assign supervisory functions to one of the subordinates towards the others, equipped with the budget of 150 000 PLN each. For example, the President of General Electric decided that each of the heads of autonomous units should have considerable freedom to conduct the business, as if they were separate companies.

Therefore, heads of numerous units, which form the GE company, have considerable autonomy. The President has the possibility to change many of the bureaucratic rules and company procedures through identifying ways to group activities (tasks, operations) and the use of resources in the process of organising. *Organising* is treated as purposeful and logical the use of resources in the activities. Example: one of the greatest engineering achievements of the modern history of humanity was to build a tunnel under the English Channel in order to enable regular rail services between England and France. The construction of the 23 mile-long tunnel was an extremely ambitious organisational undertaking for the project managers. The implementation of the project costing \$14,7 billion, which involved thousands of engineers, technicians and workers, required the careful coordination

¹⁵ See *ibid*, s.42 (sources: D. Machalaba *J.B. Hunt Reinvigorated Trucking, But Now Has Load of Problems*, „The Wall Street Journal", 9 May 1991, s. A1, A5; I. Rosenfeld *Hunter, Santa Fe Restructure Quantum As Intermodal Service Fight for Business*, „Traffic World", 11 March 1991, s. 59-60; G. Welty *Quantum's Pace Quickens*, „Railway Age", May 1991, s. 43-47)

and management of people in activities related to the provision of modern technology and the necessary technical, material and financial means for them.

Another example is the construction and the launch of a particle accelerator – *Large Hadron Collider* – LHC – the world's biggest particle (hadron) accelerator, located in the European Organization for Nuclear Research (CERN) near Geneva. LHC is located in France and Switzerland. The Large Hadron Collider is the biggest machine in the world. Its essential elements are placed in a tunnel in the shape of a torus (tire) with a length of about 27 kilometres, located at the depth of 50 to 175 metres under ground, with a train being able to move in the tunnel. To power it, a generator of the electric power of 155 MW is required. In order to service big computer centres working in a network system (grid technology) in 33 countries, it was necessary to design and construct a kind of telephone switchboard, which enabled the connection of 100 million electronic subscribers-channels with the switchboard-computer with a frequency 40 MHz. CERN employs 2,600 permanent employees and about 8,000 scientists and engineers. There are about 350 Polish people working in the organisation. CERN activity is pure science, looking for answers to the most fundamental questions related to nature, such as for example: What is matter? Where is it from? How does it create such complex objects as stars, planets and human beings? What happened 15 billion years ago?, and others.

Leadership – activities related to managing people

Both practitioners and theorists believe that leadership is not only the most important, but also the most ambitious kind of managerial activity. Leadership is a set of purposely selected procedures (courses of action) as well as the use of financial and tangible resources used in making people cooperate in order to achieve the goals (interests) of an organisation. For example, the GE President put a lot of effort in arousing the other managers interest and faith, expecting that they would have a similar attitude towards their subordinates.

Leadership means also all activities affecting people in an organisation in the process of the implementation of the basic management functions, in which the organisation members work together to achieve its goal (goals).

Controlling as the observation and evaluation of the results of activities

Controlling is very often associated with the observation of a progress and the evaluation of the status of the estimated organisation goal's achievement. As far as the organisation strives for the achievement of the assumed (fixed, required) goals, its management should have up to date information on the status of their fulfilment, on the progress and risks as well as their causes. The verification data should enable the analysis and evaluation of the current state of an action plan's implementation as well as the forecasting of the achievement of the goal assumed in it. An example here could be a successful expedition to Mars. It is difficult to

imagine a situation where an organisation such as NASA was to launch a rocket toward Mars, and then, after a few months, check whether had it achieved its goal. NASA keeps watching the flight of its spacecraft and controls the activities of the security services, and introduced necessary corrections to the flight course on the planned trajectory.

Controlling provides necessary efficiency in order to implement all management functions effectively. In general, it can be said that controlling is the process of observing the organisation progress in its goals achievement, according to the assumptions mapped in the action plan (e.g. on the market). With regard to logistics subjects, the mapping is included in the logistics action plan. On the other hand, the market activity plan of an economic subject (including a logistics company) is the effect of the implementation of one of the basic management functions – planning.

Planning in an economic subject activity¹⁶

An introductory example

The example is related to various experiences of the Hewlett-Packard Company¹⁷ (HP) and one of its competitive companies. A few years ago, the HP management established a goal, the result of which was to reduce the overall warranty costs by 90% over the next 5 years. Each employee was given a written characterisation of the goal and a description of the ways to achieve it. Selected executives in each unit were responsible for the supervision of the process, leading to the achievement of the goal. All employees were also told that the company would pay bonuses in the form of a share in profit if the goal were achieved. Finally, the implementation of these intentions required less than 5 years. Soon after that the management announced that the new goal was to reduce the

¹⁶ Explanation: this section, due to the original and constantly updated content presented by the author of the monograph, Rocky W. Griffin *Podstawy zarządzania organizacjami*. Wyd. Nauk. PWN, Warszawa 1996, related to planning in an organisation, it has been adopted in the vast majority without putting one's own content in (p.198-228). Only the information and data included in the examples have been updated. The primary didactic aim of the author of this section was firstly, not to improve something at a push, which is already very good. Secondly, first to learn and to try to rationally use the experience and necessary data, and the results obtained from the analysis can be the basis for further theory development and enrichment of knowledge. Thus, the contents below, related to the theory of organisation management should be seen from such a perspective.

¹⁷ **Hewlett-Packard Co.** (Hewlett-Packard Company - HP), NYSE: HPQ – American IT company based in Palo Alto (California). In 2010, the second world's largest IT company as far as turnover is concerned. The manufacturer of, among other things, computers, servers, printers and printing equipment as well as an IT services provider. In 1999, departments producing electronic measuring equipment, components and medical and scientific equipment were isolated from HP, forming a separate company Agilent Technologies. In 2002, the company took over the competitive Compaq Computer Company. In 2010, the company employs about 324,000 people all over the world.

frequency of the software defects by 90%. Its implementation started in a similar way. Also in this case, HP achieved very good results.

At the same time, when the HP management announced the reduction in warranty costs, one of the main competitive companies coached an even more audacious intention. The company was to improve all aspects of its functioning and take the position of the world's leader in quality matters. However, neither the goal was introduced, nor the guidelines for its implementation were presented to the employees. A manager who came up with the initiative did not specify the conditions of its implementation and the time in which the assumed goal was to be achieved. The company's customers kept on complaining about the quality of the products. While the HP Company achieved its goals, its main competitor recorded a serious fall in the revenue and mass layoffs.

Although Hewlett-Packard and its competitor are similar in some ways, there are considerable differences between them. They vary, for example, in the approach to planning. They also vary in the way they set and achieve their goals. The HP management sets clear and precise goals, makes decisions about the best ways to achieve them, provides an active participation of the employees and, in general, it is effective and successful. The competitor, on the other hand, sets the goals in an unclear and imprecise way, pays little attention to the way they are achieved, does not involve the employees in the goal's achievement, and is therefore less effective.

Planning is the first managerial function in organisation management, in which setting its goals has a significant meaning.

Planning process

Planning is a universal activity. It is practiced by all organisations, although generally they do not do it in an identical way. In spite of the fact that most organisations use this general procedure scheme (Figure. 3), each of them can use their own solutions due to its characteristics and knowledge, skills, work culture as well as traditions and experiences.

The scheme shows that planning can be used considering a particular, specific environment (business environment). If the management of an organisation do not understand this context, they will not be able to develop an effective action plan. Thus, understanding the importance and influence of the environment on the effects in market activities has an essential meaning in the planning process. Recognising the external environment, factors and conditions for the operation on the market, which are necessary to establish the overall organisation (economic subject) mission, are important. Setting up an economic organisation is connected with setting its goal, assumptions, values and market activity directions.



A planning process is implemented for specific and realistic environment conditions. Therefore, management has to understand the influence and impact of these conditions on the organisation's mission implementation and on developing its strategic, tactical and operational goals.

An organisation's strategic goals result from the organisation mission. The organisation mission and its goals enable strategic plans development. Strategic goals and plans are, in turn, the basis to establish tactical goals and to develop tactical plans. Subsequently, tactical goals and tactical plans are the basis for setting operational goals and developing operational plans. In the end, goals and plans (strategic, tactical and operational) can be also used as the basis for the organisation's future activities at all its levels.

Organisation goals

Goals have an essential meaning for the effectiveness of an organisation's functioning and they fulfil a number of functions (tasks). An organisation can have several goals of a different type, implemented consecutively or simultaneously. Their achievement also requires knowledge and skills to use the human and other organisation resources. The establishing and implementation of various goals also require the involvement of different types of managers.

Goals functions

The goals in an organisation activity fulfil four important functions.

Firstly, they are the guideline and they give a uniform direction to the people working for the organisation. The established goals allow everybody to understand where the organisation is heading and why the achievement of a certain target state is so important. The goal established by the management of General Electric was to take the first or the second position in every business the company operated. It was to allow the giving of a sufficiently high significance to every decision made by a particular company's managers. On the other hand, the Hewlett-Packard goal was to reduce warranty repair costs, and thereby, the costs of market activity by motivating employees to manufacture products of the required quality.

Secondly, the practice of setting goals affects planning. Effective goals setting fosters good planning, which, in turn, makes setting future goals easier. The success of the Hewlett-Packard Company shows to what extent setting goals and developing plans of their achievement are complementary activities. Without the established goals, the plans for quality improvement would have little meaning. Besides, the successful implementation of these plans made setting future plans easier.

Thirdly, goals can be a source of motivation for an organisation's employees. Goals given clearly and precisely, with a moderate level of difficulty can motivate people to work harder, especially when the achieving of them can be rewarded. The Rubbermaid¹⁸ Company objective, set by the chief executive officer (CEO) Stanley Gault, was to increase sales by 15% annually. In order to achieve it, he promised the employees would have more influence on the way the company is run, and the success was supposed to be rewarded better than ever before. It mobilised the employees towards activities aimed at the established goal achievement and the plan was successfully implemented for eight years.

Fourthly, goals give finally an effective mechanism for evaluation and control. It means that future results could be assessed on the basis of the degree of the earlier established goal's implementation. Example: an official working for United Way of American¹⁹ assumed that the organisation's objective is to collect \$250,000 from the members of a certain community. If, in the middle of the campaign it is possible to collect only \$50,000, it suggests that either changes should be introduced or the effort should be increased. If at the end of the campaign it is possible to collect only \$100,000, it will be necessary to analyse the performed activities and, on the bases of the obtained results, to assess the causes of the failure in the goal achievement, and to indicate operations to be implemented in the following year. If, however, it is possible to collect \$265,000, the assessment of the efforts will be positive.

¹⁸ **Rubbermaid** – tools and household goods producer.

¹⁹ **United Way of American** – charity organisation operating in the USA.

Types of goals

Organisations set many different types of goals. Generally speaking, the goals are of different levels, areas and time frames. The goals are set at different levels and for different levels in an organisation. Previously, there were four basic levels of goals pointed out. They cover the mission as well as strategic, tactical and operational goals.

An organisation's *mission* statement can include all sorts of components. The basic ones include target customers and markets, main products or services, geographical area, key technologies, the concern for survival, growth and profitability, the company's philosophy, its own concept and the desired public image. An organisation's mission means also developing its basic unique goal which distinguishes it from other companies of that type and indicates the range of implemented operations in terms of the product and the buyers (customers, clients) on the market.

Strategic goals are set at the highest level and for the highest management of an organisation. They concentrate on broad, general issues. For example, the management from Sony²⁰ assumed that the strategic goal was to reduce its dependence on the market for consumer electronic products. The company's management was sure that due to the volatile nature of this market segment, such dependence would involve too much risk.

Tactical goals are set at the middle level and for middle level managers. They concentrate on how to implement necessary actions to achieve strategic goals. An example of a tactical goal of the Sony company was the acquisition of companies in the entertainment industry (Columbia Pictures Entertainment Inc.²¹ was bought).

Operational goals are set for lower-level managers. They concern short-term issues related to the implementation of the tactical goals. An example of an operational goal for the Sony company is a defined volume (level) of the market share for a new electronic device.

Organisations also define goals for various fields. For example, the Hewlett-Packard Company sets production goals related to the quality, efficiency and reliability, and as far as human resources are concerned, they are related to instability in employment and absenteeism at work. A lot of companies set goals related to introducing, for example, innovative products into the market.

²⁰ **Sony** – a Japanese company founded on May 7th, 1946 by Masaru Ibuka and Akio Morita w Tokyo, as the Tokyo Telecommunications Engineering Company, currently one of the world's largest manufacturers of utility electronics. A public company listed on Tokyo and New York stock exchanges (TSE and NYSE) (NYSE: SNE) (see WIKIPEDIA. Wolna encyklopedia).

²¹ In 1989 Sony bought an American film and TV programme producer **Columbia Pictures Entertainment, Inc.** (Columbia TriStar Motion Picture Group and Columbia TriStar Television Group) from the Coca-Cola Company for \$3,4 billion. The corporation was renamed to Sony Pictures Entertainment in 1991, and belonging to the same group Columbia TriStar Motion Picture remained as the holding company of *Sony Pictures Entertainment Inc.* (SPE) (see WIKIPEDIA. Wolna encyklopedia).

Organisations set goals in different time frames for achieving the goals at the strategic, tactical and operational level. The first one is a long-term goal, the second one is medium-term and, finally the third one is a short-term. Some goals have clearly defined time frames (e.g. opening 150 modern restaurants in 10 years), while others do not have a specific time horizon (e.g. maintaining 10 percent annual growth pace). It should be noticed that particular time frames have different meanings depending on the level. For instance, at the strategic level, when we talk about the long term, we often mean 10 years or more, middle term means about five years, and finally the short-term is a period of about one year. To give an example, at the operational level, 2 or 3 years might mean a long-term, and talking about short-term we often think about weeks, and sometimes even a couple of days.

Responsibility for goals setting

In the goal setting process in an organisation, all managers, according to the place, positions and implemented tasks, should take an active part. And so, for example, setting up an organisation and developing its strategic goals are usually defined by the board of directors and the highest level management. Then the highest and the middle level management collaboratively develop tactical goals. Finally, the middle and the lower level management are responsible for setting the operational goals. Many managers also set individual goals for themselves. They can include a career path, informally associated with work, beyond the normal range of assigned official duties, or simply anything that is important to deepen and broaden their knowledge as well as the skills to use it in practice. These are also hobbies and interests outside work.

Many goals in an organisation

There are often a lot of different goals set in an organisation, which causes contradictions and even conflicts. An example was Nike Inc.²² producing high-quality footwear (Production goal), which, in fact, were not particularly fashionable (marketing goal). As a result of the goals implementation, the company made a significant loss in the market share, and especially after Reebok International Ltd.²³, producing high-quality, fashionable shoes, entered the market.

²² **Nike Inc.** – an American company, the world's largest footwear, clothes and sports accessories manufacturer. It was established in 1964 in Washington County, as Blue Ribbon Sports by Bill Bowerman and Philip Knight who was the President of the company till 2004. Its name comes from the Greek goddess of victory Nike. The revenue for the financial year 2004/2005 was \$13,7 billion.

²³ **Reebok International Limited** – was one of the world's largest manufacturers of footwear, clothes and sports accessories. Its name comes from the South African antelope – grey rhebok (afr. Vaalribbok). Since 2006 it has been a part of a German company Adidas AG, which, together with the company, took over the production and sale of Reebok brand. **Adidas AG** is a German company producing footwear, and sports clothes, founded in 1924 by the Dasslers brothers as *Dassler Brothers OHG*. The name comes from the diminutive name (Adi) and the first three letters of the surname

Nike Inc. managed to regain its market position on the footwear market after adjusting its goals. To solve that type of problem, the methods of multi-criteria optimisation²⁴ can be used. However, using them in practice requires the management to understand their essence. That kind of optimisation requires balancing and reconciling possible conflicts arising from the implementation of different goals. The use of multi-criteria optimisation enables searching for points, in which the goals are inconsistent, as well as making decisions related to the implementation of one goal at the expense of another. It can be also a search for an indirect goal enabling the achievement of previously established goals.

An example: a long-term goal of American Express²⁵ was to maintain good relations with banks selling its travellers' cheques. At one time, the company started to offer its customers products and services previously offered only by banks. An example here can be the Optima credit card, which was issued under similar conditions and had similar applications as Visa and Master Card, but its use was related to a lower interests rate. The consequence of such activities was the change in the relations of American Express and banks. Some of them even stopped serving American Express travellers' cheques. American Express representatives decided, however, that the extra profits obtained from the Optima cards could compensate the loss of the trade with the banks, which, in response, promoted competitive travellers' cheques.

Strategic goals focus on the broad, general, organisation issues, and are set by the highest level of management. The strategic goal of a company, whose product or service has an impact on the environment, can be the strong protection of natural resources (air, soil, water, non-renewable energy resources, forests, swamps, ponds, etc.).

(Das) of the founder, Adolf Dassler. The sentence *all day I dream about sport*, which is sometimes considered to be the right origin of the company's name, was created later. Adidas is divided into three parts: Adidas Sport, Adidas Classic, Adidas Style. The Adidas logo is three stripes, which are placed on its products, e.g. the shoulders of clothes.

²⁴ **Optimisation** is a method for determining the best (optimal) solution (extreme function search) from the point of view of a certain **quality criterion** (indicator), e.g. cost or efficiency. Single and multi-criteria optimisations are applied. **Multi-criteria optimisation** can be found in many different areas: in designing a product and the production process, finance, aircraft or car designing, in chemical industry, and wherever optimal decisions must be taken with the presence of trade-off between two or more discrepant goals. An example of multi-criteria optimisation is the maximisation of profits and minimisation of product costs, maximisation of efficiency with the reduction of vehicle fuel consumption, or reducing the substantial weight of a device while maximising the durability of its individual components.

²⁵ **American Express** (called **Amex**) is a financial company set up in 1850 in Buffalo by Henry Wells, William Fargo and John Butterfield. The company is known thanks to its payment cards. All over the world, the cards are widely accepted and considered to be prestigious. The black card American Express Centurion is one of the most exclusive credit cards in the world. One of the main shareholders of American Express is Warren Buffett. The company's headquarters is based in New York.

Planning in an organisation

Types of plans in an organisation

Bearing the obvious connection between the goals and plans of an organisation in mind, attention should be paid to various concepts and issues related to planning itself. Organisations develop plans and different types of ways to adopt them for implementation. At a general level they include strategic, tactical and operational plans.

Strategic plans are developed for the implementation of strategic goals. A strategic plan is a set of decisions related to the allocation of resources, priorities and activities necessary to achieve strategic goals. These plans are developed by the board of directors and the highest management, usually they have a relatively long time horizon and relate to the operation area, distribution of resources, competitive advantage and synergy.

Tactical plans are aimed at achieving tactical goals and are developed for the implementation of certain parts of strategic plans. The higher and middle level of management is usually involved in their development and implementation. Their time horizon is slightly shorter than the time for strategic plan, and they mainly focus on implementation rather than setting tasks.

Operational plans focus on the implementation of tactical plans to achieve operational goals. The middle and lower level management is responsible for developing them. They are short-term plans and they have a relatively short range and narrow set of implemented activities (operations).

Planning periods of time

Strategic plans focus rather on a long period of time, tactical plans – on a medium term one and operational plans – on a short one.

A *long-term plan* usually includes a few to several years. Large corporations (e.g. General Motors, Exxon Corporation²⁶) usually develop plans for periods of 10 to 20 years. A long-term planning range is different for different organisations. It is often a period longer than five years. Organisations operating in a complex and changeable environment face a particular dilemma, as they have to plan in a longer time horizon than organisations in a less dynamic environment. This complexity of their environment makes long-term planning difficult, but at the same time it forces constant observations of changes taking place in it.

A *medium-term plan* is slightly less hypothetical and less exposed to changes than a long-term plan. It usually covers a period of time from one to five years and mainly relates to the implementation of a tactical plan. It is also related to the management at middle level and on the front line. This kind of planning became the central element of planning activities in many companies. For instance, in

²⁶ **Exxon Corporation** – a petroleum company, involved in the exploration, extraction and processing.

Philip Morris Companies Inc.²⁷ a long-term plan of activity diversification and the reduction of its tobacco industry share was developed. After two years of the plan's implementation, the company acquired General Foods Corporation,²⁸ and later made a purchase of Kraft Foods Inc.²⁹ which was the result of a middle-term plan developed a year earlier, on the basis of a long-term one. After all, the actual shape of these activities was mapped in the medium-term plan.

A *short-term plan* relates to task implementation in the period of one year or shorter. In such plans, the daily activities of the manager are highly mapped. These plans have two basic forms: *an action plan* and *a response plan*.

The *action plan* is used to implement all other plans. For example, after the Philip Morris Companies CEO made the decision concerning the purchase of Kraft Foods, lawyers and higher managers of the company developed an offer, which was submitted to the Kraft Foods's CEO. Their actions were consistent with the action plan, which logically resulted from the CEO's decision.

On the other hand, the response plan includes projects enabling a company the implementation of an unforeseen task. Example: Kraft Foods managers had to make a relatively quick decision on accepting or rejecting the conditions of the acquisition of Philip Morris Companies. After receiving such an offer, they had to take actions in the conditions created by its environment, and to act in accordance with the previously agreed conditions of the response plan in a disturbed environment.

Tactical planning

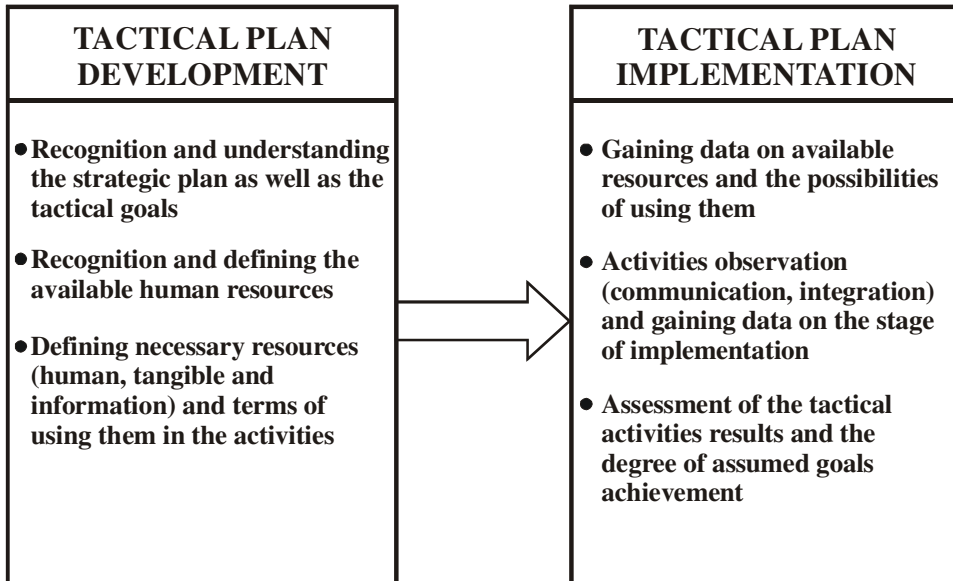
The aim of developing a tactical plan is the implementation of a certain part of the strategic plan. A well-known saying says: 'to win the battle but lose the war.' A tactical plan shows how to prepare the battle to win the war on the basis of guidelines included in the strategic plan. A tactical plan is a series of purposely chosen actions, which lead to the implementation of a strategic plan. In the

²⁷ **Philip Morris Companies Inc.** (currently - **Altria Group, Inc**) – a holding consisting of Philip Morris International, Philip Morris USA and Philip Morris Capital Corporation. On January 27th 2003, Philip Morris Companies Inc. changed its name into **Altria Group, Inc.** the corporation operates in food, beverage and tobacco business. It employs 199 thousand people. (see WIKIPEDIA. Wolna Encyklopedia - 26.11.2012).

²⁸ **General Foods Corporation** – An American food company.

²⁹ **Kraft Foods, Inc.** – it is the second-largest company in the food industry in the world. It was founded in 1903 by Jamek KRAFT. Its products are present in 150 countries. It has 168 manufacturing facilities all over the world and employs about 100,000 people. In October 2012, due to the global division, two companies were formed: **Kraft Foods Group, Inc.** – production and distribution of food products to the North American market, and **Mondelēz International, Inc.** (formerly **Kraft Foods, Inc.**) – a global group of food and beverages manufacturing. In Poland, a division of Kraft Foods has been on the market since 1992 and comprises companies such as **OLZA** (Prince Polo wafers producer) and **LU Polska** (producer of biscuits – Delicje, biscuits, LU Petitki). In Nantes in France, in the mid-nineteenth century the Lefevre and Utile families built sweets manufactory, which was taken named from the initials of their surnames **LU** (see wikipedia.org/wiki; mondelezinternational.com - 27.11.2012 and lupolska.pl - 19.03.2013).

strategic plan, the main focus is on the principles of the resources used in the implementation of the mission in a particular organisation environment, a tactical plan, on the other hand, shows people and the way they act (Table 4.).



Source: own study based on: R.W. Griffin, op. cit., s. 215.

Figure 4. A range of activities in a tactical plan development and implementation

Tactical plan development

In most cases, the effectiveness of a tactical plan depends on many factors that change depending on the situation and particular needs. In spite of these conditions, it is possible to indicate a certain algorithm (procedure).

Firstly, it should be remembered that tactical planning should relate to the implementation of a number of tactical goals resulting from a wider, strategic goal. There might be situations requiring an independent and separate tactical plan. In general, however, tactical plans are developed on the basis of a strategic plan and they should be in accordance with it. Example: one of the chief executives officers in Coca-Cola Company developed a strategic plan introducing the company in the 21st century. He also identified the main threat from the company's environment and pointed to serious anxiety and nervousness of the independent bottling plants executives, and intermediaries in Coca-Cola distribution. To counteract this threat and to strengthen the company's position, Coca-Cola Company bought a few large, independent bottling plants and merged them into a new organisation under the name Coca-Cola Enterprises Inc. the sale of a half of the share capital of the new company brought millions in profit and, at the same time, enabled the maintaining of corporation control by Coca-Cola management. Setting up a new company was

recognised in a tactical plan, while its implementation contributed to the achievement of the paramount strategic goal.

Secondly, while strategies are often formulated in general categories, tactics deal with specific resources and issues of time. For example, taking the first place on a certain market or in a certain business can result from an action strategy. However, a tactical plan must include detailed information on what activities would be taken to achieve the established goal. In the example of Coca-Cola Company, one of the elements of its strategic plan was to increase its share on the world's soft drinks market. To increase the sale of these drinks in Europe, tactical plans to build two new factories were developed. One of the factories (producing soft drinks concentrate) was located in the south of France, and the other one (producing canned drinks) - in Dunkirk. The construction of these facilities was a specific action involving measurable capital resources (e.g. funds to cover the investment costs) and having a clearly defined time horizon (the opening date).

Thirdly, tactical planning needs the use of human resources. The participants (managers, executives) of tactical planning spend a significant part of the time cooperating with other people. They collect data from the inside and outside of the organisation, and after analysing and calculating them, as well as processing them into useful information, they use it in planning and make it available to potential users. And so in the case of planning the construction of new Coca-Cola Company facilities in Europe, it took a lot of time and effort of many managers, who communicated with multiple partners (including the ones off-site).

Tactical plans implementation

Regardless of the quality of a tactical plan, the final success depends on how it is implemented. Successful implementation depends, in turn, on the wise use of resources (mainly human resources), effective decision-making and deliberate activities by competent persons, at the right time and in the right way. A person developing the plan (a manager, an executive) can have a great idea and the best intentions, which can end up with failure if there is no consistency in its proper execution. The right execution of the planned intentions depends on many various and often variable factors. While planning, it is necessary to assess a lot of possible (acceptable) ways of acting, according to the established goals. It is important to make sure that all decision-making people have the right data, information and resources necessary to perform scheduled tasks. In particular, it is necessary to provide both vertical and horizontal communication as well as the integration of effort, minimising in this way the risk of conflict between the contractors while performing some inconsistent activities. Also, the modes of operation and the results achieved in the plan's implementation should be controlled (checked) regularly as well as the degree of approximation to the desired goal should be assessed. Such activities are usually a part of tasks carried out on regular basis in the control subsystem of an organisation.

For example, a strategic plan in Walt Disney Company was developed. Its aim was to challenge the growth of its services and profits. On the basis of this strategic plan, the construction of one or a few 'Disneylands' in California was included in the tactical plan. One of them was to be constructed next to 'Disneyland' in Anaheim and modelled on the Disney World's Epcot Centre in Florida. Although the construction was a great organisational and financial enterprise, its implementation was included in the tactical plan as a consequence of the realisation of the growth in services and profits subsumed in the strategic plan.

Operational planning

Another important element of effective planning in an organisation is the development and implementation of operational plans. They are developed on the basis of tactical plans, and their task is to achieve operational goals. Operational plans focus on a narrower range of projects and they refer to a relatively short period of their implementation by the lower-level management. They include single (one-time) plans and continuous plans.

1. Single (one-time) plans

A single (one-time) plan is developed in order to carry out actions, which are the least likely to be repeated in the future. Disney, while developing its expansion plans on the west coast of the United States of America, developed a number of single plans for individual routes, attractions, hotels, etc. the most common forms of single plans are programmes and projects.

A *programme* is a single-use plan for a wider set of tasks. It can include procedures necessary to introduce new product lines, to open a new company or a point of sale, and finally to change the mission of a company. A few years ago, Black&Decker Corp.³⁰ bought a factory producing small appliances from General Electric. The transaction was the biggest operation of rebranding in history, during which 150 products changed from the GE label to the Black&Decker one. All products were analysed, redesigned, made with the use of new technology and re-introduced to the market. At the same time, the warranty period was extended for all products. It took three years to implement the programme related to the acquisition of approximately 150 products by the Black&Decker Corporation.

A *project* is similar to a programme, and it differs from it with a narrower range of activities and a lower complexity of its implementation. A project can be a part of a programme but it also can be a separate one-action (operation) plan. In the Black&Decker Corporation, the acquisition of each of the 150 products was

³⁰ **Black & Decker Corp.** (Black & Decker Corporation) – an American manufacturer of power tools and household goods. It was established in 1910 by Duncan Black and Alonzo Decker. The corporation consists of several companies, which are its subsidiaries, however, they produce tools under their own names (among others: DeWalt, Kwikset and Price Pfister). Since March 12th 2010, after the merger with Stanley Works, the company is called **Stanley Black & Decker** (see WIKIPEDIA. Wolna encyklopedia).

realised on the basis of an individual project. Each product had its own manager, the right schedule and the right contractors. Projects are also used to introduce new products within the existing assortment, to introduce new a type of bonus into the existing payroll system or to change the name of an organisation. An example here can be the successful completion of the name change of 'Mercury sports' to Reebok, known as the 'Blacktop'³¹ project.

Continuous plans

A continuous plan is used for actions repeated regularly, from time to time, as opposed to a single plan which is used in unrepeatable situations. Continuous plans are used to improve effectiveness through the standardisation of activities implementation in the decision making process. The main types of such plans are: policies, standard operating procedures and rules and regulations.

Policies, as general guidelines, are the most general form of a continuous plan. A general organisational response to a particular problem or situation is defined as a policy. For example, McDonald's³² has the policy not to give a licence to a person, who already runs a fast food restaurant. A selection committee to a university can introduce a policy to admit only the candidates who obtained at least 200 points at their maturity examination on the subjects selected for particular university departments. An electronic recruitment system can automatically reject the applications of candidates who do not fulfil this requirement. A policy directive can also describe the right way to deal with exceptions. The recruitment policy declaration of a university can, for example, envisage the establishment of a board of appeal for recruitment issues to assess candidates, who do not fulfil the minimum requirements but deserve special consideration.

³¹ **Reebok** - (Reebok International Limited) – a British company in the clothing business, producing footwear, clothes and sports accessories. Its name since 1960 comes from the South African antelope – grey reebok (afr. Vaalribbok) and was adopted by the grandsons of the founder (Jeffrey and Joseph) on the basis of the spelling from the South African dictionary, which Joseph, still as a child, got for winning a race (hence – the programme Blacktop). Since January 31st, 2006 after a merger for €3,1 billion, Reebok company belongs to Adidas-Salomon Group AD (see WIKIPEDIA. Wolna encyklopedia).

³² **McDonald's** – the company was founded on May 15th, 1940 in San Bernardino, California by two brothers Dick and Mac McDonald. Since 1953 the company has been franchised. Two years later, on April 15th, Ray Kroc created a legal form for the franchise system: McDonald's Systems, Inc. In 1960 the company changed its name to McDonald's Corporation. As a public limited company, it has been listed on the New York stock exchange (NYSE) since January 5th, 1966. In 2007 McDonald's had 31 thousand fast food bars in over 119 countries all over the world. The company also owns other brands related to gastronomy: Aroma Café, Boston Market and Donatos Pizza. In 2007, the revenue of the company was \$22,8 billion, and the net profit \$3,9 billion. **Franchise** – a product or technology sale system (goods and services), based on close and continuous cooperation between legally and financially separate and independent companies: a franchisor and its individual franchisees. Franchise also involves the transfer of knowledge from the franchisor to its franchisee during the duration of the franchise agreement. Its essence is to give rights (and take responsibilities) by concluding the franchise agreement. (see wikipedia.org/wiki/Franciszya).

The standard operating procedure is a different type of continuous plan, more specific than a policy directive, in which the *modus operandi* in certain conditions is specified. For example, an official involved in recruitment at a university can use the routine procedure after the applications have been received: 1) to create a candidate's folder, 2) attach the tests results, copies of documents and recommendation letters to the folder, 3) pass the folder to the right executive dealing with recruitment. Gallo Vineyards Incorporated³³ in California, for example, has a 300-page manual of standard operating procedures. Among other reasons, thanks to the planning guide, Gallo is one of the most efficient wine factories in the United States of America. McDonald's has a procedure describing exactly how to prepare a Big Mac, the acceptable time of storage in heaters, etc. The standard operating procedures also apply to the transport (air, automotive) of important passengers (of VIP and head type). They also apply in the case of airspace management (air traffic control).

Rules and regulations are the narrowest type of continuous plans, describing exactly how to perform specific tasks. In various situations, they are the direct basis for decision-making. For instance, all McDonald's restaurants generally did not let customers use the company telephones. A university recruitment office can apply rules which say that if a candidate's folder is not completed two months before the semester starts, the student can be admitted only at the next semester. Of course, in most organisations, a high-level manager (executive) has the possibility to suspend or 'bend' a certain rule. If a copy of a school certificate of the daughter of an outstanding university graduate and founder is delivered a few days late, the department director will probably rescind the two months rule. Rules and regulations can become a problem if there are too many of them or if they are applied too rigidly.

In many respects, rules and regulations, as well as standard operating procedures, are similar. Both of them have a relatively narrow range of 'rigidly' implemented activities and they can simplify the implementation of some activities in a decision-making process. In general, however, standard procedures indicate the order of proceedings in the action (they are an action algorithm), while the rules and regulations focus rather on the activities of one type. In the examples presented above, the standard procedure in the recruitment office consisted of three activities, the rule of two months referred, however, only to one action. In the case of many market subjects (e.g. logistics companies) the standard operating procedure applies to channelling (orientating) a new employee before taking up his new position. It often relates to the basic salary and other perks of the job, the introduction of the co-workers and executives, and finally to their acquaintance with the structure and

³³ **Gallo Vineyards Inc.**, - a company established in 1993 in California. It is the largest vineyard in the world, with an exceptional experience in the art of grape growing, winemaking and wine distribution and marketing. Gallo, being an owner of seven vineyards located strategically in the area of California, makes wine of all categories and offers a diversified portfolio, adjusted to the taste of the most demanding customers. (see biznes.interia.pl).

location of the company. For newly employed workers, an important rule can be information on an obligation of daily readiness to perform commissioned activities during the working hours.

Planning, as one of the management functions, is the basis to start an operation of any organisation. In the case of organisations, which are economic subjects on the market, planning should be the basis for fulfilling certain, specific needs and/or desires. It is implemented, on the one hand, through the recognition of the needs, especially the purchasing capacity, market segments creation, and consequently, recognition and assessment of the demand for particular products. On the other hand, while providing opportunities to fulfil particular, real life needs and/or desires, the other basic attributes, the demand is stimulated.

Planning is therefore the action which is designed to enable, although not necessarily ensure, efficiency and effectiveness in achieving the assumed organisation goals, including logistics operators.

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SUPPORTING THE POLISH AIR FORCE WITH AIRBORNE EARLY WARNING AND CONTROL SYSTEMS

Col. Bogdan Grenda, Ph.D.

Abstract

Contemporary military conflicts are unpredictable in terms of time, place, and scale. Therefore, they require the use of modern weapon systems, and platforms capable of carrying them; but above all, systems that are capable of recognizing risks and managing active counter measures. The E-3 AWACS aircraft is the platform which fulfills the requirements. The article describes the organizational structure responsible for the operation of AWACS systems as well as the E-3 aircraft. The paper presents the possibilities of its use in support of Polish Air Force operations.

Key words – AWACS, support, Air Force operations

Introduction

Airborne Early Warning and Control System (AWACS)¹ is one of the most important elements of the NATO command system. AWACS is presently an indispensable support element of NATO ground based surveillance and recognition systems. This versatile and universal system assures operational command and control capability of active defensive and offensive assets in time of peace, crisis and war; it completes the air picture over sea and ground areas² and provides air reconnaissance intelligence to other platforms and ground based command and control (C2) centers. Poland's access to the NATO agency NAPMO³ gave Polish Armed Forces, and the Air Force in particular, the ability to take advantage of E-3 AWACS assets as well as the support of a ground based surveillance system in case of emergency. Emergency cases are connected mostly with such events like the visits of heads of states, mass international meetings, which require the implementation of non-fly zones within a radius of up to many kilometers from

¹ AWACS was developed in the USA in 60s and 70s.

² AWACS is able to provide information about the situation on ground in a very limited way, it is not able to fulfill the function of the JSTAR or AGS systems.

³ NAPMO is responsible for cooperating and co financing of the NAEW&C forces.

designated areas. Each time the E – 3A's crews stay on duty from a few to many hours, facilitating the tasks of the country's airspace control, ready to guide the Polish interceptors to counteract any unauthorized violations of the non-fly zone. The cooperation process is facilitated by an automated command and control Dunaj system and systems providing communication in LINK 11 and LINK 16 protocols. In order to achieve the necessary interoperability with NATO, the Polish Air Force regularly participates in alliance exercises. Monthly exercises of the Air Force, Land Forces and Naval Forces designated to the task of the country's and alliance's air defense have been conducted for a few years. Fruit Fly exercises are an example of such trainings with Polish combat and transport aircraft crews, as well SAR helicopters, cooperating with E-3 system. Participation in such undertakings is aimed at preparing the designated forces to be able to operate in a real battle environment. Today's military conflicts are characterized by a high level of unpredictability and situation dynamics and as such they would require, among others, employment of modern information acquisition systems and command and control. All this presents a challenge for an AWACS system. Therefore the main goal of this article is to identify the main task which will be performed by an AWACS system in support of Polish Air Defense.

AWACS structure

The agenda responsible for control and management of the early warning and control system is NAPMO. NAPMO was founded in 1978 with the cost of the program at the time being 3,800 billion dollars. To facilitate this project air bases in Geilenkirchen - Germany, Trapani – Italy, Aktion – Greece, Konya – Turkey and Oerland – Norway were established and the *accommodation* of over 40 ground CRC's took place. NAPMO consists of a Body of Directors from program participant countries. Directors meet at least two times per year to discuss main issues, make plans for the future and find solutions of all identified problems. The body of directors is divided into two committees: Operational Planning and Logistics, and Control and Finance.

In the organization first years only 13 NATO countries signed the agreement for financing and supporting the AWACS unit. A few years later Spain and Hungary joined the organization. Poland gained the participant status on Dec 2006, after 6 years tenure as an observer. From that moment, Poland has had legal rights to the ownership of the E – 3A fleet. Currently NAEW&C program consists of 17 countries which have full membership status: Belgium, Canada, Czech Republic, Denmark, Germany, Greece, Hungary, Italy, Luxemburg, Holland, Norway, Poland, Portugal, Romania, Spain, Turkey, and USA. In 1989 a component of 7 British E-3D's was incorporated into NAEW&C. Great Britain retains limited control over these assets to this day. Alliance or coalition operations

led by international institutions can use the French owned E-3F⁴ assets, as this country has NAEW & C observer status. France also often supports the NAEW&C operations.

The core of Airborne Early Warning Force Command (NAEWFC) is composed of the command center and two components. NAEWFC command was established on January 1980. Its main task is the control and supervision of AWACS components. The main task of a NAEWFC commander is provision of Alliance capability to sustain airspace control and warning as well as control of air force operations conducted by the Alliance. He is also responsible for keeping the required status of operational readiness, logistics and training. NAEWFC headquarters is located in SHAPE and is directly subordinated to SACEUR (figure 1).

The structure of NAEWFC is different from other commands of Allied Command Operations (ACO). It consists of divisions: operations, communication, logistics, and support (figure 2). The main tasks of respective divisions are as follows:

1. Capabilities division – is responsible for the coordination of long and short-term planning, doctrinal documents preparation and standardization.

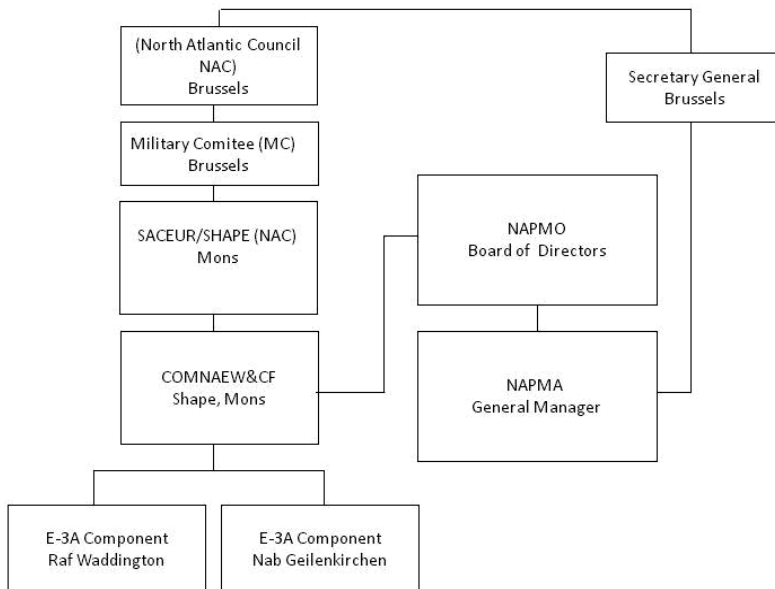


Figure 1. NAPMO in the NATO command and control system

⁴ E-3F are held by France which are beyond NAEW&C and decided to use them for the purpose of NATO takes arbitrarily France.

2. Communication and Information Systems – supervision of the development of onboard computer systems, modernization and supervision of all systems for all fleet as well as the coordination of all activities connected with the development, sustainment and use of computer systems.

3. HQ Support Division – coordination of activities connected with flight safety, planning and conduct of tactical evaluation of designated components, as well as manning management.

4. Logistic Division – responsible for effective and efficient management of NAEW logistic support.

5. Operations Division – coordinates and conducts the supervision of current activity and training as well as modernization of the E-3A fleet.

Units directly subordinated to NAEW&CF HQ are comprised of two components. The first unit is the NATO E-3A Component (AWACS) stationed in Geilenkirchen (Germany) and has in its inventory 17 AWACS aircraft and 3 TCA (Training Cargo Aircraft). The second component is the 8th RAF squadron from Waddington, with the fleet of seven E-3D aircraft, subordinated to NATO but providing the United Kingdom with a national capability when necessary. The new organization commenced flying operations in February, 1982, when the first training missions were flown. Official activation of the unit took place on June 28th, 1982. Full Operational Capability of the AWACS unit was achieved at the end of 1988⁵. The main component consists of four wings and the same number of operational bases.

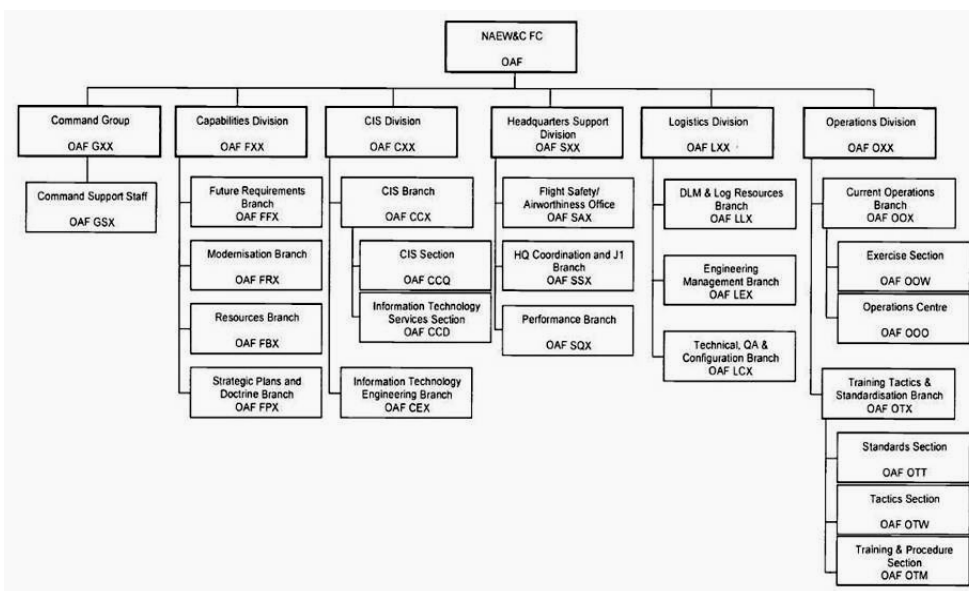


Figure 2. NAEW&C FC organizational structure

⁵ R.K. Łukawski, *Oczy NATO*, [w:] Przegląd Sił Powietrznych 5/2009, s. 16-17.

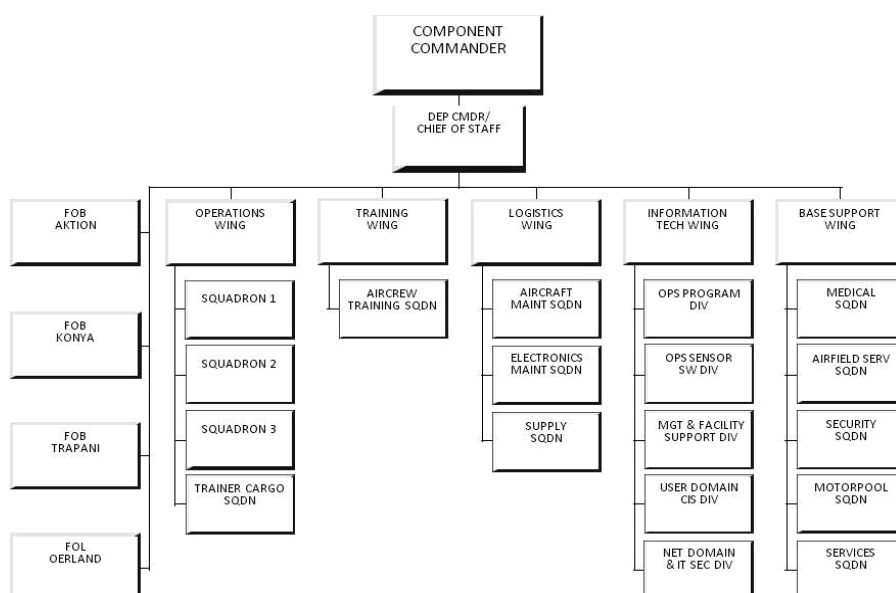


Figure 3. Structure of the AWACS Component

The Operations Wing is the core of an AWACS unit and is responsible for support and carrying out the flight operations. Its responsibility is also the planning of the effective use of 17 E-3A aircraft, two mission simulators and one TCA mission simulator. A wing consists of staff, three flying squadrons, and one TCA squadron. Training Wing is responsible for all activities connected with flight crew training and aircraft maintenance personnel. Base Wing Support provides support for all others Wing components. Logistics Wing provides for the supply of necessary equipment and materials, sources indispensable equipment and sustains the operational capability of E-3A aircraft and their auxiliary equipment. Information Technology Wing is responsible for creating projects, the improving and implementing of software for all elements of the component and that of AWACS aircraft. Commanders of the mentioned wings are the representatives of the participant countries with the rank of colonel⁶.

17 NATO's E-3A aircraft, grouped in three flying squadrons, are based in MOB Geilenkirchen, the same is true for training, logistics and information technology elements. Other bases are secondary and not used on a permanent basis. RAF AFB Waddington is the MOB for the other 7 AWACS aircraft. The location of AWACS aircraft's AFB is presented in picture four.

⁶ Na podstawie: R. Łukawski, *Oczy NATO*, Przegląd Sił Powietrznych nr 5/2009.



Figura. 4. AWACS units location

E-3A Aircraft

The E-3A aircraft is a militarized version of the Boeing 707-320B commercial airframe. One aircraft flying at 30,000 feet has a surveillance area coverage of approximately 120,463 square miles (312,000 square kilometers). It's maximum range (without air refueling) is up 7400 kilometers with a maximum flight endurance of up to 8 hours. Air refueling and an additional crew extends the time of patrolling to 16 hours.

The core element of the E-3A, determining its capabilities, is the multimode AN/APY1-2 radar system working in the E/F band. The AN/APY-2 has the capability of detecting air, ground, sea targets, including low flying and fixed objects. The AN/APY-2 has the option of sea surveillance (the USAF E-3B's equipped with a modernized version of the AN/APY – 1 has only a limited capability of sea surveillance). The radar systems of the RAF E-3D's have been improved with specific working modes employed in sea surveillance. The main antenna of the AN/APY-2 radar system is installed in the rear upper part of the fuselage and protected by rotodome with a diameter of 9,14 meters. The antenna dimensions of 7,32 x 1,5m allows it to achieve the 0.9 degree beam width in azimuth and 4.5 degree in elevation. Every waveguide presents the array of

radiating elements and is *agitated* by a very precise phase shifter. This gives the radar the electronic beam steering in elevation. In the horizontal plane the beam is fixed while the whole antenna together with the 9 meters in diameter radome rotates 6 times per minute. Employment of a mechanical beam steering in a horizontal plane allows for a very accurate forming of the scanning beam with very low level of side lobes in this plane (the first side lobes level is below -40dB). The radar employs a moving target detection technique to detect the small moving targets in the presence of strong ground clutter using the calculations based on course and speed data received from the onboard navigation systems. The detection of aircraft flying at low altitudes is conducted by using the radar working mode with a scanning beam fixed in a vertical plane (elevation). Radar modes with agile beams are used selectively when the detected target altitude measurement is needed. The radar working with sharp a scanning beam gives the substantial capability of surface sea targets detection. The radar horizontal scanning pattern is divided in 32 sectors with a defined working mode for each sector. The radar is capable of working as a passive sensor (no active scanning). In this mode the radar receiver subsystem analyses the detected electromagnetic emissions and provides the azimuth of their sources. The airspace situation is presented on 9 multifunctional display consoles. Two additional consoles are dedicated for monitoring the status of the radar system and the data transmission process. Gathered data can be transmitted to other AWACS aircraft and to ground air defense. The radar system for AWACS aircraft orbiting at an altitude of 9000 m has the ability to detect targets flying at very low altitudes at distances up to 400 kilometers, while targets flying at medium and high altitudes can be detected up to 520 kilometers away.

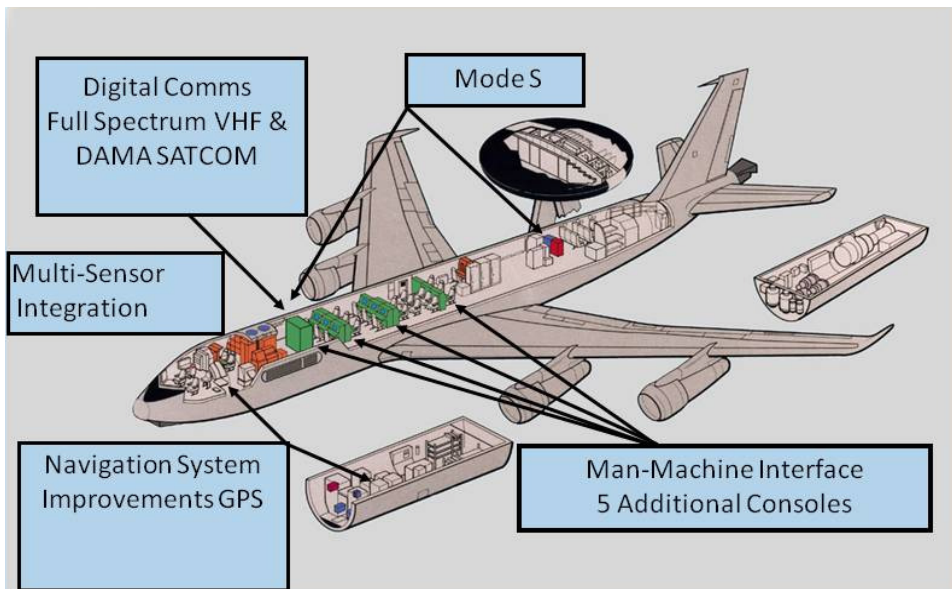


Figure. 5. E-3A aircraft

Another system is the onboard IFF. Its task is to detect and identify flying objects equipped with the elements of this system. The IFF's working process is based on the principle of active interrogation/answer. An aircraft sensor, which has a bigger detection range than an onboard radar, is its passive detection system. The aircraft's passive sensors have the ability to detect, identify and track the EM emissions from sources operating from an air, sea surface and ground environment. It also allows it to track vehicles built with stealth technology⁷.

A normal crew complement of E-3 Sentry AWACS requires 16 members (maximum complement is 35 crew members). An aircraft crew complement consists of flight-crew and mission crew. The flight – deck crew consists of:

- Aircraft Commander, they are the pilot in command and the superior officer of all crew on board;
- Second Pilot is also responsible for radio communication and providing support and help for the commander
- Navigator, his duties include ensuring the aircraft reaches and maintains its orbit position, often in an airspace giving little margin for error;
- Flight Engineer is responsible for monitoring the engine power and flight performance of the aircraft.

The mission crew consists of:

- A Tactical Director responsible for overall conduct of all missions controlled and supported by AWACS aircraft;
- A Surveillance Team of 5 five which comprises the Surveillance Controller with three Surveillance Operators and one Passive Controller subordinated to him. These highly-trained airmen are responsible for management of the battle space – real air picture, data communications, identification of air vehicles and management of defensive systems;
- The Weapons Team comprises of a Fighter Allocator and two Weapons Controllers subordinate to him. They are responsible for the proper conduct and safety of assigned missions. Usually one of the WCs controls the tasks of Defensive Counter Air (DCA), while the other those of Offensive Counter Air (OCA);
- Airborne Technicians comprise of the Communications Technician, System Technician, and the Radar Technician. They are responsible for controlling the onboard systems.

⁷ R. Ciemięś, AWACS – inny punkt widzenia, Przegląd Sił Powietrznych, nr 6/2011, Warszawa 2011, s. 37.

The mission and tasks of an AWACS system

The mission of NAEW&C (IAW SACEUR's Concept of Operations⁸) is the support of the integrated air defense system and the execution of NATO operations.

E-3 aircraft are used to support the control of joint NATO operations (assume the role of an air command center). This is the reason behind the peace time preparations of E-3 assets as command and control centers for fighting forces, electronic reconnaissance and the distribution of radar air and sea surface picture. Support of air search and rescue is a very important mission for E-3 aircraft in times of both peace and war. In a time of war these aircraft will execute the tasks connected with combat identification (as additional identification source), support of air interdiction missions, support of airforce and naval operations, strikes of sensitive targets and Defensive Counter Air (DCA) and Offensive Counter Air (OCA) operations.

NAEW&C are the high readiness forces subordinated to NATO. They have a deployment capability, into any world region, of five days after reception of the decision where they become an element of every rotation of NATO response forces. The NAEW&C commander's mission is to execute tasks in accordance with the priority of: NATO operations, including NATINADS support, NAEW&CF training and support for the training of other units.

Additionally the NAEW&C's responsibility is to train and equip⁹ subordinated forces to give them the deployment capability and ability to operate not only from their MOB but also any base in the world.

AWACS in the Polish Air Forces

Support of Armed Forces training and Air Forces in particular is the main benefit provided to the Polish Army by AWACS. This is done through support of exercises and trainings executed on a national, alliance and coalition level. In order to prepare Air Forces for operations supported by an AWACS system they take part in common exercises covering all possible air scenarios. The goal to be achieved is the training of command and control crews, including those of active defense, to be capable of communicating and take advantage of AWACS assets on a national, alliance and coalition operational level. An airborne early warning capability requirement was defined in the 1970's by NATO with the aim of

⁸ *SACEUR's Concept Of Operations for NAEW&CF.*

⁹ For appropriate equipment are NAPMO states member responsible, which incurring the cost of upgrading E-3A aircraft. Equipment E-3D aircraft is the responsibility of the UK, so there are differences in the ability of aircraft E-3A and E-3D.

counteracting air operations conducted by low level flying vehicles. Formulated requirements included:

- The capability of simultaneous tracking of more than 100 objects;
- The capability to transmit the information to ground centers and other aircraft in near real time;
- Command and control for tactical aircraft achieved by the introduction of militarized B-707 aircraft equipped with radar surveillance equipment¹⁰ – effectively E-3A¹¹.

Employment of an AWACS system for the purpose of Polish air defense is focused on training activities, including support of high visibility events. AWACS training activity is mostly conducted through the control of participant country airspace. In such an event national air defense C2 cells improve their skills of communicating with E-3A aircraft and provide RAP for areas not covered by ground based surveillance. In times of crisis the tasks of an AWACS system will undergo significant extension. In a time of crisis military activities will cover alliance peacekeeping operations, national and coalition counterterrorism operations and support of civil administration. Amongst these operations two main categories can be differentiated – peace support operations requiring the acceptance of the international community (acceptance of NATO countries) and those which do not require such a consent – presented in doctrines as other crisis response operations. Such a division of crisis response operations has been also assumed in Polish doctrine DD/3.4¹².

Peace support operations are conducted in cooperation with international organizations, mainly the United Nations and encompass military actions, diplomatic and humanitarian activities. Peace support operations comprise such activities like Peace Keeping, Peace Enforcement, Conflict Prevention, Peace Making, Peace Building and Humanitarian Operations¹³.

Other crisis response operations are the second area of non article 5 crisis response operations. These operations do not require acceptance of all NATO participants and as such they may be executed at a coalition, bilateral or national level. They include also support of humanitarian missions, removal of natural disaster effects, search and rescue, evacuation operations, force withdrawal, enforcement of embargoes and sanctions, and support of civil authorities¹⁴.

Tasks executed in facilitating the above mentioned operations will be mainly focused on providing surveillance information – radar air picture for the forces participating in the operation. Crisis response operations are often conducted in hostile or difficult to access areas, where there is no possibility, or its not justified

¹⁰ AN/APY-2.

¹¹ In the NATO code - „SENTRY”.

¹² *Operacje reagowania kryzysowego* spoza Artykułu 5 (DD/3.4) / MON/SG WP, Warszawa, 2008, s. 25–35.

¹³ *AJP-3.4 Non-Article 5 Crisis Response Operations*, NSA, Brussels 2005, s. 3-1–3-4.

¹⁴ *AJP-3.4...*, wyd. cyt., s. 4-1–4-10.

from an economic point of view, to establish a ground based air surveillance system. That's why the E-3 aircraft will be the sole provider of air surveillance information in such situations. During the conduction of crisis response operations non fly zones are established, and enforcement of those zones can be facilitated by E-3 aircraft providing surveillance and acting as command and control centers for interceptors enforcing the non – fly zone.

Crisis response operations are getting increasingly similar to war time operations, and having in mind the inevitable participation of PLAF in alliance and coalition crisis operation, the need for the proper preparation of crews and cooperation becomes very urgent. During war time an AWACS system will support the full spectra of Air Force activities. Tasks performed by AWACS are assigned to support ones according to NATO typology. These tasks encompass the following areas:

- Control of air space and sea surface to enhance the surveillance of these areas;
- Early warning and provision of information;
- Control of air force activities in operational area;
- Provision of air surveillance information for ground command and control centers.

The main task of an early warning and detection system done for the benefit of the Air Force and in particular for the integrated air defense system is to provide information about objects on distant approaches in the shortest time possible. This will enable IADS to act appropriately against these threats while keeping the economy and needed concentration of assets on given sectors. The main tasks of an AWACS system in the conduct of such operation can be defined as follows:

- Detection and identification of aerial targets, establishing their location;
- Detection, location and identification of sea surface targets;
- Detection and location of enemy ground based air defense elements;
- Provision of information to Europe's HQs air defense elements about detected targets, and allied maritime command about detected sea surface vehicles;
- Provision of air space situation to ground based command and control centers;
- Directing fighter-interceptor aircraft to detected targets identified as enemy;
- Search and participation in combat search missions.

Support of NATINADS in national and coalition defensive missions is the most important task provided for PLAF by AWACS. E – 3A aircraft, in addition to the above mentioned tasks can act as a main or secondary airborne command and control for commanders of joint forces.

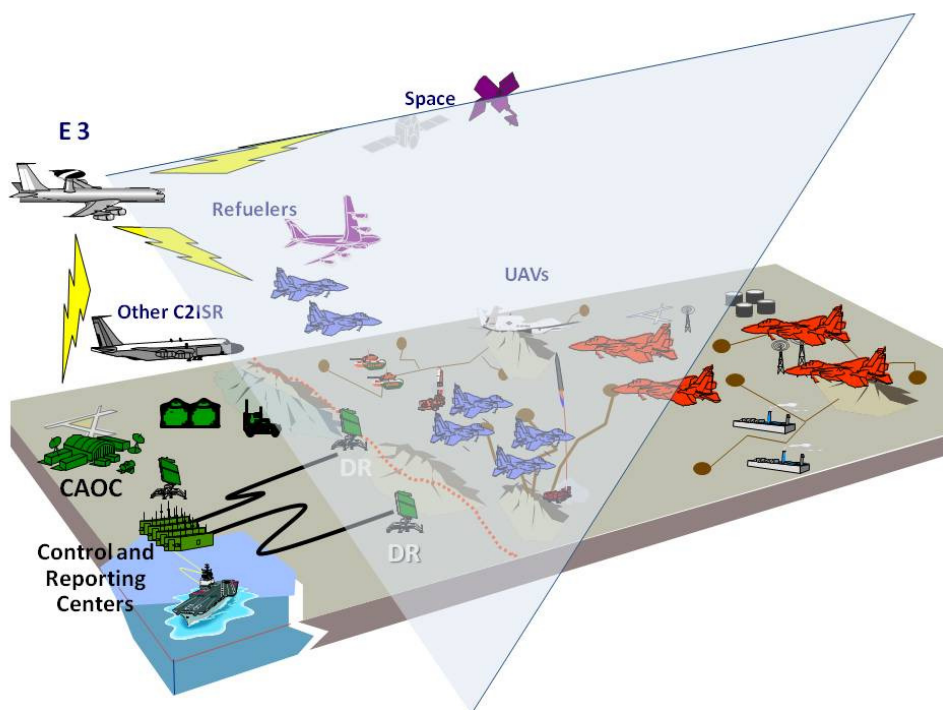


Figure 5. Supporting of the Air Force with E-3A

Summary

The AWACS NATO system presents a new quality for the defensive potential of our country. E – 3 aircraft – the airborne element of the AWACS system – provide an increased airspace surveillance capability for Polish ADS. Additionally, with the introduction of the new generation F – 16 fighter, equipped with the Link - 16 terminals, there appears a new opportunity of using this protocol for communication with AWACS. The E – 3 A's onboard equipment is fully interoperable with other NATO command and control systems. At the same time the task of adapting the national elements of IADS to take full advantage of AWACS presents a big challenge for the PLAF. Having in mind the AWACS role, in times of peace aircraft of that system will be mainly used for the control of airspace to enhance national and coalition ADS.

It's in the best interest of the PLAF to maximize the use and cooperation of its assets with AWACS during exercises and training to excel the procedures of cooperation with the national air defense system. Still the main source of airspace surveillance information for the Air Forces will be the network of ground radar outposts, and the main national command and control system contributing to the NATINADS.

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THE IMPORTANCE OF THE COMPANY SIZE IN INTERNATIONAL ECONOMIC AND DEFENSE COOPERATION

Stefan KURINIA, Ph.D.

Abstract

Today, as a result of significant reductions in the armed forces in the world, it is difficult to maintain the scale of production at a high level and for it to be economically rational. In addition, self-mastery of all the necessary modern battlefield technology is a huge challenge for even the biggest economic powers. That is why it is so important today for the security of states to have international economic cooperation. Recently there has been a growing interest in international economic cooperation in the field of defense technology. Economic and defense cooperation in the field of advanced technology is especially important for small businesses. Small businesses are more flexible in taking risks, but do not have the capabilities. Interesting research on the factors influencing the development of economic and defense co-operation of small businesses has been conducted British economist P.Bishop. Empirical studies on a sample of 355 British companies have confirmed a significant positive relationship between firm size measured by the level of employment and the likelihood of international cooperation. The study also showed that innovation and a significant share of defense in total company revenue can facilitate establishing international economic cooperation.

Key words – economic cooperation, company, small businesses

Introduction

One of the pillars of national security is the size and condition of the defense industry. Its potential is not only the volume but also technological advancement and military equipment and armament offered. Today, resulting from the significant reduction of armed forces in the world, it is difficult to maintain a scale of production at a high level and economically reasonable. In addition, self-mastery of all the necessary modern battlefield technology is a huge challenge for even the biggest economic powers. That is why the security of a state's international

economic cooperation is so important today. International cooperation in defense industries can take three forms: an international tender for the supply, licensed production and distribution of manufacturing, and international programs.

International tenders for supplies are organized in a choice of competitive bids concerning the price, technical and tactical requirements, and delivery date. Offers may include a completely new weapon that is in the design phase or development of the existing one. Since the seventies, many countries have made efforts to purchase arms abroad accompanied by compensation for losses due to the resignation of procurement for the national defense industry. Usually, the term compensation (offset) means the employment of a certain size, the supplier gives business to the state purchasing weapons for not using its own production capacity. Estimating the size of compensation is difficult because different countries have different criteria for determining the scope of compensation for losses realized in connection with the transaction. Hartley and Martin noted the need for a distinction between direct and indirect compensation¹.

Direct compensation related to the products and services for weapons and military equipment that is purchased. An example of direct compensation may be a situation where the British, buying American aircraft, will produce the chassis mechanism.

Indirect compensation is not related to the acquiring of military equipment. For example, Spain has allocated some compensation for the loss resulting from the purchase of the U.S. F16 aircraft on the development of domestic tourism. Indirect compensation may include investments and mutual exchange, such as barter, purchase and mutual redemption of defense equipment.

License production and distribution of production binds to the total or partial share of the domestic industry in the production of the weapons of another country. It is believed that the result of this option are higher unit costs than if the entire production was purchased directly from the original manufacturer. Higher costs may result from the smaller scale of production, duplication of tools, and technology transfer. There is also a license fee, which could amount to about 10% of the sales price. On the other hand, the production license can save a significant investment in research and development. This avoids the problems of balance of payments, sustains a skilled labor force, preserves a national defense industry and can have the benefits of access to advanced technology.

International programs include both development and production. Joint projects can be realized by two or more countries; the nomination of companies that will participate or share could be established on a commercial basis. Joint projects seem to be the most suitable for standardization. Thanks to them, there is no duplication of investment in research and development and it uses economies of scale. There is also the added effect of keeping the national defense industry, the use of advanced

¹ K. Hartley, S. Martin, *UK Firms' Experience and Perceptions of Defence Offsets: Survey Results*. Defence and Peace Economics, vol.6, 1995, p. 125.

technology and manufacturing of the product makes it more competitive in export markets. There are also costs. Each partner may require some modifications that increase the cost of research and development, and reduce the benefits of large-scale production. States will insist on a "fair share" of all the advanced technology sector, and can insist on doubling the final assembly line. Although ultimately international cooperation does not seem to be an ideal case, in comparison to the national programs, there may be some unit cost savings.

For economic and defense cooperation of NATO states it was characterized at the beginning that the first joint projects were dictated by the needs of industry. Cooperation was forced by the need to create the ability to use advanced technology. The share of the UK and France in joint projects brought a change in the nature of cooperation. For both countries a common armaments production was seen as a way to maintain their own independent production capabilities in the face of increasing demands on resources. Contrary to expectations, we found that the cost of international projects tends to be higher than the cost of national projects. The main reason for Kaldor was the difficulty in reaching a common understanding and inefficient division of labor arrangements. The quest for a fair division of labor resulted in duplication of the production lines of each project participant. And although international projects can reduce the potential for research and development by 35%, the result of the general increase in the cost of the joint project there was, in the opinion of the author, no reduction in overall production capacity which was a simple sum of production capacities of all the project participants².

International cooperation in the field of technology development

Recently there has been a growing interest in economic and defense cooperation in the field of technology development at the international level. This is due to the huge role played by the development and use of world-class technology in the creation of the military potential of the state. In today's uncertain and varied threats sophisticated technologies play a key role. It becomes a priority for governments to identify those technologies that should be developed to ensure the sovereignty and competitiveness of the defense industry.

The development of technology is of particular importance for:

- 1) meeting the challenges of defense,
- 2) the provision of cost-effective defense capabilities,
- 3) countering current and future threats,
- 4) creating an efficient supply system,
- 5) supporting the competitiveness of national industry.

² M. Kaldor, *European Defence Industries- National and International Implications*, ISIO Monographs, vol. 1, no. 8, p. 40.

In the UK, appreciating the role of technology, the government developed a 10 year strategy for the development of technology to increase investment and development in the public and private sectors³. Innovation improves the quality of weapons and equipment, increases combat capability of the armed forces and influences the export performance of the defense industry.

In order to meet the needs of the armed forces there should be paid particular attention to:

- technologies that can be implemented immediately, immediately bringing the effects of the military;
- technologies that could affect the expansion of deliveries;
- technologies where Britain has a competitive advantage, which must be preserved;
- technologies that are assessed as having an increasing importance to national defense.

The British government decided to increase spending on technology development to 2.5% of GDP in 2014. It was found that the British industry had missing researchers. Industry reports a lack of 41% of engineers, 32% of technicians, 28% of managers and scientists⁴. OECD Statistics say that in the UK there are 5.5 researchers per 1,000 employees, compared to France: 7.1, U.S.: 8.6 and Finland 15.8 (the average of the OECD countries is 6.5)⁵. In addition, it was noted that from 1997 to 2004 there was decreased recruitment of students of mathematics, physics, chemistry, biology and computer science at 7.5% and low interest in these directions⁶. There is a lack of integration of professionals with deep knowledge and technology on a global level. This situation forced the British government to expand the development and technological facilities. This shall be given to increase planning and departmental research, encouraging industry and universities to compete for development programs. In 2003, 90% of research topics were implemented by government agencies, such as DSTL (Defence Science and Technology Laboratory-military institute of science and technology) and QinetiQ (industrial research institute). By 2010, it is expected that only 35% of the research programs will be carried out by DSTL, whilst for the others QinetiQ, universities and industry will compete. The Government will also support organizations that contribute to the quality of the products (Towers of Excellence and Defence Technology Centres), developing international cooperation in the field of network and information science (International Technology Alliance in the U.S. and Innovation & Technology Partnership for Guided Weapons Technology with France). DTS is an organization for strengthening the cooperation of enterprises and universities. It is funded jointly by the Ministry of Defence and industry. The

³ *Science & Innovation Investment Framework 2004-2014*, HM Treasury, 2003.

⁴ *EEF South Employer Survey 2003*.

⁵ *Strategic Science provision in English Universities*. HOC Select Committee on Science and technology inquiry 2005.

⁶ *UK must go on promoting and funding science*, Nature Volume 483, 3, November 2005.

ministry allocates its business around £ 90 million for a period of five years. Areas of particular interest for the DTS are database technologies and information systems, bionic, remote electromagnetic controllers and autonomous systems engineering⁷.

The British Government is aware that only itself can lead a study of major strategic importance for defense. Thus, an important role is attached to international cooperation.

Today, about 12% of the research programs would not be realized without international cooperation⁸. The main partners are the United States and European countries, especially France and Sweden. Italy also plays a growing role in collaborative research.

UK cooperation with the U.S. thrives. Britain manages better than other European countries in competition for U.S. defense orders. This is due to a better mutual understanding and trust, based on a broader strategic relationship and mutual respect for the industrial and technological potential. For example, the U.S. bought the BAE Systems lightweight 155 mm howitzer for the Marine Corps. Currently, Britain is involved in many joint programs with the U.S., the largest of which is the JSF aircraft (Joint Strike Fighter) program. The joint program involves the British companies, such as BAE Systems, Rolls-Royce, Cobham, Smiths and others. Full cooperation with the United States requires the transfer of certain technologies. The UK seeks to establish such a framework of cooperation that will facilitate the exchange of technology and at the same time provide the conditions for mutual security⁹.

The strategy of research programs also provides two additional options: MOTS (Modified Off The Shelf) and COTS (Commercial Off the Shelf). MOTS is ordering tests that do not have significant importance for the defense of the country to various centers, including through international tenders, taking the necessary safety procedures. COTS is the implementation of a number of research needs by expanding cooperation with many industrial and scientific centers of the country. It is not possible to implement research by the ministry of defense in all areas, and it is impossible to support all the needs of industry and research universities.

The role of the size of the company in international defense cooperation

Economic and defense cooperation in the field of advanced technology is especially important for small businesses. Small businesses are more flexible in taking risks, but do not have the capabilities. That's why for a small business it is very difficult to carry out cooperation at international level. They have limited

⁷ *Defence Industrial Strategy, Defence White Paper*, MoD, December 2005, s. 41.

⁸ *Ibidem*, p. 42.

⁹ *Ibidem*, p. 45.

access to key resources, such as finance and skilled workers. The reasons for this lie in the lack of managers who have international experience, contacts and knowledge of other cultures. This also indicates that small business owners are guided by local objectives and focus on survival and independence. Interesting research on the factors influencing the development of economic and defense co-operation of small businesses was conducted P.Bishop. He proposed an econometric model which linked the probability of collaboration to a number of factors characterizing a small business¹⁰:

$$\ln[p/(1-p)] = a + b_1EMP + b_2OWN + b_3INN + b_4XPSAL + b_5UNC + b_6REG + b_7DEF + u$$

where:

EMP-number of employees,

OWN-rate of a company's independence (0- independent, 1- part of a larger group)

INN-innovation rate (1- if there were innovations in the last 10 years, 0- on the contrary),

XPSAL-share of exports in total sales,

UNC- uncertainty rate (1- if management is convinced of the uncertainty of the future sale of defense, 0- on the contrary),

REG- business location rate (1- Region South West and South East, 0- other regions of UK)

DEF- share of defense in total revenues.

Empirical studies on a sample of 355 companies have confirmed a significant positive relationship between firm size measured by the level of employment and the probability of cooperation (table 1). What is not confirmed however is whether the desire for independence limited cooperation. Innovation, as would be expected, has a significant positive impact and can be a key factor for cooperation. The share of defense in total revenue also has a significant positive impact. However, the share of exports in total sales and the location of the company has a negative impact. Uncertainty about the future sale of defense has significant negative effects. Entrepreneurs predicting difficulties in the implementation of future contracts are less willing to establish cooperation, but rather tend to diversify or reduce production.

Additional tests were also conducted on three samples of enterprises that work with businesses in the United Kingdom, the European Union and the United States (table 2, 3, 4). The study showed some differences in the results obtained. It turned out that the size of the company described by employment does not matter in cooperation with partners from the UK in comparison with the EU and the USA. This may be a confirmation of the importance of firm size for international cooperation. The share of exports in total sales has a significant negative impact on

¹⁰ P. Bishop, *Collaboration and firm size: some evidence from the UK defence industry*, Applied Economics, 2003, 35, p. 1966.

cooperation with partners from the UK. This may mean that the business-oriented international cooperation are less willing to cooperate with domestic companies. The firm's independence is important for cooperation with British and European governments/firms, with a positive impact on the cooperation of the EU and has a negative impact for cooperation with domestic firms.

Table 1

Estimates of general collaboration equation

Variable	Parameter	Coefficient	Standard error
stała	a	-2,47	0,582
EMP	b1	0,002	0,001
OWN	b2	0,295	0,288
INN	b3	1,022	0,286
XPSAL	b4	-0,005	0,008
UNC	b5	-0,571	0,271
REG	b6	-0,160	0,275
DEF	b7	0,025	0,005

Source: P. Bishop, *Collaboration and firm size: some evidence from the UK defence industry*, Applied Economics, 2003, 35, p. 1967.

Table 2

Estimates of collaboration equations for UK

Variable	Parameter	Coefficient	Standard error
stała	a	2,127	0,936
EMP	b1	0,000	0,000
OWN	b2	-1,071	0,462
INN	b3	0,037	0,470
XPSAL	b4	-0,022	0,011
UNC	b5	0,411	0,407
REG	b6	-0,165	0,416
DEF	b7	0,010	0,007

Source: P. Bishop: *Collaboration and firm size: some evidence from the UK defence industry*, Applied Economics, 2003, 35, p. 1968.

Table 3

Estimates of collaboration equations for Europe

Variable	Parameter	Coefficient	Standard error
stała	a	-3,842	1,046
EMP	b1	0,001	0,000
OWN	b2	1,469	0,471
INN	b3	0,104	0,506
XPSAL	b4	-0,001	0,011
UNC	b5	0,224	0,430
REG	b6	0,219	0,429
DEF	b7	0,010	0,007

Source: P. Bishop, *Collaboration and firm size: some evidence from the UK defence industry*, Applied Economics, 2003, 35, p. 1968.

Table 4

Estimates of collaboration equations for US

Variable	Parameter	Coefficient	Standard error
stala	a	-1,685	0,891
EMP	b1	0,001	0,000
OWN	b2	0,282	0,426
INN	b3	-0,013	0,472
XPSAL	b4	0,010	0,010
UNC	b5	-0,288	0,400
REG	b6	0,335	0,410
DEF	b7	0,007	0,007

Source: P. Bishop, *Collaboration and firm size: some evidence from the UK defence industry*, Applied Economics, 2003, 35, p. 1968.

The study confirmed the role played by the size of the company in international economic and defense cooperation. For small businesses it is much more difficult to cooperate. In addition to the actions that should be taken by the companies themselves to make international cooperation, government policies are needed supporting their efforts in developing international defense programs. As part of this policy may be favoring the defense industry consolidation.

Conclusion

Today, international cooperation in defense industries seems to be something that is clearly conducive to the development of national defense potentials and the strength of national and international security. However, there are still many areas where this cooperation is a problem. These include, among others:

- double production lines,
- inadequate offsets for defense purchases,
- difficulties in the fair division of labor,
- limited access to modern technology,
- an uneven level of development of national defense industries,
- the too small size of the company.

The assessment of the importance of the size of the company in the collaboration of defense companies is based on the findings from the UK. In these studies analyzed the cooperation of British defense companies with both domestic companies and foreign ones -from the European Union and the United States. The results helped draw two important conclusions:

1. small businesses are less likely to enter into international cooperation,
2. innovation and a significant share of defense in total revenue may facilitate the establishment of business cooperation.

It seems that these are also important lessons for Polish defense companies. There is a huge role for the state, which should support the innovative activity of enterprises, expand defense orders invested in domestic companies and support the consolidation of the defense industry.

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THE IMPROVEMENT OF THE LEVEL OF NATIONAL ENERGY SECURITY RESULTING FROM THE NEW CONCEPT OF CRUDE OIL MANAGEMENT IN POLAND. (PART III – CONSTRUCTION OF NEW STORAGE FACILITIES AND PIPELINES)

Col. Maciej KAŻMIERCZAK, Ph.D.

Abstract

One of the main tasks, the implementation of which will enhance energy security in the oil sector, is the implementation of projects related to the storage and transmission of crude oil. In Poland, primarily the construction of new pipelines is the main task for Oil Pipeline Exploitation Company (PERN), whereas Liquid Fuel Logistic Operator (OLPP) is the market leader in fuel storage capacity. In addition, the construction of new reservoirs to fulfill their own needs is realized by PKN ORLEN and LOTOS Group.

PERN is planning the further expansion of the domestic and cross-border network of fuel pipelines. The development of a national network of fuel pipelines would allow for the delivery of fuels by pipeline to the largest urban centers - Warsaw and Silesia. In addition, in the area of the North Port it is planned to build a base for storage and transshipment with tanks designed for the collection of both crude oil and fuels. Whereas, according to the strategies of the LOTOS Group and PKN ORLEN there are continued investments connected with the expansion of the tank base and increasing the ability for the storage and distribution of fuel.

However, according to experts the strategic importance for the energy security of the country is the construction of storage facilities for crude oil and fuels in salt caverns in Dębogórze near Gdynia.

Key words – energy security, oil sector

The purpose of this article is to present possible ways to improve the energy security of the country from the point of view of oil management, in particular related to its storage and distribution.

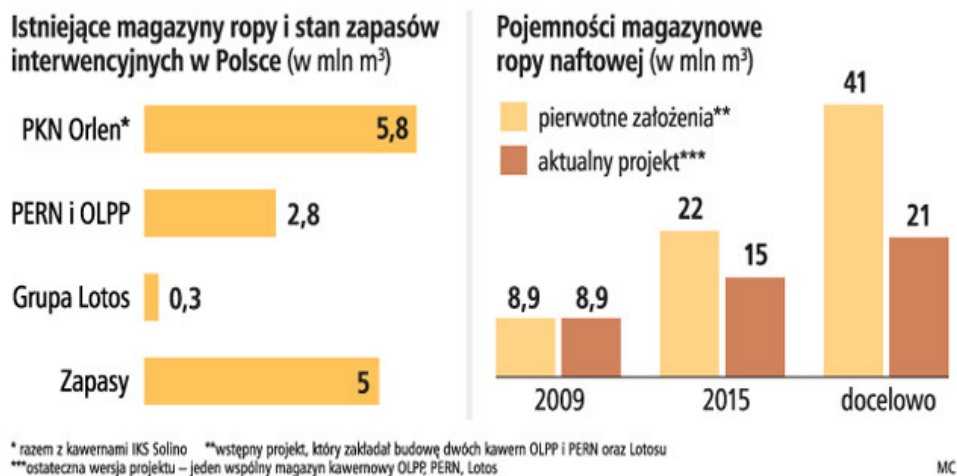
In the oil sector the lifeblood is the logistic network, including pipelines and storehouses (Figure 1). It requires new investments because the market is growing rapidly. These are needed due to both operational reasons and strategic national security. Please refer to the solutions already existing in the world and apply those, which are the most appropriate in the Polish situation.



Source: Pipelines in Poland, <http://www.pern.com.pl>.

Figure 1 - Logistics infrastructure of petroleum products in Poland

In Poland, the construction of new pipelines is dealt with primarily by Oil Pipeline Exploitation Company (PERN), whereas Liquid Fuel Logistic Operator (OLPP) is the market leader in fuel storage capacity. In addition, the construction of new reservoirs to fulfill their own needs is realized by PKN ORLEN and LOTOS.

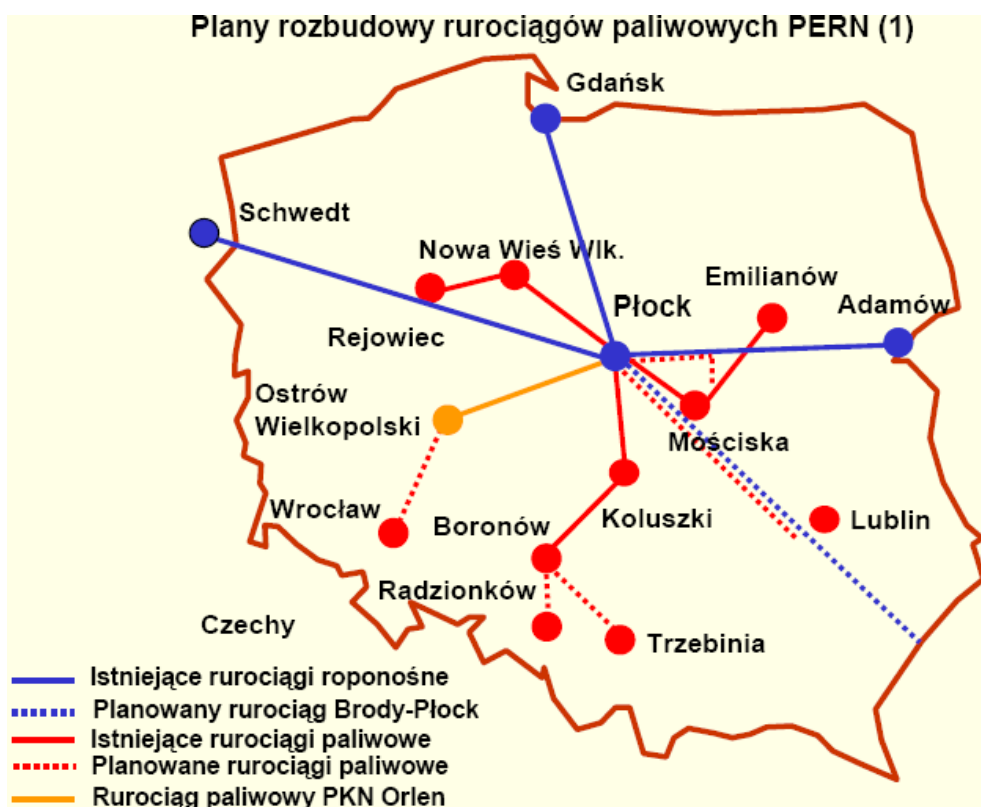


Source: Stores liquid fuels, <http://www.naftobazy.pl>.

Graph 1 – Methods of storage fuels in Poland (situation at 31.12.2010)

PERN updated its strategy for the company, setting a plan and goals for the period of 2010-2015. The main objectives of the strategy are to improve the efficiency of the Capital Group PERN in particular business segments, including transportation of crude oil and fuels. The connection of PERN with the company OLPP, focuses on the fuels segment and provides inter alia cooperation in investment projects, such as the opening of the pipeline system to third parties and the conversion project of the so-called first line of the eastern pipeline from Adamów at the border with Belarus to Płock, which connects the main line of crude oil to the products line, used to transport processed fuels.

PERN is also working on a strategy to develop a national network of fuel pipelines. The development of a national network of fuel pipelines would allow for the delivery of fuel by pipeline to the largest urban centers - Warsaw and Silesia. The plan includes the construction of several sections of the pipeline, such as Boronów-Trzebinia, Ostrów Wlkp.-Wrocław, Płock-Warszawa, Płock-Lublin czy Boronów-Radzionków. New directions in the development of fuel pipelines to take over, even to a greater extent, the logistics operations on the Polish fuel market.



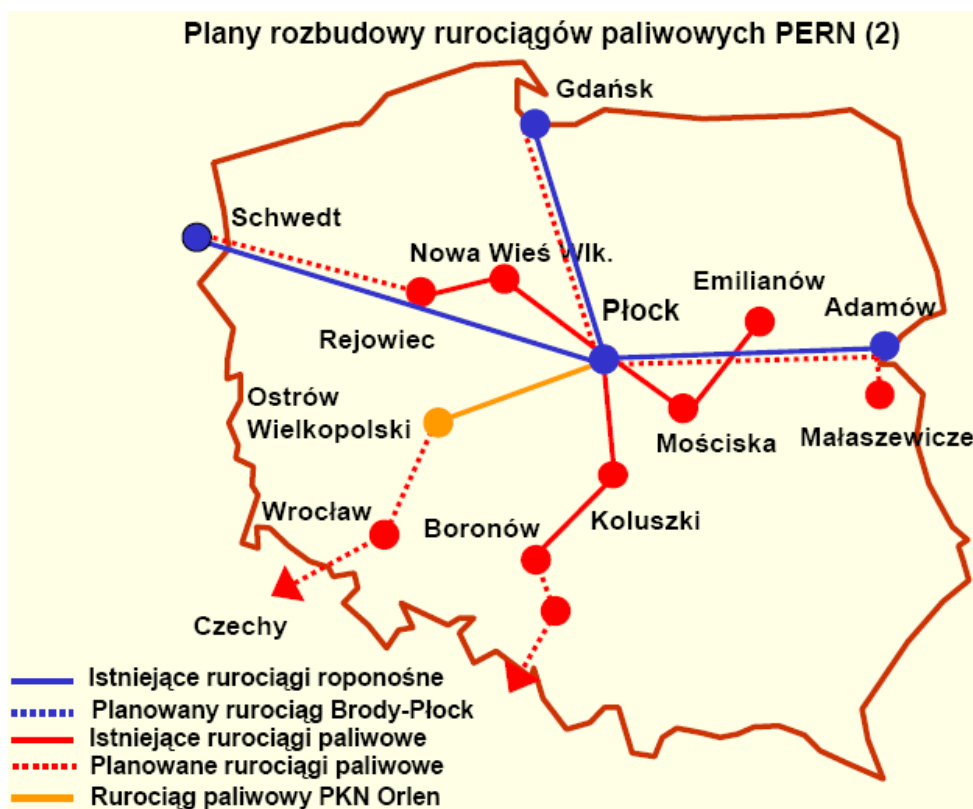
Source: PERN materials, <http://www.pern.com.pl>.

Figure 2 - The plan of expansion national connections of pipeline PERN

Moreover, PERN plans to expand cross-border mergers of fuel pipelines that will allow Poland to diversify fuel supply sources, with a view to ensure greater energy security for Poland. PERN intends to look into the construction of pipelines in the sections: Rejowiec-Schwedt, Płock-Gdańsk, Płock-Małaszowicze, Ostrów Wlkp.-Wrocław and Wrocław-Czechy¹.

The Ministry of Treasury is a sole shareholder of PERN. This company imports crude oil from Russia (about 50 million tons a year) to Polish refineries - PKN Orlen and Group LOTOS and German refineries - PCK Schwedt and Mider Spergau, as well as to fuel storage depots across the country. It sends also the raw material in transit to the Gdańsk Oilharbour, which owns shares. Since November 2009, under an agreement with the Ministry of Treasury to transfer the shares, PERN is the owner of OLPP.

¹ *New strategy PERN Przyjaźń*, [w:] <http://www.pern.com.pl>.



Source: PERN materials, <http://www.pern.com.pl>.

Figure 3 - The plan of expansion PERN cross-border pipelines

PERN's most important investment plans² for 2010 is to continue, at the fastest possible pace of construction, the third line of the *Przyjaźń* pipeline. In the middle of April 2009, the company put into exploitation the first part of this investment. Construction of an 82-km section between Zawada and Adamowo cost 230 million PLN. The starting of a new pipeline will allow the company to save significant costs associated with the transport of oil and increase the possibility of a discharge of 3 million cubic meters per year. It will also provide the opportunity to make the necessary repairs to the first pipeline which has been functioning continuously for almost 50 years, as well as enable the increased transmission of oil after the formation of the extension of the Odessa-Brody pipeline to Adamów. The next two stages of the third line, a total of 232 km, means PERN will be ready to put it gradually into use by 2012. The whole project will cost nearly a billion dollars. Construction of the linear part of the pipeline, in exceptionally favorable circumstances, could be concluded from the executive and financing already

² Ibidem.

in 2010. According to the schedule of work in 2010 there will be put into service a 72 km section of Orzechowo-Plebanka, and by 2011 a 78 km section of Zawady-Orzechowo. PERN also plans to complete this year the construction of two reservoirs at the base in Adamowo, with a 100 thousand cubic meters capacity each and begin design work on the construction of the pipeline Boronów-Trzebinia and construction of caverns³. However, by 2012 in Pleban, the largest base of the company will be completed the construction of two reservoirs with a capacity 100 thousand cubic meters each. There is also underway a construction project in Gdansk of two further tanks of 100 thousand cubic meters each to be filled with oil in 2015.

In the years 2010-2013, in the area of North Port, PERN intends to build up a warehouse and transshipment, with tanks designed to collect both oil and fuel⁴. With this base, combined with the positions of transshipment in the Northern Port and system piping, PERN could provide logistics services, connected with the distribution of oil and fuel, which is not to trade in these products. PERN, on behalf of the oil companies could store, deliver or mix fuels or crude oil derived from a variety of sources. The new base at the port of Gdańsk will be the equivalent of a free zone, accumulating stocks of crude oil and refinery products. It will be different than the other PERN bases in Adamów, Pleban, Płock and Gdańsk-Górki Zachodnie, where you can store a total of 2.8 million cubic meters of oil (by 2015 the capacity is expected to increase to 3.4 million cubic meters). When liquid raw material prices continue to fall it will be possible to buy it and store it in the base port. PERN estimates the value of investments in the Northern Port at around one billion dollars. The investment in Gdańsk port will be carried out jointly with a foreign company of oil sector. This will allow for the creation in 2010 of the company that would build a base in North Port⁵.

The strategy for 2009-2013 PERN is engaged in will increase the capacity of bases for crude oil storage tanks and also the handling capacity of oil transported by sea⁶. According to experts, the related infrastructure of the Pomeranian pipeline and Oilharbour has a strategic role for Poland. It constitutes the second alternative to the *Przyjaźń* pipeline, a source of supply for domestic refineries with crude oil. This preferred system infrastructure is also used for the transit of Russian oil through Poland. As a result of the modernization, the Pomeranian pipeline would be able to distribute each year 32.5 million tons of oil.

³ *PERN ma strategię do 2015 r.*, [w:] <http://www.wnp.pl>.

⁴ *Nowa strategia PERN Przyjaźń...*, op. cit.

⁵ Ibidem.

⁶ Ibidem.



Photo 1. Oil transshipment terminal in North Port

Currently, reversing the Pomeranian pipeline linking Płock and Gdańsk seaward reaches an annual capacity of 20 million tons, while in the opposite direction there is a capacity of 30 million tons per year. The use of pipelines from Płock to the west and north is dependent on the previous section (Adamowo-Płock). The capacity is 43 million tons, which currently is reached. This is successful enough to cover the needs of Polish and German refineries. In recent times, however, in the market there is observed a huge demand for Russian oil. Along with it there is also a growing demand for the transport of this raw material. For three years Poland also has benefited on this as a transit country. PERN using new technology, or using substances that reduce friction in the discharge of oil, periodically raised the efficiency of its pipeline. This allows it to pump annually about 49 million tons, of which transit is about 10 million tons. For comparison, the Belarusian side of the *Przyjaźń* pipeline can transport about 55 million tons per year, and what is more it achieves higher level through part of the pipeline in Russia. Thus, the Polish part of the pipeline could also achieve 6 million tons more. These are, however, in the present state of infrastructure, quantities impossible to achieve. From the other hand, the technology used to reduce friction in the pumping, so that it is possible to pump at 49 million tons per year, is a costly and short-term solution, because in the long term the pipeline cannot operate at such high performance.

The Polish transport route is key for Russia, through our country runs about 30% of Russians oil exports. The only solution to meet the growing demand for a transportation service is the actual development of transmission capacity by the building of the third line on the section between Adamów and Płock. After finishing the Polish part of the *Przyjaźń* pipeline it will reach efficiency comparable to the pipeline on the Belarusian side. The investment will

increase the volume of transported raw materials and lower operating costs. It increases also the safety and reliability of supply.

Liquid Fuel Logistic Operator (OLPP), which is the market leader in fuel storage capacity, is going to significantly **expand its fuel base**. In 2010, the company has allocated money for investments totaling nearly PLN 200 million, of which more than one quarter went to the construction of new fuel tanks. According to the plan approved by the supervisory board of the company, PLN 160 million will be allocated for the development of investments and PLN 34 million for the modernization works. The most intensive work is provided for bases in: Kawice, Dębogórze, Koluszki, Zawadówka i Małaszewicze. The aim of the work is the improvement of the existing fire protection, environmental (sewage treatment plants) and transport (new railway points of fuel reloading)⁷.

In turn, 40% (about 64 million PLN) of the amount allocated for development expenditure is to fall on the construction of two tanks of petrol (15 thousand cubic meters capacity each) at the base in Koluszki, as well as a cross-border pipeline linking the base in Małaszewicze with Belarus. Thanks to this investment the total capacity of the fuel base in Koluszki will increase to over 200 thousand cubic meters (currently 171 thousand)⁸.

In 2008 OLPP put into operation 244 thousand cubic meters of new capacity, and plans for the next 2-3 years assume the construction of additional tanks with a capacity of almost 300 thousand.

According to the strategy of PERN and OLPP there is planned an investment of a cross-border fuel pipeline running from the border with Belarus to the fuel base in Małaszewicze. It could be a way to connect company bases to the system of fuel pipelines of Belarus, which in turn would help to facilitate the import of fuel from that direction. The new connection of Biernady-Małaszewicze will enable the transfer of about 2 million tons of fuel per year. From Belarus, Poland imports about 16% of the country's imported oil (Polish market still suffers from a deficiency). Currently, imports from this country are burdened with the high costs related to the need for the fuel to be reloaded onto railway tankers from a wide track to normal tracks. The pipeline is a much more efficient way to transport oil - cheaper, safer and more environmentally friendly. The OLPP Management Board believes that the new route may also have a positive impact on the diversification of fuels supplies. Thanks to that the market could gain an ability to quickly increase imports of finished fuels, when it will be necessary.

The project will be implemented in partnership with the Belarusian company Bielnieftiechim. OLPP is supposed to build the pipeline with a length about 10 km from the border with Belarus to the base in Małaszewicze, which will be adapted for the fuel reception and distribution from the pipeline.

⁷ *Fuel Stores...*

⁸ P. Apamowicz, *Fuel warehouses: the crisis came luckily*, [w:] <http://www.wnp.pl>.

In 2010, a network of storage facilities of the LOTOS Group was built subject to optimization launched in previous years, with the aim of providing the best possible trading tasks service. The company systematically increased its own role in fuel depots and terminals reloading, especially in Gdańsk, Czechowice, Jasło, Piotrków and Rypin. However, the number of used external storage facilities, the volume and type of fuels distributed by independent operators have been adapted to the needs of the market and new sources of supply⁹.

Following the strategy, Grupa LOTOS in 2010 continued to invest to increase the capacity of the tanks refinery in Gdansk and improve the transmission capacity of the pipeline system connecting the refinery to the port. Such investment will increase export opportunities arising from the increase in production potential after completion of the 10 + Programme, as well as facilitate and speed up the reloading of the increasing volumes of oil shipped by sea.

In the middle of 2010, the Gdańsk refinery of LOTOS Group completed the expansion of its storage tanks. The investment costs, which are part of the 10 + Programme, was around 60 million euros. The plan was to build a total of 11 tanks. These include four tanks (each 20 thousand cubic meters in capacity) thermally insulated, which will store heavy products of CDU / VDU and ROSE installation. The new stores were built in the place of the tank which had a volume 32 thousand cubic meters, which was removed. The total storage capacity increased by more than 200 thousand cubic meters, which will ensure the safe operation of the refinery in Gdańsk with an increase of 4.5 million tons of crude oil throughput. In addition, they will construct three diesel tanks (each 32 thousand cubic meters) and two fuel tanks (each 20 thousand cubic meters), as well as a tank for LPG (with a capacity of 1800 cubic meters) and the effluent reservoir for oil-polluted water (10 thousand cubic meters). Tanks for petrol and oil-polluted water will have "floating" roofs¹⁰.

Tanks for liquids characterized a modern steel, double-jacket construction increasing the storage safety. A two meters space between the steel walls will be filled with sensors that will alert of any detected shell leakages. Before the commissioning of new reservoirs leak test will be carried out, during which it will be filled up with water, and the County Office of Weights and Measures will perform metrology works.

Within the companies LOTOS Jasło and LOTOS Czechowice there are continued investments connected with **the expansion tank base and the increased ability for the storage and distribution of fuel**. Both companies of LOTOS Group will focus on the logistics and warehousing of mandatory reserves. By 2009, for the storage of mandatory reserves (oil, components and finished products) their own warehouses were used with capacity at the maximum level. To reduce dependence on external providers of storage services, in LOTOS Czechowice there

⁹ About LOTOS Group, [w:] http://www.lotos.pl/korporacyjny/grupa_lotos/o_grupie_lotos.

¹⁰ 10+ Programme, [w:] http://www.lotos.pl/korporacyjny/grupa_lotos/program_10.

was built modern tank with a capacity of 32 thousand cubic meters and six tanks were modernized with a total capacity of 6 thousand cubic meters. The total storage capacity of LOTOS Czechowice is currently about 180 thousand cubic meters. However, in LOTOS Jasło there are six modernized tanks with a total capacity of 23 thousand cubic meters which are used for the storage of diesel fuel and heating oil.

As part of the LOTOS Group, Czechowice plays an important role related to the storage and distribution of liquid fuels, oils, lubricants and asphalts, which are marketed in Southern Poland and abroad, including the Czech Republic, Austria, Hungary, Romania and Slovakia¹¹.

Implemented by Grupa LOTOS fuel sales volume growth makes it necessary to systematically increase the number of stocks held mandatory. LOTOS Group also generates revenue with the so-called ticket services - providing customers the ability to maintain surpluses of gasoline and heavy heating oil as mandatory supplies.

According to experts, **the strategic importance for the energy security of the country is the construction of storage facilities for oil and fuel in salt caverns** in Dębogórze near Gdynia. Its construction will be taken care of by a company, whose shareholders on equal terms will be: PERN and OLPP. The purpose of the company, in addition to the preparation of the technical and construction investment and the formal and legal organization, is also to find an additional outside investor to help finance the project. The cost of the first stage is estimated at PLN 1.5 billion, of which 25% is sufficient to be covered the European Union¹².

Currently, the verification of plans to build warehouses is being carried out. It is assumed that the first fuel will be stored in caverns after 2013. Two caverns with a storage capacity of 6 million cubic meters each will be used to store crude oil, and a capacity of about 1-1.5 million cubic meters will be dedicated to the storage of fuels, mainly diesel. Caverns will reach full capacity in the years 2017-2018. In return, the PERN storage capacity released in Gdansk, with a capacity of about 900 thousand cubic meters of oil, after a small adjustment, can be used for the storage of fuels (like new base in Siarkopol with a capacity of 1 million cubic meters, which is to be acquired by PERN)¹³.

A similar company that could build the caverns for the storage of crude oil and liquid fuels in Pomerania, was also planned to be created by LOTOS Group. However, in 2009 the Group decided not to build in Pomerania caverns tanks for the storage of crude oil, which resulted in the previously planned storage capacity being decreased by nearly 50%. The LOTOS Group planned by 2015 to build caverns with a capacity of about 7 million cubic meters, and eventually up to 20 million cubic meters. Along with a competitive project of which the leaders are

¹¹ LOTOS Czechowice, [w:] http://www.lotos.pl/korporacyjny/grupa_kapitalowa/lotos_czechowice.

¹² *Podziemne magazyny paliw – bezpieczne i wygodne*, [w:] <http://www.racjonalista.pl>.

¹³ D. Malinowski, *The mandatory supplies of fuels - a boom in the caverns*, „New Industry” nr 6/2007, s. 32.

OLPP and PERN, for six years in Pomerania there should be available up to 13 million cubic meters, and eventually up to 32 million cubic meters of storage capacity in caverns¹⁴.

Finally a company from Gdańsk will participate in the project with OLPP-PERN. The storage capacity resulting from the investment will be offered to Polish firms (mainly the LOTOS Group), but also used as the mandatory reserves of crude oil and fuels (diesel) for countries around the Baltic Sea. For this purpose, Dębogórze will be connected by pipeline for raw materials and product (carried out in the bottom of the Gulf of Gdańsk) with Oilharbour and a base of reloading and storage in Gdańsk.

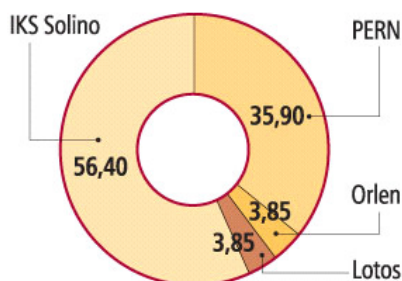
Przedsięwzięcie OLPP i PERN

- Data realizacji I etapu: 2014/2015
- Pojemność w I etapie: 6 mln m sześć.
- Docelowo: 12 mln m sześć.
- Wartość inwestycji: 1,5 mld zł
- Planowane dofinansowanie z UE: 375 mln zł

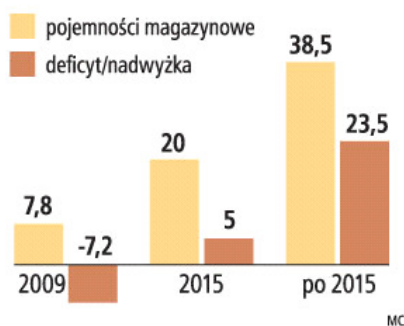
Przedsięwzięcie Grupy Lotos

- Data realizacji I etapu: 2015
- Pojemność w I etapie: 7 mln m sześć.
- Docelowo: 15–20 mln m sześć.
- Wartość inwestycji: 1,7 mld zł
- Planowane dofinansowanie z UE: 463 mln zł

Udział firm w pojemnościach magazynowych (w proc.)



Magazyny ropy naftowej (mln m sześć.)



Source: Magazines of liquid fuels, <http://www.naftobazy.pl>.

Graph 2 – The project of oil storage in salt caverns in Pomerania in Poland

The US military are also interested in the Polish technology enabling underground fuel storage caverns¹⁵. The idea of using native salt storage facilities for military purposes appeared as early as 2005. The Polish-American-Turkish concept was to enable such storage of fuels to be used for NATO F-16 aircraft. The study resulted in a positive opinion and as a result NATO wanted to build in our country 12 fuel depots. The store was planned near the Malbork airport and in

¹⁴ *Oil Magazines: new investors*, [w:] <http://biznes.gazetaprawna.pl/artykuly>.

¹⁵ *Inwestycje NATO na Pomorzu*, [w:] <http://www.miasta.gazeta.pl/trojmiasto>.

Cybowo (supplying F-16 in Mirosławiec and Świdwin). Finally, the idea of using salt caverns met with a lack of goodwill from the Ministry of Defense. The project (called NATO-CCMS EAP) was not implemented, because the MoD decided to build traditional tanks. Now the concept of caverns may return because the Polish and U.S. governments are interested in it again. It is estimated that the filling of caverns by fuel for the fighters could take place in 2013. Although NATO is conceptually ready to implement this project there has to be carried out geological work, then there will be needed another year to rinse the caverns.

INSTITUTE OF MANAGEMENT



REGIONAL INFRASTRUCTURE GOVERNING BODIES IN EXECUTION OF TENDERS WITHIN UNITS OF THE THE ARMED FORCES



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Abstract

As an element of the public sector, armed forces are obliged to comply with the regulations governing public procurements. One of the entities dealing with awarding contracts are Regional Infrastructure Governing Bodies (RIG), subordinate to Chief Inspectorate of Armed Forces Support. The article presents the results of analyses on 1334 reports with information on awarded contracts between January 2011 and end of July 2012. The study data was obtained from web sites of ten RIGs. As a result of the analysis a certain image illustrating how the investments executed within the units influence their closest surrounding has been obtained. The analyses of the gathered statistical material have been carried out with the use of Statistica v.10.

Key words – Regional Infrastructure Governing Bodies, Armed Forces Support

Introduction

The units of the armed forces are specific organizations. This derives from their purpose, structure and their tasks carried out within the defense system. As an element of the public sector they are obliged to follow the procedures governing public procurements¹. However, the basic principles of awarding such contracts are

¹ The need to regulate the procedure governing public procurements was firstly pointed out in the pre-war period. At that time there existed the following legal regulations regarding this issue: the Act of 1933 on deliveries and works on behalf of the Treasury (Ustawa z 1933 r. *O dostawach i robotach na rzecz Skarbu Państwa, samorządu oraz instytucji prawa publicznego.*), the Ordinance of the Cabinet of 1937 (Rozporządzenie Rady Ministrów z roku 1937). In 1948 it has been replaced by introducing the Act on deliveries and works on behalf of the Treasury, self-government and some categories of legal persons (Ustawa *O dostawach i robotach na rzecz Skarbu Państwa, samorządu oraz niektórych kategorii osób prawnych*). Another regulation was introduced as a result of implementing in 1957 the Act on deliveries, works and services on behalf of state units (Ustawa *o dostawach, robotach i usługach na rzecz jednostek państwowych*). Since 1983 awarding public

fixed for all units: the central supplying in the armed forces, specification of military units, including financial specification (e.g. some of them deal with procurements to satisfy their own needs, the other ones are obliged to secure different units), internally-determined rules and types of procurements; this causes the divergence within the system of public procurements for each of them. Moreover, dynamic changes within military units, leading up to the necessity to provide services fast, and sometimes the need to meet additional requirements (e.g. security-related) do not facilitate the execution of tenders.

Some of the entities dealing with the acceptance of tenders are the Regional Infrastructure Governing Bodies (RIG). They are subordinate to the Chief Inspectorate of Armed Forces Support and are convened to carry out the tasks related to army lodging and the managing of real properties governed by the Minister of National Defense. Information on the accepted tenders placed on their sites is the subject of this analysis, the results of which are presented further on.

Basic study information

The study aims at determining the level of influence of the tenders carried out by RIG and concerning various investments in the units of armed forces on companies seated near a military unit.

The following questions were put forward: When are the tenders decided upon? What do they concern? What companies participate? What regions of Poland do the companies come from? How far are the companies located from the site of service provision and what amounts are transferred?

Analysis data was obtained from the web sites of Regional Infrastructure Governing Bodies. The study encompassed 623 reports with information on awarded contracts in the Regional Infrastructure Governing Bodies of Gdynia, Lublin, and Poznań between January and December 2011 and 710 reports placed on the RIG websites of Bydgoszcz, Gdynia, Kraków, Lublin, Olsztyn, Poznań, Szczecin, Wrocław, Warsaw, Zielona Góra informing on the awarded contracts on the first half of 2012². Only the reports having the complete information concerning the date of announcement, tender subject, winner, and amounts for its execution; the total amount of reports analysed was 1334. Additionally, for the tenders of 2011, the distance between the site of service provision and the seat of the awarded company was determined. The distance spread turned out to be considerable (from 0 to 696 km). Firstly, it was divided into the intervals that are

contracts was partially determined in departmental regulations. In 1991 the works aiming at drawing up the law governing public procurements commenced. As a result, in 1994 the Act on public procurements (*Ustawa o zamówieniach publicznych*) was adopted. Amendment of its regulations caused the creation of the Act on *law of public procurements* (*Ustawa Prawo zamówień publicznych*) in 2004. <http://www.uzp.gov.pl> (as of 27.06.2013).

² Data concerning the tenders in 2102 prepared by mgr Justyna Stochaj.

most often adopted for spatial analyses: up to 30 km, up to 60 km, up to 90 km (considering their divisibility). Other intervals were also implemented, using the statistics-established approach to determine their number.

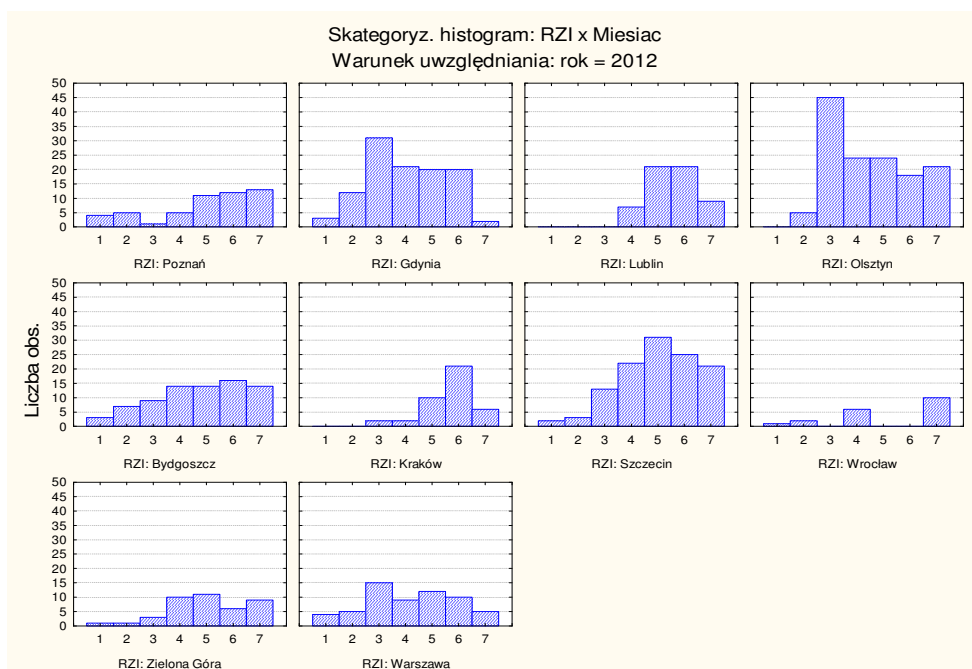
The intervals were also used in variable “amount for execution”, with the following assumed as the basic one: very small amount – up to 1,000 PLN, small – up to 10,000 PLN, average – up to 100,000 PLN, large – up to 1,000,000 PLN, very large – over 10,000,000 PLN. While analysing the profiles of the companies which were awarded contracts attempts have been made to group them according to the Polish Classification of Business Activity³. However, it turned out to be a very difficult task, on the basis of the information at hand. In light of these circumstances, the classification has been carried out according to their names (groups of trade and services, construction industry or multi-branch company). The analyses of the collected statistical data have been carried out with the use of Excel and Statistica v.10. Analyses produced the numerical characteristics of the studied groups and helped to draw conclusions on phenomena correlations. The results have been visualised using adequate graphs.

Analyses’ results

The number of awarded contracts in particular Regional Infrastructure Governing Bodies was not equal. Also the intensity of their examination on subsequent months and days varied depending on the governing body. In 2011, in Regional Infrastructure Governing Body of Gdynia the results were most often announced in April (24.5 of all tenders), usually in the mid-month or towards the end, in RIG of Poznań – in October (28.3%), often towards the end of the month, whereas in RIG of Lublin – usually during summer months, June (18.2%), July (17.7%), most often mid-month.

At that time the tenders concerned refurbishment works (33.2%), particular services (18.3%), construction works (18.0%), maintenance works (8.3%), equipment delivery (8%) and other jobs. Some months had higher award rates, the other ones had less intensity. Award intensity in the first half of 2012 in particular RIGs is presented in Figure 1.

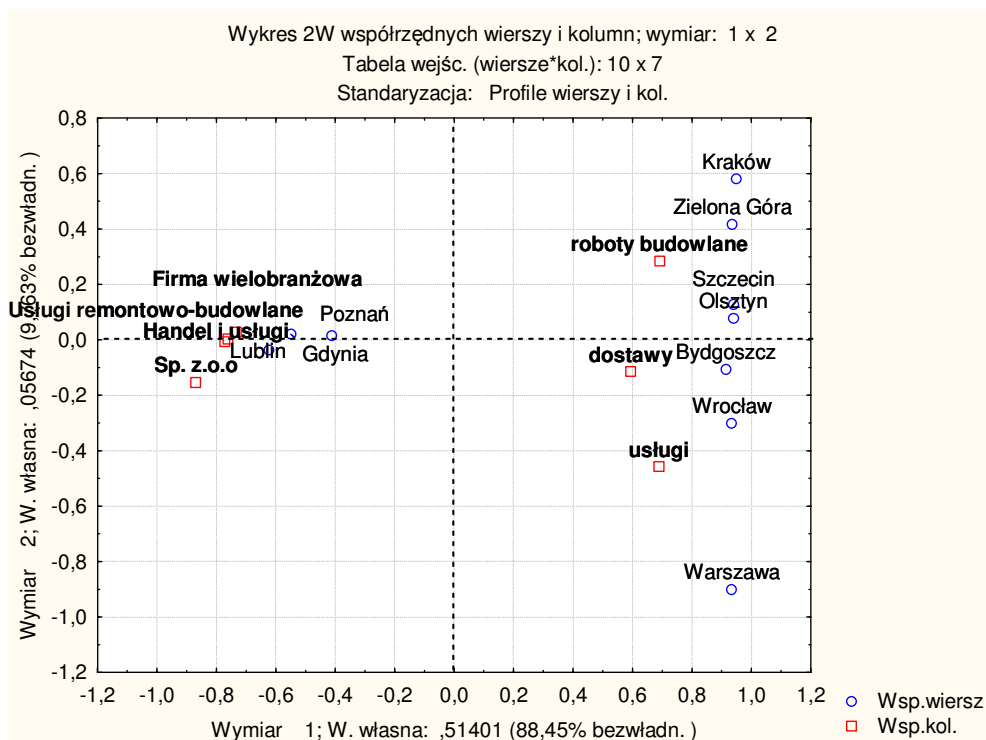
³ Ordinance of the Cabinet of 24.12.2007 on the Polish Classification of Business Activity (PKD) published: Journal of Laws of 2007, No. 251, item 1885 and of 2009, No. 59, item 489. (Rozporządzenie Rady Ministrów z dnia 24.12.2007 r. w sprawie Polskiej Klasyfikacji Działalności (PKD) publikacja: Dz. U. z 2007 r. nr 251, poz. 1885 oraz z 2009 r. nr 59, poz. 489).



Source: own study.

Figure 1. The number of awarded contracts in the first half of 2012 in particular RIGs

Actions related to the tenders of 2011 were mostly carried out (63.6% of the cases) by the companies running trade and service business activity (they were awarded most often in RIG of Gdynia – 65.3% of tenders). Construction companies were usually awarded in RIG of Lublin (35.5% of tenders). In the first half of 2012, excluding RIG of Warsaw where most of the tenders concerned services (56.7%), the tenders in remaining RIGs most often concerned construction works (Bydgoszcz – 50.0%, Gdynia – 54.1%, Kraków – 75.6%, Lublin – 44.8%, Olsztyn – 56.2%, Poznań – 54.9%, Szczecin – 58.1%, Wrocław – 42.1%, Zielona Góra – 65.8%). The situation in 2011 and 2012 is presented as a whole in Figure 2. The results presented of correspondence analysis presented in the figure are interpreted on the basis of the location of points that reflect the categories of individual variables. The points located far from the projection centre make the largest contribution to the rejection of hypothesis on non-dependency of variables. The close location of points of different variables indicates the correlations between the categories. The near location of two points of the same variable indicates a large similarity of their profiles (Stanimir 2005, Stanisław 2007).



Source: own study .

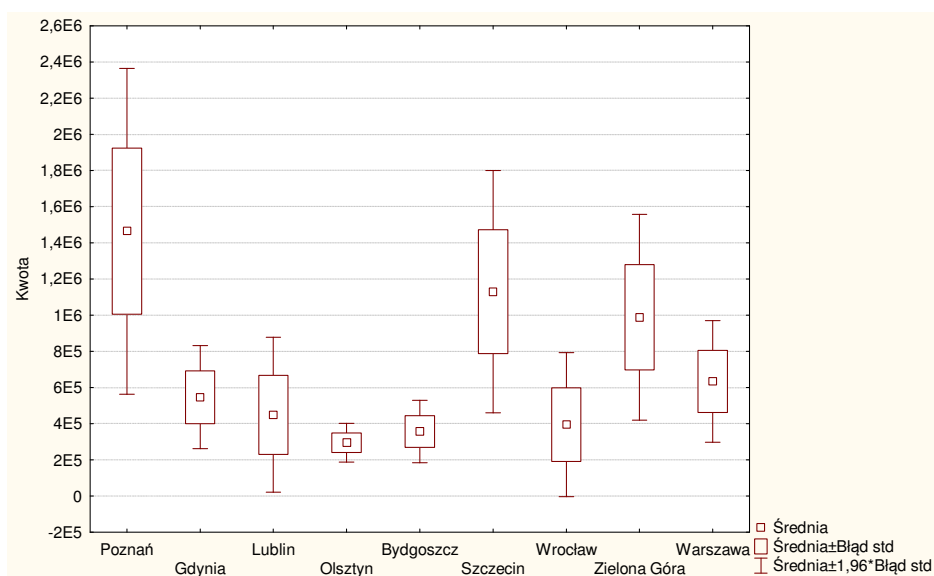
Figure 2. The dominating profile of the most often awarded companies in particular RIGs

Trade or construction companies were both located close to the site of executing commission and located in far reaches of the country (in each RIG the minimal distance was 0 km, maximum was in the RIG of Lublin – 696 km, in the RIG of Gdynia – 563 km, in the RIG of Poznań - 414 km). When the company is located far from the site of the executing commission, it might be assumed that it is being carried out by sub-contractors. This assumption is not however supported by reliable information. In 2011, the average distances for particular RIGs separating the companies' seats from the sites of the executing commission varied (Gdynia – 135.4 km, Lublin – 115.4 km, Poznań – 100.6 km). Median values were also different (the RIG of Gdynia – 54.5 km, RIG of Lublin - 70 km, RIG of Poznań – 51.5 km).

Considering the previously-assumed distance intervals (up to 30 km, up to 60 km, up to 90 km and over), it is noticeable that the average values for each of the RIGs are included in the last interval "over 90 km". It has been determined that in 2011 the largest number of trade and service companies (48.0%) was seated far from the site of the executing commission (over 90 km). The remaining ones (31.8%) were located close to the site of the executing commission – not further than 30 km, 10.4% - not further than 60 km, other –not further than 90 km. In the

case of construction companies, it has been stated that the largest amount (50.0%) was seated close to the site of the work's execution (within the radius of 30 km). Other companies from this group were located within the distance of up to 60 km - 13.8%, up to 90 km – 3.5%, or further – 48.3%.

The allocation of funds for undertakings encompassed in the tenders is variable (min. 468.7 PLN, max. 57,500,000 PLN). In the analysed cases, the high (44.4%) and medium (38.3%) values appeared most often (according to the assumed distribution). As in the case of distance, also the average amounts of funds allocated for task execution in particular RIGs varied (Figure 3).

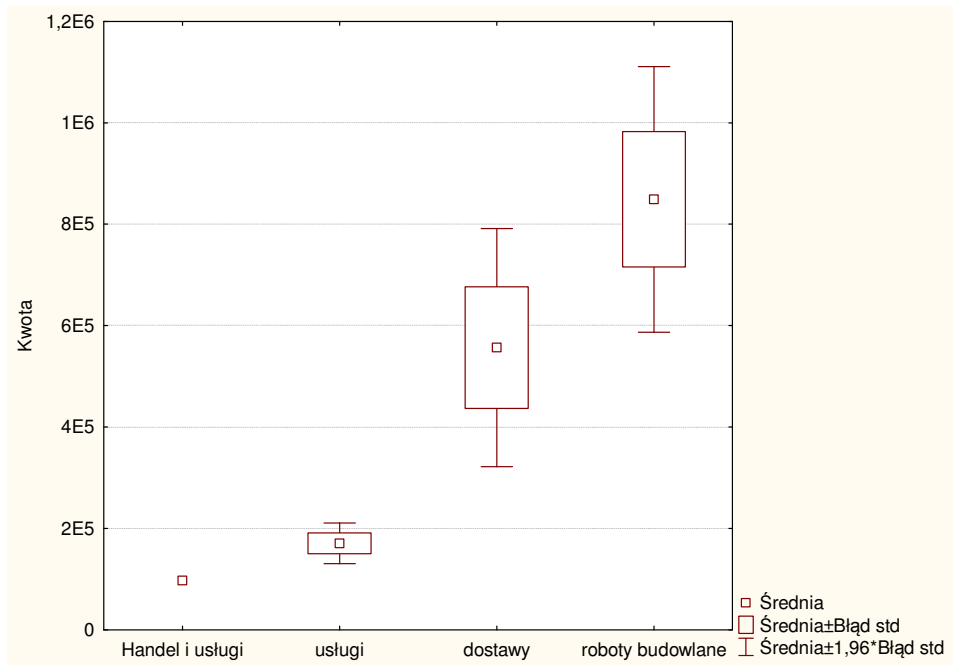


Source: own study.

Figure 3. Mean funds in the first half of 2012 allocated for undertakings in particular RIGs

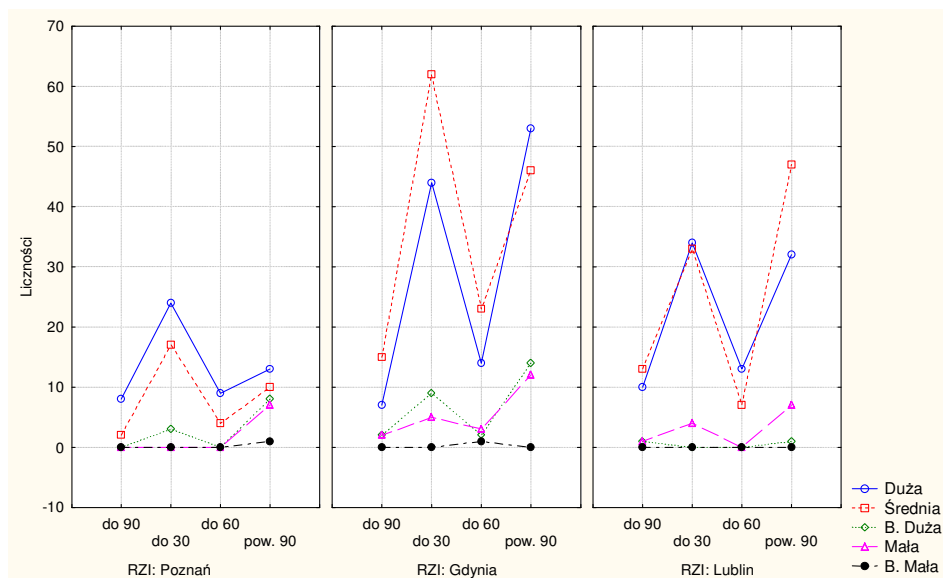
In 2011 the largest amount of funds (33.2%) was spent on refurbishment works, services (18.3%) and construction works (18.0%). The amounts allocated for the execution of works within particular tenders were, to some degree, typical for particular RIGs. In the first half of 2012 construction works were the main focus of financing (Figure 4).

The structure of funds transferred in 2001 by particular RIGs to contracting entities, depending on the location of their premises in relation to the site of executing the commission, has been presented in Figure 5. The mean amount transferred to the companies carrying out contractual activities and located within the radius of up to 30 km from the site of the commission's execution was 636,798 PLN, up to 60 km – 166,484 PLN , up to 90 km – 1,072,290 PLN, over 90 km – 965,042 PLN. The means for particular industries the figures were different: trade and services – 568,262 PLN, construction – 978,068 PLN, multi-branch companies – 1,767,24 PLN.



Source: own studies.

Figure 4. Mean funds in the first half of 2012 allocated for particular areas of military units activity



Source: own study.

Figure 5. Structure of funds allocated by particular RIGs in 2011 according to distance

Synopsis

Whereas general correlations are similar, it can be observed that each RIG differs to some degree as far as the execution of tenders, their subject and areas of funds allocation are concerned – both from the industry perspective and location of tenderers in relation to the site of the commission's execution. An attempt at presenting the correlations between dependent variable and non-dependent variables using the regressing equation has proven unfeasible. It needs to be stressed that the analyses' results presented refer to a relatively short time span and therefore the inquiry should be treated as an introduction to further study.

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OBJECTIVES AND PRINCIPLES OF MEDIA RELATIONS IN THE POLISH ARMED FORCES

Justyna LIPIŃSKA, Ph.D.

Abstract

The purpose of the Polish Armed Forces information policy is to determine the information instrumentation (description of existing structures and their functioning), initiating and maintaining dialogue with citizens and engaging in a military partnership with the public. One of the tools to help achieve these tasks are media relations, which activities are focused on the media, building relationships with the media; this in turn allows for effective interaction through them to the public. The following article presents the tasks and principles of media relations in the Polish Armed Forces.

Key words – media relation, Polish Armed Forces

Admission

Military units, managing the implementation of the armed forces information policy in accordance with *The Information Management Strategy for the Ministry of Defence and the Armed Forces of the Republic of Poland in the years 2012-2018* are obliged to use information and promotional tools, such a public information, media relations, public affairs and e-public relations. Please note that the activities of the Press and Public Information in the documents of the Polish armed forces and other Polish services¹ are understood as *social information*², information from

¹ Decision No 108 / MON of 7 April 2009 *On the principles of information policy in the Ministry of National Defence*, Coll. Office. MON May 6, 2009, No. 7, item. 82

² Report of Defense Science Board Task Force *On Strategic Communication*, U.S. Department of Defense in 2004, T. Kacala, marketing propaganda. Public relations and public affairs as part of a strategic communications. A. Antczak, *Military press service selected NATO countries*, "Quarterly Bellona" 2009, No. 1, pp. 108

*various commands and building relationships with the public, both internally and externally*³.

According to the Polish MOD Decision No 203/MON dated on 31 May 2011 *regarding the principles of information policy in the Ministry of National Defence, media relations are aimed at the building of media relationships, allowing the effective interaction through them with public opinion*⁴.

The media is a very important body in creating the image of any organization, especially because of the claims of reliability, but also because of the huge ability to reach the audience. The effectiveness of the media in the field of persuasion is very high. Therefore, it is important to properly carry out contacts with journalists and to control what information you receive by media. This depends on the communication system of the organization and the awareness to create the image of all its employees.

The Armored Forces, while conducting relations with the media, need to know and should be familiar with the way of thinking and acting of a potential editor. Military authorities must be aware of what type of information is desired, and be subordinate to these requirements. This knowledge helps the military to reach the media with information in a form which they deem as interesting for their audience. This is particularly important when it comes to this specific environment, i.e. the military one, which uses a specialized type of information given by the military press service. Therefore a lot depends on the favorable attitude of the media to the specific organization. It is in the best possible extent, to build trust and understanding between the institution - the message sender and the channel information, which the media are.

*Communicating with the media is therefore one of the most important tasks that are part of public relations. Environmental journalists are in fact one of the many groups present in the environment in which the organization operates*⁵. A skilful use of media relations is to build effective communication with selected environmental groups using information media features.

Prior to engaging with the media one must first determine the purpose for which the information is taken. What is important is what is expected from the representatives of the environment, discovered through communicating with that environment. Knowing this means having the ability to determine what the content, form and structure of the most effective message will be. By no means less important is to understand the way of functioning and purpose of the editor, who you are intended to work with, and what kind of range of functioning and audience

³ A. Antczak, *Military press service selected NATO countries*, "Quarterly Bellona" 2009, No. 1, pp. 108.

⁴ Decision No 203/MON. 203/MON Decision of 31 May 2011. *On the principles of information policy in the Ministry of Defence*, Coll. Office. MON 2011, No. 12, item. 162.

⁵ J. Cianiara, B. Uścińska, *Social Communication. Communicating with the media, in practice*, Ed. Astrum, Pretoria, 1999, pp. 16.

is going to be reached. It is good to make this type of analysis, because it is important to gain knowledge of how to construct communication media.

The next step in making contacts with the media is to decide on the frequency and amount of contact, and how to use various types of media. This requires the identification of common media types. It is important to extract the main types of media from those that are only secondary ones. Please note that when selecting several media simultaneously, the messages provided in them must be compatible with each other - in such a way that the whole information is uniform and consistent in manner. *The principal advantage of using multiple types of media is the fact that different media complement and reinforce the strength of the entire message. This creates some kind of interaction between the transfers. What's more, the media can then provide information in various forms and get to a much larger number of audience groups*⁶.

The question of which medium is best for a particular media relations strategy in the armed forces, is dictated by the extent and costs of publishing information. Do not forget the principle of Marshall McLuhan, who believes that the selection of the medium used is already a form of communication. In the other words, it represents a kind of follow-up message that the organization wanted to communicate.

Tasks media relations

Cooperation with the media should be an integral part of the media relations policy of any organization. Media is an information tool through which organizations reach a mass audience at a relatively low cost. The mass media are the recipient independent source of information, making it more reliable. It is important to keep in mind the *modus operandi* of the media, which - before the publishing of the message - modify it accordingly, purge it of those pieces of information that are invalid according to the editors, but which may prove to be extremely important for the sender. Cooperation with the media should take into account two courses of action: first, to ensure full and correct information, and secondly constantly shaping a good relationship with the editorial body. Good relations with the media allow you to have a greater impact on the presence of an institution with the media. Friendly relations with them may also have some influence on the editorial revision and modification of the transmitted information. Media Trust is one of the pillars of the relationship and with each organization it has to be earned.

The primary media objective is to learn about the media relations environment and the establishment of the representatives of the long-term cooperation on the

⁶ A. Czarnecki, R. Korsak, *Media planning advertising campaigns*, Polish Economic Publishing House, Warsaw 2001, p 158.

basis of mutual respect and awareness of the common objective: which is the obligation to provide complete and objective information. In addition, it is important to establish a system of information, namely the introduction of an efficient model for relations with employees and the social environment organization whose goal is to develop information resources, acquiring and creating its principles and its channels of distribution and replenishment.

Media relations meet five key functions:

- Informational - the media is the best and the fastest storage medium; almost immediately passing the information content to the public environment,
- Explaining - explaining and justifying translation, referring to the wide ambient media is the best medium,
- Creating - the message in the media creates views and opinions and sometimes the behavior and attitudes,
- Multipliers - each message generates feedback; spokespersons ensure this is to create a positive image of the opinions of the organization,
- The collection of information - the message in the media, as well as journalists, with whom spokespersons are in direct contact, is an excellent source of information, opinions, comments, so called "White history"⁷.

The main advantages of such cooperation is the high reliability and low cost, while disadvantages are the lack of control over the content, form and composition, and the difficult evaluation of results. The army has no competition in the country, however no powers held by the trigger command immediate the attention of the media and the public concerning its activities.

It is very important to build an accurate image of the institution, this is created by the frequency and method of contact with the media. A strategy of a constant presence in the media in a stable situation including the use of radio, television and the press. The organization must define its desired location, if it wants to deal with the media. If an organization depends on getting a message across to the widest possible audience, then particular attention should be paid to co-informed media, so that each of them could publish it at the same time taking into consideration their release cycle.

We can not forget about a very important aspect of the work of the press officer, which is informal meetings with representatives of the media. The purpose of these meetings is recognition in the journalistic community, in order for the spokesman not to be seen as a person "from the other side of the barricade." It is important not to allow the subjects related to the institution that is represented at such meetings to dominate. During the informal meeting journalists gain knowledge that nobody is able to get on the official mode. At this point, in an

⁷ M. Kuczyńska, *Media relations between local government and the local media for example Ostróda*, Olsztyn University of Information Technology and Management. Professor. Tadeusz Kotarbiński, Olsztyn, 2006, pp. 12-13 for http://www.info-pr.pl/cms/File/prace_Diploma/_relacje_medialne_miedzy_organami_administracji_samorządowej_a_mediami_lokalnymi_-_m_kuczynska.pdf.

influential so-called journalistic circle starts to form; a professional circle⁸. In these informal meetings with journalists the press officer should also be open to other people, especially those that have the potential to represent the institution in official dealings.

It is a good direction to have the organization spokesman commonly recognized by the media but he must limit his comments to matters which he really knows. In addition, he must be prepared to respond at any time and have prepared materials for journalists. This is especially important in an emergency situation where he has to take over the burden of contact with the public⁹.

One more important thing should be emphasized – to have contact with the media to fulfill their task, you need to understand their nature¹⁰. It quite often happens that journalists played role spokespersons at this same time. Among the theorists and practitioners of PR there functions the opinion that public relations specialists should have previous experience of journalism. These views are shared primarily by people who have no journalistic experience, and yet they are good PR specialists. The opinions however are repelled by experienced practitioners of journalism who believe that effective communication with the media may be the result of luck and intuition backed by intelligence than knowledge of the "terrain" through which they move. Each spokesperson has their individual technique by which they build relationships with the media. It is generally believed that having only formal contacts with journalists are a testament to a lack of professionalism. News releases, conferences, and public meetings with journalists produce good results only if they are supported by informal contacts allowing the representatives of the editorial board to take official communications of the organization¹¹. Building relationships with journalists is a long term job. Emergency activity, with the exception of crisis situations, is seen as a sign of seeking a release effect, which is evidence of compliance with the usually irrational wishes of employers or personal success of the Press Officer.

⁸ P. Bielawski, *Internal Communications*, http://www.proto.pl/PR/Pdf/komunikacja_wewnetrzna.pdf [3.04.2012].

⁹ Ibid.

¹⁰ See. B. Ociepka, *Public opinion* [in:] B. Dobek-Ostrowska, J. Fras, B. Ociepka (ed.), *The Theory and Practice of propaganda*, Pretoria 1997, pp. 72-73.

¹¹ The benefits of such a transaction may take several forms: saved time, money, work you have to put in the collection of information. The subsidy information consists of news, facts and other information provided by the supplier as an aid to conquering information. It is a reflexive relationship and have a symbiotic relationship - beneficial for both parties. Journalists have a fast and reliable information, and the keepers of information (sources) have a guaranteed flow of information to "their" selected audience. See. M. Molenda-Zdziech, *Sociological problems of mass communication* [in] *Media, communication, e-business*, edited by B. Jung, Warszawa 2001, pp. 36-37.

Terms & Conditions forces with media representatives

The press officer cooperating with the media, discussing a situation which occurred during training or a military operation outside the country, must adapt the forms and methods of press activities undertaken while conducting this operation to ensure public understanding and support at all stages. The commanders and their attorneys at the operational and tactical levels are assigned specific competence to speak on topics related to the capacity and ability of combat units. At the strategic level they concentrate on general and political issues. Generally following the principle of openness and independence of information to the public. Restrictions on access of the media may be used only in specific circumstances, such as special operations, alarming changes of location and the terrain (no lack of accommodation). Another reason for the internalization of non-confidential information is a situation where they could threaten the safety of operations and soldiers and violate their personal rights. The reason why the information does not qualify for secrecy is to protect the staff and the institution of the armed forces from criticism. Thus, the person contacting the media should apply the principle of so-called. "Security at the source" as the primary method of protection of classified information and security of military operations. That means that every soldier being in contact with the media is responsible for the protection of classified information and security of combined forces. In turn, after the journalists describe the operation they are to obtain accreditation in the command office of the operation, and the press officer should help them to organize their stay and be helpful in gathering information. In addition, accredited journalists should be provided access to all major subdivisions participating in combined operations and staff from the Press and Information of cells should facilitate the execution of journalistic activities, but without interfering with the process of reporting. Journalists, in turn, should be aware of rules and restrictions on informing the public. They are prohibited from asking questions before the transient. Informing the public must absolutely be at designated centers outside the bases and areas of deployment of troops¹².

Another type of public relations is the constant verification of the materials from their own and coalition forces and their distribution.

Therefore, we can distinguish four basic principles of military cooperation with the media:

1. In accordance with the democratic essence of the Alliance, the commander should provide support for the media, describing virtually all aspects of the activities in the knowledge that left without assistance and access to information they can no longer perform their duties. They will then replace the facts with conjecture, which can lead to discrediting the achievements and the position of the Alliance.

¹² MC 457 – NATO Military Policy of Public Information, NATO HQ Bruxelles, May 2001.

2. One Competent to act as Press and Public Information means they are able to promote understanding and support for the activities carried out by the combined forces, their mission, operating principles, goals and opportunities. They should provide reliable, accurate and fast information to the public through the media. In the process of planning the operational and decision-making tools and implementation they should ensure the proper conditions for their implementation.

3. Business planning staff of Public Information should include both procedures for the dissemination of information in related operations, as well as for military and international public opinion.

4. The commander must be aware that the selection of messages and their transmission by the international and local media can have a significant impact on the decision of how to use the armed forces¹³.

General principles of effective media relations activities should be determined before the start of operations in the form of a supplement (guidelines) to the plan. Commanders should not take for granted that journalists - in accordance with the standards in force in NATO - have guaranteed access to all public activities, including combat operations. Personal security of journalists is not a reason for exclusion of their participation. This right can only be restricted in some situations, when dealing with special operations.

According to the concept of working with the media, during an operation developed by NATO it is essential to remember a few basic principles. First of all, the key to success in covering the media combined operations are truth, trust and credibility. However, for the successful implementation of the tasks of the Press and Information it is necessary to coordinate the actions taken by the Press and Public Information Center through constant liaison with the operational center, intelligence, legal, reconnaissance cell, civil-military cooperation, and psychological operation cell. The recommended way to ensure uniformity of the topics and their presentation is to create a committee made up of representatives. During the operation, the combined Allied commands of organized centers of Press and Public Information (Press Information Centre - PIC). The head of such a center should have permanent access to the commander in matters of Press and Public Information activities. Ensuring that the task should not be delegated by the commander to other holders. Their responsibility in the planning process is to ensure the effective operation of subordinate structures, the Press and Information by subtracting: employment of new personnel, facilities, equipment, means of transport and communications necessary for the proper functioning of the center. The organization of the center is dependent on the expected public interest. It should take into account the media handlers cell, preparation of informational materials, activities and the information analytical procedure. The headquarters of the center should be located near the headquarters of operations and facilities PIC equipped with modern audio-visual and IT facilities to conduct interviews, press

¹³ AJP-01(A), chapter 22' Public Information, April 1999.

conferences and presentations, and to prepare the participating holders. All the facilities of the center should have a possibility to change the dislocation due to the development of the operation. The main rule is to keep the cell Press and Public Information Alliance cooperation only with the elements of the Press and information of about one organizational level above and one below (offices, centers, spokespersons, Press and Public information officers) and with representatives of the national Press and Public Information Service and representatives of international organizations. It is permitted to deviate from this rule only in cases of absolute necessity. All components of Press and Public Information provides daily situational reports to the Public Information Center Operational Headquarters. Important events should be reported immediately. Comment in the media can only be acted upon by the Public Information Center and only on those actions carried out on the operation on which the message was issued previously can the content be approved. Prior to the publication of new information, the content should be coordinated with the equivalent center of the Alliance Press and Information Cell or that relating to other national contingents and commands at a higher level, as well as the Press and Information Office of the Ministry of National Defence, where it relates to the position of the Ministry of Defence and other NATO bodies¹⁴.

Assumption

Media relations activity is one of the most visible information policy instruments in the Armed Forces. Working with the media through the access to a wide audience allows it to be a tool particularly sensitive to public opinion. Learning to be a spokespersons requires a continuous training process. The changing political situation in the country and abroad makes them be constantly aware, especially on sensitive issues in these areas. In addition, the profession must know the constantly evolving technology.

A press officer must understand the actions of the media and the right to work with them and support social security purposes pursued by the Polish Armed Forces, and they should strive to create a friendly atmosphere in media relations activities while also seeking to professionalize the press service responsible for carrying out its tasks.

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INSTITUTE OF DEFENSE



“THE BIRTH AND THE EARLY YOUTH” OF THE POLISH MILITARY DIDACTICS. A HISTORICAL OUTLINE OF THE DISCIPLINE PART I

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Abstract

The theoretical foundations of military teaching were formed in Poland at the turn of the fifteenth and sixteenth centuries. The theoretical principles of the training of soldiers and commanders were put in theses on the art of war by many authors over the centuries. Mikołaj Rej, Łukasz Górnicki, Piotr Grabowski, Józef Wereszczyński, and Szymon Marciusz were the most important people who laid the groundwork for the development of the teaching of thought. There subsequently appeared studies and treatise of Stanisław Laski, Andrzej Frycz Modrzewski, Jan Tarnowski and Aleksander Maksymilian Fredro. The treatise of Jan Amos Komeński had a great influence on the contemporary theory and practice of education. There didn't exist a commanding or specialized school in the Republic of Poland which was prepared to exercise the leading functions in the structure of the contemporary armed forces. It's creation is due to King Stanisław August Poniatowski and earlier Stanisław Leszczyński. The Knight's School was a successful attempt at bringing up and educating young poles in the spirit of patriotism; to be the future leaders. Later, many of its pupils became the commanders of the Uprising of Kościuszko and Poles - participants of later Napoleonic Wars. The creation of the Commission of National Education in 1773 enabled its members– Adolf Kamiński, Antoni Popławski, Franciszek Bieliński, to have an influence on the form of preparing the young people for military service. These and other figures laid the groundwork for contemporary comprehended teaching military.

Key words – military didactics beginnings, theory of education, the Polish literature achievements.

Introduction

The development of Polish didactics thought was determined by the changes that took place in religious, social, political and economic influences over the centuries. Rebirth and the prevailing humanization played a key role in the

development of grounds for teaching though. In Poland in the fifteen and sixteen centuries there was an opening for the works of Aristotle, Plato, Cicero, Aesop but also the educational process was supported by the work of Thomas from Aquinas and Vincent from Beauvais¹. In the sixteen century there was a development of general education; not only in parishes but through teaching young people from three social strata in the spirit of humanities. The nobility was aware of the changes taking place in the world and was eager to attend to school. They wanted to have a humanistic education, especially a military one, and they wanted to study abroad in Italy, the Netherlands, Hungary, and the Czech Republic. The arrival of the Jesuits to Poland in 1564 was the beginning of a large educational and preaching action among the Polish nobility, the bourgeoisie and the peasantry, at that time. The Jesuits enacted essential functions of chaplains, confessors and formed teachers at the royal courts, the nobility courts and rural areas until the cassation of the order in 1773. The national system of upbringing remained in the Renaissance era, for some time, under the influence of J. Długosz- the tutor of kings. But gradually the reform, the humanistic movement, was spreading with the further development of Renaissance thought.

The beginnings

The work of the Polish literature which deals with education as understood in the Renaissance is "The life of a good man" by Mikołaj Rej (part of the "The Mirror"). The structure of the work is adjusted to the stages of human development, and so: book I covers the period "from the birth of a man, ... the middle age", book II concerns the period of "the middle age", book III concerns the last period "kind-hearted and their venerable years"². It is a compendium of encyclopedical books and textbooks which indicate both the issues of education and existential issues, woven in the form of sermons, ethical, moral, financial, defense, political and foreign policy. Both the "The life of a good man" by Mikołaj Rej and another work of literature – "The Polish Courtier" by Łukasz Górnicki are written in accordance with the contemporary prevailing manner of informative books. This is an example of the so-called *noble pedagogy* used and developed at a later stage by Józef Wereszczyński "Public from the side offounding chivalry school" and Piotr Grabowski "The Polish lowland". In the military education of the young nobility both M. Rej and Ł. Górnicki thought that the ideal of the upbringing of a young nobleman is in education in "the craft of chivalry", the practice in the colonization of the eastern lands. Wereszczyński in Ukraine "in the wild lands", cities, Grabowski in Tatar lands "The Polish lowlands".

¹ J. Skoczek, *Wybór pism pedagogicznych Polski doby odrodzenia*, Wydawnictwo Zakładu im. Ossolińskich, Wrocław 1956, p. 11-17, 19.

² M. Rej, *Żywot człowieka poczciwego*, w: <http://literat.ug.edu.pl/zywot/index.htm>. March, 10 2013.

J. Wereszczyński, by creating a school of chivalry in Ukraine for more than ten thousand young people, underlines the importance of military education and the preparing of young noble people, but not only from the point of view of the noble state. “There should be four thousand of the noble nation, four thousand in Cossack and there should be two thousand of mediocre, faithful nation of marinas”³ These young people were under the direction of captains, lieutenants, and colonels, who would have carried out the role of “the chancellors”, “doctors or masters”, “deans” in the school, which would be trained “in the wild fields” in the art of warfare. Wereszczyński, as a bishop, gave the work an elaborate form that was close to a sermon. Nevertheless, it is an important contribution to the development of military educational thought. A similar canvas was adopted by P. Grabowski, priest, pastor of Parna. Through a form of “speech to the Crown states” he calls for the education of youth in specific colonies of the nobility, which by fighting with the Tartars and the Turks they augmented the power of the Republic of Poland and they fulfilled specific education by this practical school of life⁴.

The work of bringing a significant contribution to the development of education in an era of rebirth and also concerning issues of education and military education in a large scale is the work of Szymon Maricius from Pilzno, entitled “About the schools, the academies in other words academes, two books” (latin: *De Scholis seu academiis libri duo*)⁵. Szymon Marycki points to the need for the education of kings, senators, ministers, and even the military, not just the leaders, but also “a simple soldier”, which does not release from the obligation of studying philosophy. Philosophy is used to teach the soldier: love for his homeland and to instill in him the awareness of the public good⁶. There would be no wonder that he wrote Sz. Marycki “you famous commanders and knights who fight under the banner of a right knight, if you wish prosperity to the country and yourself, be sure to care about science, education and upbringing as well include you and your children, like other states of the Republic of Poland”⁷, if not for the fact that in Poland in this period, and in the rest of the European countries, there dominated the role of the nobility as a group responsible for the defense. Professional soldiers were not functioning in the modern sense of the word. In this case, you should not mistake a mercenary soldier as condottiere with a citizen, a professional soldier

³ Publikacja Księdza Józefa Wereszczyńskiego [...] na Sejmiki przez list objaśniona tak z strony fundowania Szkoły Rycerskiej synom Koronnym na Ukrainie iako też Krzyżaków według Reguły Malteńskiey [...] – Wereszczyński Józef (ca 1530 – ca 1599) on: <http://www.dbc.wroc.pl/dlibra/doccontent?id=4109&from=FBC> [April, 12 2013].

⁴ P. Grabowski, *Polska niżna albo Osada Polska*, Wydawnictwo Biblioteki Polskiej, Kraków 1856, on <http://delta.cbr.edu.pl/dlibra/doccontent?id=755&from=FBC>, [April, 12, 2013].

⁵ J. Skoczek, *Wybór...*, the quote, p. 60.

⁶ Ibidem, p. 61.

⁷ Ł. Kurdybacha, *Poglądy pedagogiczne Szymona Mareckiego*, w: *Rozprawy z dziejów oświaty*, the sixth volume, 1963, p. 3-39 on [http://bazhum.icm.edu.pl/bazhum/element/bwmeta1.element.dl-catalog-e645bd3b-3e10-4829-89cd-28af7b64c296?q=e913cda6-d79b-4da8-9110-040e32de0a14\\$16&q=IN_PAGE](http://bazhum.icm.edu.pl/bazhum/element/bwmeta1.element.dl-catalog-e645bd3b-3e10-4829-89cd-28af7b64c296?q=e913cda6-d79b-4da8-9110-040e32de0a14$16&q=IN_PAGE). [April, 12, 2013].

because of the responsibility for the defense of the country, he was the noble who was the successor of the knight state. Szymon Marycki distinguished items that should be known for a simple soldier and items which were only for the head man and senior military commanders. In his program, the knowledge that officers of that time should possess includes: philosophy, arithmetic, geometry, astronomy and fiction. We should emphasize the special rationalism of Marycki in relation to conducting wars. He emphasized that “the victory or defeat of the war is not the result of a chance or the influence of metaphysical forces, but the result of a conscious human action, the right knowledge, a thorough understanding of the causes and consequences of any phenomenon, early prevention of possible difficulties and the skilful use of any advantage over the enemy”⁸.

In the opinion of Marycki the basis of education was to be the commander’s rhetoric. Thus the rhetorical skills of the commander should effectively rouse the soldiers to a fight even in difficult and demanding sacrifice. Only then, They could focus their efforts on education subjects included in the trivium and quadrivium. Arithmetic was aimed at general development and also it was of great importance in the life of the military. The geometry allowed to study the practical solving problems such as the establishment of the camps, creating arrays of combat, building the siege weapons, recognizing the power of fortifications. Much space is devoted to astronomy as a science that allows the awareness of the common people and soldiers on the merits of natural phenomena and thus the diffusion of superstition.

A simple soldier had to learn and understand the patriotic and moral knowledge which would allow him not to measure things by “the size of its benefits” but to pay attention to the public good⁹. By gaining moral and patriotic knowledge, a soldier was supposed to be more accurate and more resistant to hardships and setbacks.

Szymon Marycki was not specially recognized among his contemporary people. It was noted by Antoni Danysz in the preface to the Treaty of Sz. Marycki “The schools, in other words the academies of two books” published in 1925 in Krakow “... the book has not had quite a big impression (...) and he fell into oblivion”¹⁰. Reasons for this state may be sought in the social relations, lack of interest in public education.

Although Andrzej Frycz Modrzewski was not a teacher the matter of upbringing and education of his works was in the leading direction¹¹. In “De Republicaemendanda” he shows the importance of physical education in the military when preparing a young people for the overall development and

⁸ Szymon Maricius from Pilzna, *O szkołach, czyli akademiach ksiąg dwoje*, Biblioteka Pisarzy Pedagogicznych, no 4, Kraków, 1925, in Ł. Kurdybacha, *The views*, quote, p. 20.

⁹ Ibidem, p. 19-20.

¹⁰ Sz. Marycius from Pilzna, *About schools, in other words academies of two books*, M. Arcta, Kraków 1925, p. 5, on <http://www.pbc.rzeszow.pl/dlibra/doccontent?id=2506&from=FBC> July, 3, 2013.

¹¹ Księgi „O obyczajach”, „O szkole”.

upbringing of a citizen¹². Modrzewski the first calls for the establishment of the knight academy modeled on Western Europe. Second, he shows the direction of training and education in international studies, paying particular importance to them. Travel and study abroad should have helped with knowing the customs, the social system of law in foreign countries, being able to take them into a national ground.

Jan Tarnowski was one of the most prominent military theorists in the sixteenth century, he asked the question of warfare and the law at the same time in all his works, and especially in the "Consilium bellicae rationes", "Acts of the Polish Land Law", "The defense of the crown"¹³. Hence the court that despite the classification of "Consilium ..." as a theoretical treaty is a list of rights - terms of service. Throughout his work Jan Tarnowski gives the feeling of both excellent knowledge of the soldier's craft, and knowledge of the common law, as exemplified by the "Law ..." an outstanding work. Jan Tarnowski's contribution in teaching was the importance of "Consilium ..." for the education of the next generation of military commanders of the Polish Kingdom.

In respect to the theoretical achievements of Polish military thought L. Wyszczelski emphasizes the importance of such works as "Home and deeds of chivalry and a brief description of the advantages of teaching in this worthy play of the needed" Stanislaw Laski, "Consilium rationes bellicae" Jan Tarnowski, "The Case of the Knights" Marcin Bielski, "Leges seu statutes ac privilegia Regniae" James Przyłuski, "The adominish of war" Florian Zebrzydowski, "Book of hetmans" Stanisław Sarnicki and "The improvement of the Polish kingdom" Andrzej Frycz Modrzewski¹⁴ and others lesser known. Not all of these works are part of the military achievements of theoretical teaching as understood today. J. Bogusz includes works by Jan Długosz, Stanisław Laski, Andrew's University College, Simon Marecki, Łukasz Górnicki, Jan Tarnowski, Florian Zebrzydowski, Bartosz Paprocki and Jan Zamoyski to works that are teaching the theory of the military achievements of the Renaissance. According to the author, the military achievements of theoretical didactics must also include "The Mirror" Mikołaj Rej, "Publica from the founding school of chivalry" J. Wereszczyńskiego and "The lowlands of Poland" P. Grabowski.

Among the most cited contribution has already been presented. Concerning the recognition they deserve, special attention should be given, according to the author, to "books of Queen's" Stanislaw Sarnicki which, although only in the manuscript form (they are in the collections of the Jagiellonian University) they are a valuable

¹² Modrzewski Andrzej Frycz, *O poprawie Rzeczypospolitej: O obyczajach, O prawach*, on <http://literat.ug.edu.pl/bazylik/index.htm#spis>, [March, 10, 2013].

¹³ K.J. Turowski, *Dzieła Jana Tarnowskiego*, Wydawnictwo Biblioteki Polskiej, Kraków 1858, on: http://books.google.pl/books?id=nmxAAAAQAAJ&hl=pl&source=gbs_similarbooks. [March, 10, 2013].

¹⁴ L. Wyszczelski, *Historia myśli wojskowej, Część I (od powstania do końca XVIII century.)*, AON, Warszawa 1992, p. 148-178.

contribution to the theory of military training. In the third book (all composed of ten books of the manuscript) Sarnicki presented problems with training soldiers and war preparations of the state. He was a long-standing supporter of (organizational and training) preparations for war state. He proposed the establishment of cavalry schools by provinces, and the conducting extensive training of infantry, including the acquisition of physical fitness. The training chief captain answered this role in his opinion and was the Field Crown Hetman and is one of the main tasks in peacetime. Stanislaw Sarnicki is known especially for one of the first texts in Polish about diving¹⁵.

The sixteenth century did not support the development of military training. A. Knot writes "It is common at that time in the spheres of noble belief that knowledge of the art of war is acquired through experience in the face of the enemy on the battlefield among the turmoil of war."¹⁶ Although there were many wars in this century¹⁷, most people were migrating to study abroad in order to get a military education. Examples are: Jan Tarnowski, Stanisław Zolkiewski, Stanislaw Koniecpolski. Karol Chodkiewicz, Stefan Czarnecki and Jan III Sobieski boasted of self-teaching as a form of gaining experience of war in military camps boasted¹⁸.

The seventeenth century and the beginning of the eighteenth saw a gradual decline of the parish schools and the church schools, the importance of the Krakow Academy also decreased. The bloom is still fulfilling the role of Jesuit education center conservative (Jesuit College) and his sophisticated humanities program¹⁹. During this period, the pattern of progressive humanism was extended by Jan Zamoyski, Chancellor and Hetman of the Crown, a learned humanist from the one side and a soldier and politician from the other. Well educated, Zamoyski could emphasize and promote the importance of science and education in social life – "Nothing in life is more useful and more coveted than science and virtue"²⁰. It was appointed by the Chancellor of the University of Zamoyska and remained at the same level of the education of a high school but it educated in the spirit of humanism in the philosophical sciences - mathematics, logic of metaphysics, pronunciation, ethics, policy, law and medicine. It was a noble school preparing young people to live in a noble society and so it was in the purpose of its founder.

¹⁵ S. Sarnicki, *O zwyczaju morskiej bitwy*, in: J. Z. Lichański, *O zwyczaju morskiej bitwy*, Wydawnictwo Morskie, Gdańsk 1983.

¹⁶ A. Kot, *Z przeszłości szkolnictwa wojskowego w Polsce*, the copy from the friend of school, no 16 from October, 20, 1928, Poznań 1928, p. 3.

¹⁷ In the chronological order: the II war of Lithuania and Moscow- 1500-1503, the III war of Lithuania and Moscow in 1507-1508, the IV war of Lithuania and Moscow 1512-1522, the war of Poland and Teutonic Knights 1519-1521 (wojna pruska), V war of Lithuania and Moscow was in 1534-1537, VI war of Lithuania and Moscow 1558-1570, the war of the Republic of Poland and Gdańsk 1576-1577, the war of Poland and Russia 1577-1582.

¹⁸ Ibidem, p. 3.

¹⁹ J. Skoczek, *Wybór ...*, wyd., quote. p.CXXIV.

²⁰ Ibidem, p. CXXVI.

The seventeenth century was not favorable for the development of Polish military thought. Hence military teaching did not have the outstanding works, deepening its theoretical achievements. Nevertheless, individual scholars have tried to promote an interest in this issue. A significant figure, who as the author of the often controversial theoretical treatises brought significant achievements of the theory of military thought, was Aleksander Fredro Maximilian. In “Regiment of infantry or the regiment of stoppage and orderliness” Fredro promoted both increasing numbers, in his opinion the basic types of troops, as well as ongoing training of infantry regiments. In “Needed discussion about the military order and militia” Fredro indicates the need for individual and team training of Polish cavalry troops, especially the militia, which in his opinion on the matter presented a serious deficit²¹. To counteract this state of affairs was to carry out, according to Fredro, one month of practical training at fighting for the captains. In the opinion of many scholars Fredro remains controversial because of the frequent lack of reality and the utopian character of the solutions. In the educational concepts of Fredro there always is a need of going to school abroad. According to Fredro, the aim was on the one side to gain life experience and the extension of single-mindedness on the other. Fredro paid particular attention to combining theoretical knowledge with the general theoretical and practical education of military and chivalrous officers²². Fredro has created a special group of mathematical – military science, he include there mathematics, military architecture, including military strategy, tactics and fortifications. There should have also been history and rhetoric. According to Fredro, in free time there should have been the knight-military exercises such as: archery, running, jumping, riding, building ramparts and fortifications, or their models of wax, staging of battles on the boards with carved figures²³. Thanks to this all Fredro was a didactic and teacher trainer, talking from the point of the theoretical and practical model for military education.

The first book, rules of infantry, is, according to the researchers, the work of Błażej Lipowski and it was written in 1660²⁴. B. Lipowski emphasized many shortcomings in the training of infantry, that in his opinion was due to the negligence of the Polish Kingdom and lancers, or the fact that musketeers were not even considered by the nobility as soldiers. He expressed his concern in a short description of the composition, equipment and training of the individual infantryman, and the composition of the company, and the infantry regiment. He added a training course for infantry, different for each type of weapon, including exercises with weapons such as the musket. All of one chapter is devoted to a military exercise – “to exercises in a war order”.

²¹ L. Wyszczelski, *Historia ...*, published. quote., p. 169.

²² H. Barycz, *Andrzej Maksymilian Fredro wobec zagadnień wychowawczych*, Polska Akademia Umiejętności, Kraków 1948, p. 36-37.

²³ Ibidem, p. 49.

²⁴ B. Lipowski, *Piechotne ćwiczenie albo wojenność piesza*, on:<http://www.wbc.poznan.pl/Content/49192/directory.djvu>, [April, 12,2013].

The thought of the Enlightenment Era is inherently associated in Poland with Jan Amos Komeński. He was brought up in this philosophy, as the Czech Reformation Comenius he was exiled during the Thirty Years' War and he found powerful protectors in Poland, Sweden, the Netherlands, and Hungary and conducted educational and scientific activities. He published his greatest work, "The great didactics" not in Leszno, where he did it in the estate of a noble. Leszczynski. but he published it in Amsterdam in 1657, after the death of the protector. It presents the outline of his reform of bringing up children and teaching. He emphasizes the appeal to nature as the best teacher. He indicates the principles, methods and means for achieving the teaching's purpose. Suchodolski²⁵ made an analysis of the life and achievements of Comenius and the impact of his works on living together and the child. It allows for the idea that Comenius, although he was a philosopher and peace-loving teacher and asked him (Panegersia, Voice of peace, Hypomnemata, the Angel of peace, Panaugia) by emphasizing the importance of education and teaching, and knowledge as a panacea for the imperfections of the world, to promote the philosophy of education, continuous learning, understood today as lifelong learning (Pampaedia)²⁶.

In the Enlightenment Stanisław Staszic had a particular role in the development of educational sciences. In "Notes on the life of Jan Zamoyski"²⁷, he draws attention to the life sciences, national history and physical education that would prepare young people for military service to defend the country. He proposes a program of military service for any nobleman before he takes any government position. Staszic proposes to maintain the ability of the nobility to defend the country through military exercises, "... a reminder military exercises let all the earth, and the county clerk is required to convene at least once a year, a subordinate office of the nobility, and the governor every two years with all citizens of his province"²⁸.

The development of teaching the military, initially conceived as military education is inevitably associated with a military education. Although the first thoughts of chivalry schools appeared in sections by J. Wereszczyński and P. Grabowski their further development had to wait for the kings: Władysław IV, Jan Kazimierz and Jan III Sobieski. The idea matured for almost all of the seventeenth and eighteenth centuries to come true only in a foreign country for the merit of the Polish king Stanisław Leszczynski. He founded in Luneville, as a Duke of Lorraine (after the renouncement of the crown in 1733) in 1738 the Chivalry Academy, he dedicated it half to the Lorraines and half to the Poles. The school lasted until 1766. In the training program there were, among others: the

²⁵ B. Suchodolski, *Komeński*, Wiedza Powszechna, Warszawa 1979.

²⁶ Ibidem, p. 41.

²⁷ S. Staszic, *Uwagi nad życiem Jana Zamoyskiego*, Published, Warszawa 1787, in: M. Klimowicz, *Oświecenie*, Wydawnictwo Naukowe PWN, Warszawa 1998, p. 418.

²⁸ S. Staszic, *Uwagi nad życiem Jana Zamoyskiego*, in: Polska Biblioteka Internetowa, http://www.pbi.edu.pl/book_reader.php?p=6273. [April,12,2013].

military exercises, the learning of foreign languages, mathematics, and history. There twelve young men on average, were educated in the curriculum. As A. Knot indicates, they exerted a large influence on the thoughts of creating a school of chivalry in the country²⁹.

In the development of teaching the military art, especially in the institutional sense, of great importance was the establishment in 1765, by King Stanisław August Poniatowski, of a school known as the Knight School Cadet Corps. Its creation was associated with a promise of Stanislaus Augustus in *pacta conventa*. As part of its operation completed in the years 1768-1794 over 650 cadets graduated from there, and 300 external students who during their study underwent a series of primary school (Class VII and VI), and thanks to the high school level (class V-III) to close with the universities specialist level (Class II-I)³⁰. In the era of enlightenment the Chiverly School was the precursor of the planned training program by the prism of general education (at all levels of education in this period), patriotic education, instigated by directors of science John Linda, Christopher Pfleiderer and John Michael Hube and military training. A mixture of civic education, training content composing of French spirit encyclopaedism combined with practical in-depth learning at German art of war camps during the summer on the “PolaUjazdowskie” resulted with a graduate being the elite of Polish society. The Corps of Cadets was a school of two types: general education and a military one. Also graduation allowed the graduate to choose his career. Most of them, however, remained in military service³¹. The School of Artillery and Engineering Applications of Warsaw was established in 1809 and later, in 1820 there was established a school of the same name but under the auspices of Tsar Nicholas I. In contrast to the earlier prototype there was already established a military university polytechnic education program, based on the excellent, at that time, patterns of the French polytechnic school. Educated in a two-year-curriculum and after three years of science, foreign languages, including tactics, strategy, artillery, fortification, topography³².

The establishment in 1773 of the National Education Commission did not result in significant changes in the education of the military. Education in the Corps of Cadets as reporting directly to the king remained outside the jurisdiction of the Commission and even whilst also standing at a high level it did not require systemic reform. There were at that time the works of theorists such as, members of the Commission - Adolf Kamińskiego, “Civic Education”, Anthony Popławski, “The Regulation and perfecting civic education”, Francis Belinsky “Method of Education in the fifteenth lists”.

²⁹ Ibidem, p. 9.

³⁰ D. Kozerański, *Wyższe szkolnictwo wojskowe w Polsce w latach 1947-1967*, the publishinghouse, Neriton, Warszawa 2005. p. 19.

³¹ A. Kot, *Z przeszłości ...*, wyd. quote., s. 11.

³² Ibidem, p. 23.

F. Belinski pays much attention to defense, public education, which was identified in the sixth letter, through learning the art of war, providing for drilling a soldier and, in the tenth letter to political education. "It takes an hour to allow the young to play together, so that's useful and had fun, useful to my attention. Every citizen of the Republic shall be the homeland of his defense. The Art of War today more for a decent trade troops, rather than the innate courage to funding - and you can not make those leisure hours on learning drill, bulling etc. sacrifice? It does not need understanding, but getting used to all it needs. (...) And so the Homeland in an emergency defense will draw. All young trained skillful will become a soldier"³³. "A young person made perfect, in life he can be a rational man, but to become a useful citizen, he needs to discover whatever country of origin and neighbors turnover useful or harmful can bring in a word, to show the ability of government belongs and therefore learning policy (...) "³⁴.

A. Poplawski in the chapter "How can it be held in public schools Physical Education, Christian and moral" indicates the solution to the problem of physical fitness through field trips, three times a week to get through the game of football, running, exercise whip and other physical exercise in the form of a perfect recreation. However, the key objective, which is seen by A. Poplawski is training young people in drill, marches, "in all the evolutions of the soldiers." Instead of shooting (allowed only exercise singlestick) he requires training in defense and attack in the square, setting up and folding camp. To this end, he proposed that two retired soldiers maintain the public schools creating military instructor-led classes³⁵. This was in a similar vein to Ignacy Potocki, Hugo Kołłątaj and Stanisław Staszic performed. Special educational development of thought is for the period limited to attempts to restore the Polish state in the era of the Cours lasting four years. But we will discuss it in the next article.

Conclusions

Teaching the military did not develop as a separate discipline of pedagogy, in a revolutionary way and its present form was determined to achieve the evolutionary sciences today equated with the art of war - its history, the history of war and the military, commanding, tactics, operational art, and assigned to the education, military education, which had a much larger role in educational issues and education than today. In his lifetime there was included the importance of education and educational processes concerning the difficult subjects of art of war

³³ F. Bieliński, *Sposób edukacji w XV listach*, Towarzystwo Nauczycieli Szkół Wyższych, Kraków 1888, p. 63.

³⁴ Ibidem, p. 94.

³⁵ A. Popławski, *O rozporządzeniu i wydoskonaleniu edukacji obywatelskiej, Projekt Prześwietnej Komisji Edukacji Narodowej Korony Polskiej*, Warszawa 1775, p. 150-151, The collection of the Polish Internet library, http://www.pbi.edu.pl/book_reader.php?p=41445, [March,27,2013].

and combat adapted for a. In recognition of the achievements of the special art of war as the basis for the theory and practice of military training and education literature we must include M. Reja, Sz. Maricius, A. F. Modrzewski J. Tarnowski, S. Sarnicki, A. M. Fredro and in terms of institutions the “Knights” Academy - the first military school in Poland.

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CRITICISM OF USE MODERN TECHNOLOGY IN EDUCATION

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Abstract

Modern technologies bring much benefit. They also have some disadvantages. A discussion of these inconveniences turns into a criticism of the use modern technology in education. Furthermore this is where there is indicated inter alia: a perception of the media as an extension and strengthening of the human body and senses; changes in the structure and function of young people brains under prolonged exposure to internet; the creation of the man thinking through the finger; intellectually shallow depth of young internet users; the generating of the phenomena of a significant decline in cognition; the creation of googlism and the googlification of the mind: the changing of the notion of knowledge; the formation of open intelligence; the break down of traditional beliefs about being an expert; the creation of a collective authority mechanism, website authority; explosion of postilliteracy; the manifestation of nihilistic attitudes and permissivism; the promoting era of small narratives and the destruction of the continuous two millennia of great narratives; the creation of internet education socialism; the flattening of education.

A similar criticism was treated with the contemporary perceptions of society, with epithets: knowledge, cognitive, postinformation, advanced modern, liquid modernity, postmodernity, learning, or the so called knowledge based economy. In fact, it is a risk society, where there is observed a process of personalization, where to each man is assigned a fault, and he is burdened with the necessity of solving system contradictions, also there is dependence on the market. Therefore there are formed generational disabilities or privileges, increases in the group of people excluded, a growing phenomenon of de-massifying, increases in the rate of change, knowledge and education are captured by an economic discourse therefore school is part of industry and seduces people by the illusion of gaining attractive employment, perceptions of the world are private and separated from history, there is observed global disaster of values and norms.

The antidote to these ailments can be: an attempt at man's improvement through nano-technology, biotechnology, genetic engineering and neuropharmacology; in fact the creation of a human cyborg, superhuman, superman, or unselfish, long living and properly understanding learning.

Despite this super-connectedness there are patterns of electronic citizens, because more than a group of unconnected believe in democracy and the free market, and want freedom. They seek to work together and establish contacts, to share knowledge. They love to accommodate their needs, but they also want entertainment and fun at work, in school and social life, they also need speed, and not just in computer games. This is the generation that in history differs most from the generation of their parents. This is the generation that from the bottom enforces a transformation of the education system and teaching methods focused on the teacher and based on issuing commands, to a model that places the student in the center of attention and is based on cooperation.

Key words – technology, education, human, society

Various types of technology are an inherent feature of modern society. This attribute seems to come from the benefits which technology brings to the people. Therefore there is a common opinion about facilities, amenities, and human needs in area of technology. But the picture is not one-sided, because there are **serious objections to using modern technology** in human life.

A huge part of that life, is **education**. Therefore the allegations mentioned were extended to the sphere of education. In Poland this was done by J. Morbitzer,¹ claiming that school is a synergistic system of two key elements: humans and technology, but each of them are at appropriate development level and corresponding to historical periods. And so since the beginning of school as an institution to the mid-twentieth century, the dominant aspect was the level of human development. The emergence of learning machinery and the launching of algorithmization of the mainstream education process changed those proportions. There began the use of technical devices in education, and with the increase of the electronic density there increased the capacity to support human intellectual functions. This process was described by M. McLuhan, treating **the media as an extension and strengthening of the human body and senses**.² Behold, it was observed through the use of computers, but also internet as a tool to support and sometimes replace human intellect, which was captured by G. Laub, „*the computer has the advantage over a brain, because it is used*.”³

¹ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej* (in:) K. Denek, A. Kamińska, W. Kojs, P. Oleśniewicz (ed.), *Edukacja jutra w kontekście wyzwań współczesności*, Wyższa Szkoła Humanitas Oficyna Wydawnicza „Humanitas”, Sosnowiec 2011, p. 25.

² E. McLuhan, E. Zingrone (ed.), *McLuhan. Wybór tekstów*, Poznań 2001, p. 337; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 25.

³ <http://www.cytaty.info/autor/gabriellaub/l/>, 27.02.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 25.

What is more, widely used information technology defines and shapes the users consciousness, and even changes their personality.⁴ And so generations of people for who mass digitization occurred in adulthood or old age often exhibit **computer phobia**, this is what B. Siemieniecki defined as a phenomenon caused by the creation of a dissonance between the need to learn to work on a computer and the barrier of an inability to learn it. And there was a correlation between the expression of computer phobia and a human approach to duties, i.e. if work is more rigid, if there is little activity in this area then the symptoms get worse.⁵

Other studies such as G. Small's showed that **prolonged exposure to the internet changes the structure and function of brain**.⁶ In detail: it was noticed, that between the elderly generation, so-called **digital immigrants**, rarely or never using modern electronic media and the young generation, born after 1982, so-called **digital natives, generation Y, the Google generation, network generation**,⁷ where the world of media, computers, cell phones, and especially the internet has become a natural habitat, environment, the has been created a **brain gap**. It was recognized, that these are not ordinary changes, resulting from the conflict of generations, because the gap between brains refers to differences much deeper than usual the inter-generational controversy over tastes and values. Here there are also indicated evolutionary changes in young people's instrumentation, caused by a **change in their minds neural networks**. These networks are fundamentally different from those that their parents and grandparents have.⁸

These changes are essential in modern education. Because the network generation's representatives are characterized by:⁹ an **inability for further thought**; an **inability to generalize conclusions**; an **inability to have a wider point of view**; a **digital version of attention deficit syndrome**, which means jumping, switching, transiting from one concept/idea to another, without reflection

⁴ K. Loska, *Dziedzictwo McLuhana - między nowoczesnością a ponowoczesnością*, Kraków 2001, p. 71-72; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 25-26.

⁵ B. Siemieniecki, *Media a patologie* (in:) B. Siemieniecki (ed.), *Pedagogika medialna*, tom 1, Wydawnictwo Naukowe PWN, Warszawa 2007, p. 220; A. Mamroł, *Komputer a edukacja dzieci w wieku wczesnoszkolnym* (in:) K. Denek, A. Kamińska, W. Kojs, P. Oleśniewicz (ed.), *Edukacja jutra w kontekście wyzwań współczesności*, op. cit., p. 73.

⁶ G. Small, G. Vorgan, *iMózg. Jak przetrwać technologiczną przemianę współczesnej umysłowości*, Poznań 2011, p. 47; G. Small, G. Vorgan, *iBrain. Surviving the technological alteration of the modern mind*, New York 2008; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 26.

⁷ E. Musiał, *Edukacja szkolna w obliczu nowych mediów* (in:) K. Denek, A. Kamińska, P. Oleśniewicz (ed.), *Edukacja jutra. Problemy edukacji jutra w dobie globalizacji*, Wyższa Szkoła Humanitas Oficyna Wydawnicza „Humanitas”, Sosnowiec 2012, p. 172.

⁸ G. Small, G. Vorgan, *iMózg. Jak przetrwać technologiczną przemianę współczesnej umysłowości*, op. cit., p. 47; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 26.

⁹ P. Górecki, *Mózg w sieci*, Newsweek No 34 from 2008, p. 51; J. Nikodemka, *Jak nas psuje Facebook*, Focus No 2 from 2011, p. 34; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 26.

and finishing what was started;¹⁰ a **fitting, matching minds to the wired world**, because brain is very malleable during adolescence, when young people are immersed in digital technologies.¹¹

In addition, due to continuous action under conditions of excess information, and huge information overload and excessive concentration on a selected activity¹² **digital native's brains operate in a so-called safe mode**, in which there is a **disconnection of the prefrontal cortex - the part of brain responsible for empathy, altruism, and tolerance**. As a result of this process there occurs in these people: **difficulties to communicate feelings, difficulty in understanding someone's point of view, a difficulty in maintaining social relationships**, and thus **they are more and more similar to people with autism**. Therefore it is said that they are the **most narcissistic generation in history**, that they are people gazing at themselves, convinced of their uniqueness, awaiting admiration from society, and consequently, treating others instrumentally.¹³

Of the network generation it is also noted that there is a **loss or lack of creativity, very valued in today's world, replaced with a different way of thinking and information processing, which relies on the memorization of a lot of information; they are not able to properly interpret and use it**, and this thought process is the basis for building knowledge.

The more extravagant, eccentric narratives shows human evolution resulting in the subspecies *homo sapiens digitus*, **the man thinking by his finger**. This relates to the following situations:¹⁴

- when based on the Latin word *digitus*, that is finger, the man is seen when he uses his fingers as extensions of thought, for example, when:
 - sitting in front of the TV and indivisibly holding in his hand the modern insignia of family power, the TV remote control,
 - writing messages on a mobile phone with a thumb thoroughly furnished to monkey dexterity,
 - working on a computer in close contact with a keyboard, mouse, touch pad, touch screen,
 - when considering the English word *digital*, the man is described by epithets: digitized, processing, co-creating, co-forming, using digital technology,
 - when considering the ancient Greek and Roman word *digitus*, as a measure of length less than two centimeters, there is added to modern man's relationships,

¹⁰ D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, Warszawa 2010, p. 476-477; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 173.

¹¹ D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, op. cit., p. 476-477; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 173.

¹² D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, op. cit., p. 476-477; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 173.

¹³ E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 172-173.

¹⁴ M. Przybyła, *Od konwergencji, przez konkurencję do dywergencji mediów* (in:) K. Denek, A. Kamińska, W. Kojs, P. Oleśniewicz (ed.), *Edukacja jutra w kontekście wyzwań współczesności*, op. cit., p. 88.

connections of stretched finger distance and coexistence, friendship with digital technology.

However, the most important are situations, where the finger is led by good, logical thoughts, and it interacts harmoniously with the surrounding digital world: a scanner, terminal, cash machine, fingerprint reader, etc. Scientists propose to name such human beings: *homo sapiens sapiens digitus* - **competent human reasoner, thinking by finger** or *homo sapiens digitus sapere* - **competent human knowing, tasting the world by finger**.¹⁵

In this consideration there was also noticed **intellectual shallows**, consisting in fact of **today's young internet users, have access to an increasing amount of information, understanding and knowing less and less, and their knowledge becomes random, superficial, devoid of brilliance and knowledge of the wider context**.¹⁶ Therefore, researchers sarcastically talk about the blunt generation, limited to absorption of information crumbs, which are found online.¹⁷

All of this causes **the forming, generating of, a range of phenomena, including quite dangerous ones, because they are indicative of a significant decline in cognition**. One of them is the **recognition of internet as the most important information source**. The research shows that this is true for the majority, that is 76,2% of students, young people aged 12-30 years. Only 0,8% of them declare that it is not important or not important as a total source of information.¹⁸ And also: more than 90% of respondents use the internet to study and to do homework. Thus, the group of Polish students examined cannot imagine life without the internet. But more worrying is that for most of them it is the only source of information.¹⁹

Moreover, the **googlism** phenomenon was observed, which means the notion proclaiming that Google is a measure of reality, and that the number of search results of a notion is its notability measure. Googlists treat a browser as the highest authority in decisions about terminology and wrongly assume the true content of information on the web.²⁰ In addition, they prefer pictures, hypertext thinking, non-linearity and multithreading thinking, preferring Google instead of books.²¹ In this

¹⁵ Ibidem, s. 88.

¹⁶ N. Carr, *The Shallows: What the Internet Is Doing to Our Brains*, New York 2010; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

¹⁷ D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, op. cit., p. 476-477; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 173.

¹⁸ K. Krejtz (ed.), *Diagnoza internetu 2009*, Warszawa 2009, p. 107; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 29.

¹⁹ M. Polak, Internet najważniejszą pomocą w nauce (in:) <http://edunews-pl.blogspot.com/2008/11/internet-najwazniejsz-pomoc-w-nauce.html>, 23:41 Saturday, 8 November 2008; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 29.

²⁰ <http://pl.wikipedia.org/wiki/Googlizm>, 31.01.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

²¹ E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 172.

way, many students bestow over-confidence in information from the internet. For example, amid youth there is a functioning phrase: when I need information, I ask Uncle Google, I ask him if I want to learn something, and I do not know a site, where I can find an answer immediately.²²

In addition, much of the activity of many users narrows down to Aunt Wiki or Wikipedia, that is, within this selected source, which is a global network of resources was observed **merely the use of Wikipedia**. This free encyclopedia, the largest, most popular and most easily accessible in the history of the world, though by no means the best, has millions of facts.²³ These facts are created by a web crowd of enthusiasts, which A. Keen ironically and perhaps with an overstatement has named ignorant and dunce, whose work contains many errors and inaccuracies.²⁴ So Wikipedia is an evident triumph of quantity over quality. However, there's a precious thing, that is the final aim, which means a result of cooperation amongst very large groups, between people unfamiliar with one another, but perceiving a common goal and being able to implement it. Further these joint ventures, besides Wikipedia mentioned above, we can add YouTube, Facebook, and Twitter. Their great role was proved by the fact, that the news magazine *Time's Person of the Year Award*, awarded since 1927 to man, a group of people, machines, or an idea, that has had the greatest influence on events in the world, went in 2006 to members of the online community, honoring in this way a mass development of web and communities, that are created through the internet. In the explanatory memorandum was inter alia stated, that it is a community and collaboration on a scale unlike anything that has previously been seen.²⁵

The above relates to notion of the **googlification of the mind**, where the functioning of the brain is limited to the above-mentioned web browser Google. In practice, this phenomenon means a thoughtless copying and pasting of someone else's sentences and thoughts, in order to create one's own text, generally devoid of intellectual and cognitive value.²⁶ In general, it refers here to **the lack of criticism in the evaluation of internet sources**.

²² M. Filiciak and others (ed.), *MŁODZI I MEDIA. NOWE MEDIA A UCZESTNICTWO W KULTURZE*, Raport Centrum Badań nad Kulturą Popularną SWPS, p. 116 (in:) <http://bi.gazeta.pl/im/6/7600/m7600446.pdf>, 28.02.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

²³ 10. urodziny Wikipedii, *Dziennik Polski* 15.01.2011, p. A6; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 29.

²⁴ A. Keen, *Kult amatora. Jak internet niszczy kulturę*, Warszawa 2007; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 29.

²⁵ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?* (in:) K. Denek, A. Kamińska, W. Kojs, P. Oleśniewicz (ed.), *Edukacja jutra. Edukacja w społeczeństwie wiedzy*, Wyższa Szkoła Humanitas Oficyna Wydawnicza „Humanitas”, Sosnowiec 2010, p. 210.

²⁶ S. Kawczyński, *Problem plagiatowania w szkolnictwie wyższym. Charakterystyka treści tyka elektronicznego systemu antyplagiatowego*, E-mentor No 2 (19) from 2007 (in:) <http://www.e-mentor.edu.pl/artukul/index/numer/19/id/412>, 15.02.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

In this way the formation process of modern education was recorded. It took place under the dual influence of nature factors - technological, cultural and social life. They remain in a mutual relationship, because the development and popularization of the internet have enabled the formation of social networks and mechanisms for an average internet user to supply global network with content, which in the long term **generates a culture of convergence, a interoperability** between the various participants in online communities; allowing them to achieve a variety of common goals.²⁷

With the above is associated **the change of knowledge notion**. The traditional understanding of knowledge means the information captured in human mind, as a result of experience and learning. Thus, the classic definitions of localized knowledge in the mind of man.²⁸ Characterizing the contemporary paradigms of reality C. Cempel and L. W. Zacher said that knowledge is a metaphor for the internet. Because reality is seen, as a network of relationships, between observed phenomena or information.²⁹ On the internet, people use for a common goal and implementation of common ideas, their learned competence in a particular area of expertise. **No one knows everything, everyone knows something. The totality of knowledge is possessed by mankind.** Collective intelligence is the ability of virtual communities to use the combined talents of all its members. What you do not know or do not know how to do by yourself, now you can do with others. This organization is called by the researchers a **knowledge community**.³⁰

To this analysis P. Walsh added theorem, that **traditional beliefs about being an expert break down** or at least are changed by a more open process of communication in cyberspace. Indeed, the expert paradigm requires the memorization by a being of narrow area of knowledge. The questions posed in front of a collective intelligence are open and interdisciplinary, issues go beyond borders and utilize combined knowledge from diverse community. Collective intelligence assumes, that each person can contribute something, even if it will be invoked on an ad hoc basis, for a moment. The strength and binder which connects a collective intelligence is not knowledge, but the process of acquiring that knowledge, it is dynamic and requires active participation, continually testing and

²⁷ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 35.

²⁸ W. Okoń, *Nowy słownik pedagogiczny*, Warszawa 2001, p. 434; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27.

²⁹ C. Cempel, *Nowoczesne zagadnienia metodologii i filozofii badań*, Poznań 2003; <http://neur.am.put.poznań.pl/mt/mt.htm>, 26.02.2010; L. W. Zacher, *Transformacje społeczeństw - od informacji do wiedzy*, Warszawa 2007, p. 209; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 211.

³⁰ R. Levy, *Collective Intelligence: Mankind's Emerging World in Cyberspace*, Cambridge 1997, p. 20; H. Jenkins, *Kultura konwergencji. Zderzenie starych i nowych mediów*, Warszawa 2007, p. 31; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 211.

affirming social bonds within the group.³¹ It was recognized that the most spectacular and measurable achievement of community knowledge, collective intelligence, has already been mentioned: Wikipedia, available on the internet, written and edited by users, it is a widespread encyclopedia and accompanying it there are smaller sites, such as Wiktionary, Wikibooks, Wiktionary, and others. These undoubtedly useful and popular products of online communities have changed the understanding of knowledge concepts, from subjects sanctioned by traditional encyclopedias, to a much wider range of issues, interesting for specialized groups and subcultures. The understanding of expert competence has also been changed, from hitherto regarded academic personalities, to something less specific, closer to the concept of collective intelligence. Those who fear the low reliability of Wikipedia, are calmed down by the word that the majority of Wikipedians, its creators, take very seriously and responsibly their commitment to the community, and besides, the whole community works as a self-correcting mechanism and any information contained in the network will be tested and improved. Creators of Wikipedia belong to the so-called **knowledge culture**, which is a growing community based around the sharing and evaluation of knowledge, and also is part of a **participatory culture**, where its fans and consumers are invited to actively participate in new content creation and redistribution.³² Moreover, the internet gives people access to the environment of millions of human minds working simultaneously on all information, where everything is potentially important for everyone. This new cognitive category is also called **open intelligence**.³³ In other words: knowledge and intelligence, which so far has been attributed to human beings, leaves human minds, and is socialized, becoming public property, open to the constant flow of information, ideas, concepts, not necessarily deep and valuable, but dynamic, which are in constant interaction with other ideas and concepts, derived from anonymous members of the online community.³⁴

But the important issue, is quality and the usefulness of such knowledge, because the collection of information from unidentified sources it is a controversial practice. Hence the large **problems with utilizing such interpreted knowledge in the development of science**. Indeed, the concept of science is understood as whole knowledge, achieved as a result of scientific methodology, which means a system of clearly defined research rules and procedures, that underpins knowledge evaluation. Meanwhile, both the strength and weakness of collective intelligence is its disorganization, a lack of discipline and rules, a lack of procedures established

³¹ H. Jenkins, *Kultura konwergencji. Zderzenie starych i nowych mediów*, op. cit., p. 54-55; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 211-212.

³² H. Jenkins, *Kultura konwergencji. Zderzenie starych i nowych mediów*, op. cit., p. 246, 257; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 212.

³³ D. de Kerckhove, *Inteligencja otwarta. Narodziny społeczeństwa sieciowego*, Warszawa 2001, p. 21; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 212.

³⁴ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218-219.

for the usage of knowledge. Each participant applies here their own rules, processing data according to their own standards, where some of them are more convincing than others, but none are inherently bad.³⁵ It follows that unprocessed knowledge from the internet cannot be a basis for scientific development. So clearly there is a tendency of blurring the old meaning of knowledge, extracting it from the human mind to a global network, de facto almost equating knowledge with information. What is difficult to resolve is the problem of open intelligence and knowledge measurement, which has been associated with a particular person, not as now with the whole global community. In this respect, J. Morbitzer added, that the concept of knowledge is one of the most important in education. Absorption of that knowledge, as well as the preparation for its acquirement, next to the educational role are basic educational goals, and even a school's mission. What's more, knowledge and wisdom are not contained in books, computer programs and the internet; in these are only information. **Wisdom and knowledge always are embodied in a human being**, they are acquired and used by a learner.³⁶ Therefore knowledge is the domain of man, not machine. Only a man can acquire, improve and transform knowledge. Also there is the unauthorized identification of information to knowledge. Therefore teachers have to teach the rational and reasonable use of these huge information sources, not only emphasizing those that are intended to be first, but also the last contact source. What is more: getting the needed information on the internet is the first link in the eventual process of transforming information into knowledge, and then a long process forming man towards wisdom. Online information is just a basic building block, which can and should be used for the building of knowledge.³⁷

In this way, researchers discovered the phenomenon of the **collective authority mechanism**, based on the Latin word *auctoritas*, what means: prestige; dignity; impact; importance; man or institution which affect, meaning, is surrounded by dignity, mir; man as an arbitrator, expert, oracle, champion, alpha and omega;³⁸ a person whose meeting, even in a historical layer is important for the development of someone else, which is considered as a catalyst for inner change, to which someone has a debt of gratitude, but without a sense of submission.³⁹ For Wikipedia, it is the direct result of the collective action of internet users, who actively use the web encyclopedia, who continually modify and verify the content

³⁵ H. Jenkins, *Kultura konwergencji. Zderzenie starych i nowych mediów*, op. cit., p. 55; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 212.

³⁶ P. F. Drucker, *Spółeczeństwo pokapitalistyczne*, Warszawa 1999, p. 171; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27.

³⁷ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27, 29; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 211.

³⁸ W. Kopaliński, *Słownik wyrazów obcych i zwrotów obcojęzycznych* (in:) <http://www.slownik-online.pl/kopaliniski/444589BD9ED81322C12565CC004B5894.php>, 28.02.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 31.

³⁹ L. Witkowski, *Wyzwania autorytetu*, Kraków 2009, p. 17; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 31.

of definitions.⁴⁰ This mechanism, based on idea that everyone can contribute something, and most can not be wrong, is in opposite to the school of knowledge mechanisms, which assumes the correctness of experts' knowledge.⁴¹ On occasion, it is worth mentioning, that the collective authority phenomenon is correlated with a **nihilistic attitude**, the **collapse of individual authorities**, a **global disaster of values and norms**, which increasingly is revealing among all social groups.⁴² A special form of collective authority is website authority, as high as a result of web search. However, it is a naive belief in absolute truth of such an algorithm, because website positioning in search engines depends on commercial considerations.

The functioning of collective authority, affects the **perception of forms of traditional authority**, both school as an institution and teachers, recognized as:⁴³

- **deontically**, that is treated as superiors, who have power and shall be entitled to command, or when one is convinced, that one can not achieve the pursued objective, otherwise than by executing commands. This type of authority is divided into:

- **sanctions authority**, where authority has a different purpose than a person, but listens to orders for fear of punishment or hoping for reward,

- **authority of solidarity**, where both sides have the same goal,

- **epistemically** i.e. treated as experts, professionals, or in other words: a person is an epistemic authority for another person, if and only if they are convinced, that such a person knows better the matter of interesting and tells the truth.

Therefore, teachers often feel insecure, knowing that content provided by them can be readily verified by students, who use cell phones, allowing one to quickly connect to Internet. Thus, new technologies deprive today's teachers of an expert role, or at least force them to be more cautious in knowledge transfer. However, assigning authority to online search engines, websites or search mechanisms also is a very unusual practice and presents contemporary syndrome. All the more surprising then, that the modern generation, brought up in spirit of postmodern ideas often denies the authorities existence. What is therefore surprising is the

⁴⁰ M. Filiciak and others (ed.), *MŁODZI I MEDIA. NOWE MEDIA A UCZESTNICTWO W KULTURZE*, op. cit., p. 116; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

⁴¹ M. Filiciak and others (ed.), *MŁODZI I MEDIA. NOWE MEDIA A UCZESTNICTWO W KULTURZE*, op. cit., p. 116; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 30.

⁴² A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, (in:) K. Denek, A. Kamińska, W. Kojas, P. Oleśniewicz (ed.), *Edukacja jutra. Aksjologia, innowacje i strategia rozwoju*, Wyższa Szkoła Humanitas Oficyna Wydawnicza „Humanitas”, Sosnowiec 2011, p. 152.

⁴³ J. M. Bocheński, *Sto zabobonów. Krótki filozoficzny słownik zabobonów*, Wydawnictwo ANTYK Marcin Dybowski, 2008; Józef Bocheński - *Sto zabobonów* (in:) http://100-zabobonow.blogspot.com/2008/04/autorytet_27.html, 12.02.2013.

granting of authority to the internet, which after all does not meet any criteria of being an authority. In turn this demonstrates the erosion of some important education notions, or as H. Arendt noted, in modern education there was made the problem of „a reliance on fact, that it can not renounce authority or tradition by its nature, but the modern educational process must take place in a world, whose structure does not designate authority and tradition bond.”⁴⁴

These changes force a search for new teaching forms and methods. Therefore, the traditional methodological question 'How to teach?' should be replaced by the question 'Who is being taught?'. Without the awareness of teachers derived from the digital immigrant generation, that now they are faced with a different student than in past, i.e. with a digital native all communicate attempts, which are needed in good education will be doomed to failure.⁴⁵

Thus, inter alia has appeared the concept of knowledge, even education named **connectivism**. Its creators G. Siemens and S. Downes, based it on the huge impact of the internet, and more broadly, it was based on media and the way of learning of modern young people that have accepted that the metaphor of learning is to generate connections within the internet, media nodes.⁴⁶ Here the most important education category is to know where, instead of to know what, or to know how. As the authors of connectivism emphasized, the ability to efficiently obtain knowledge is more important than knowledge resources already possessed. Knowing where, or knowledge about the sources of knowledge, and thus somewhat meta-knowledge becomes elementary knowledge, while knowledge proper, or rather information in the classic sense, is in network resources. Such an understanding of knowledge becomes a processed flow of multimedia content and ideas, also the constant interaction between community members. Moreover, knowledge contained in a written test or essay is much easier to evaluate and does not require the presence of the author. On the other hand, the teaching process, understood as an in time orderly changes sequence of the personal conditions, is much more difficult and lengthy to evaluate.⁴⁷

⁴⁴ H. Arendt, *Kryzys edukacji* (in:) H. Arendt, *Miedzy czasem minionym a przyszlym. Osiem ćwiczeń z myśli politycznej*, Warszawa 1994, p. 231; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 31.

⁴⁵ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 26.

⁴⁶ G. Siemens, *Connectivism: A Learning Theory for the Digital Age*, 2005 (in:) <http://www.elearnspace.org/Articles/connectivism.htm>, 25.02.2011; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27.

⁴⁷ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27.

The concept of learning based on connectivism, advertised under the slogan connect to learn, is just as interesting as controversial.⁴⁸ Therefore it tends to reflect the nature of knowledge and the mission of the school. On one hand, it perfectly reflects the activity of modern students, who using new technologies are looking for selected contents and opinions, to process them, summarize, exchange them with other students, joining them to their own resources. It also gives hope for changing the school from an institution informing and encyclopedic, to a postulated institution, that teaches exploration and the development of knowledge, that favors primacy of thought over preparedness to absorb knowledge given in an easy form. On the other hand, connectivism alters the previous understanding of the learning process and knowledge possession, bringing with it the danger of reducing learning to a mindless clicking for information.⁴⁹

Connectivism contributed to the emergence of two types of knowledge, that D. Tapscott characterized as follows:⁵⁰

1) man himself knows well the matter. This is the traditional understanding of knowledge, in fact it is **the elite knowledge**, because due to the different cognitive abilities of individuals it is not available for all,

2) man knows where to find information on a particular topic. So it is an **egalitarian knowledge**, which allows for providing equal opportunities for all learners. However, this is a kind of the aforementioned meta-knowledge, or knowledge about the sources of knowledge, more specifically only sources of information.

It is clear, that from access to information, even the most valuable, to its understanding and the acquiring of the ability to use, the road is very long. It is difficult to accept, that the same ability to access information is sufficient for the development and promotion of students at different educational levels. Following this line of reasoning, soon such a knowledge will be recognized as the purchasing of a book, or maybe just the awareness of its existence. Moreover, J. Morbitzer has the impression that the apologists of new technologies suggest that the Gaussian curve, describing for example the distribution of human intelligence, creativity and the ability to learn, will be flattened or even will become a straight line, which also will be a symbol of the equal parameters for the entire population. At the same time they forget that science, economics, politics, culture and many other areas

⁴⁸ M. Polak (ed.), *Konektywizm: połącz się, aby się uczyć* (in:) http://www.edunews.pl/index.php?option=com_content&task=view&id=1068&Itemid=1, 20.04.2010; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27.

⁴⁹ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27-28.

⁵⁰ D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, op. cit., p. 479; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 27-28.

necessary for development require elites: that is, outstanding individuals, able to generate progress.

Hence the quoted author in reflecting on connectivism puts consecutive questions:⁵¹

3) Should teachers accept a new concept of knowledge?

4) What in fact is connectivism?

5) Is it really a new concept of learning in the network society, or the legitimization of an existing and simplified method of learning, forced by digital natives?

6) How does connectivism explain and enrich the learning mechanisms, and thus build knowledge, or is scientific theory a cover, that allows the dangerous derivation of knowledge, from students minds to the internet, providing a pseudoscientific explanation for student laziness, passivity and carelessness?

No answers to these questions may lead to an uncritical acceptance of connectivism, and thus consent for the redefining of the notion of knowledge, which emigrates to the resources of a global network. Hence the assumption that connectivism can be accepted only as a parallel method of gaining knowledge, not instead of the previous concept, but as a modern complement, corresponding to the spirit of the time. It should be borne in mind, that a fully fledged method of modern education is a **WebQuest**, based on constructivist concept, a variant of the project method, assuming the building of knowledge in the minds of learners using information from websites. Paradoxically, although Connectivism and the WebQuests method are situated at opposite poles of knowledge acquisition, both are considered and applied.⁵²

According to J. Morbitzer, in this way arises a worrisome tendency to communitize notions that have been traditionally individual, closely related to man; this is the previously submitted: knowledge, intelligence and authority. This trend is convenient for people intellectually mediocre and poor, whose level is below average and for which the communitization of knowledge is a promotion. But not necessarily, people who are outstanding, rising above mediocrity will accept it. This approach leads to a reduction of the intellectual level large social groups, as well as the depreciation and obfuscation of a notion's essence, which already is well-defined and well-established in education. These worrying trends perfectly fit into the postmodern ideology that promotes unrestricted freedom, equality, the plurality of truths, as well as activity caused by internet, **promoting the era of**

⁵¹ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 28.

⁵² W. Zawisza, *WebQuest - metoda projektu osadzona w technologii informacyjnej* (in:) J. Migdałek, M. Zając, *Technologie informacyjne w warsztacie nauczyciela*, Kraków 2008, p. 269-281; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 28-29.

small narratives and the destruction of a continuous two millennia era of great narratives.⁵³

The Internet also has its ideological roots and contemporary sympathies. The previously described trends of the communitization of selected notions are a promotion form of **internet education socialism**. Mechanisms of rivalry necessary for human development are disappearing, but many facilities for information searching and copying are appearing. The space of the internet spreads more widely than deeply. In fact these facilities are valuable and useful. But for an unprepared and thoughtless man are they are an intellectual trap, so created by a rare elite. Technological development absolutely does not have a positive correlation with the development of an average person. Therefore, researchers put questions here: are these intentional actions aimed at reducing people's intellectual level for easier control? Is humanity ready to give up their own development in the intellectual and spiritual dimension in exchange for the offer of an easier life in all its dimensions?⁵⁴

These types of **dilemmas** and **criticism** also apply to a much broader concept, namely a **knowledge society**. Paradoxically, this term is a result of ignorance, misunderstanding, the multiplicity of interpretations and some simplifications. It must be emphasized, that while the information society is a society of technology, built on really existing information technology tools such as microcomputers, the internet, and mobile phones, such a knowledge society refers to human resources.⁵⁵

Within literature the contemplated notion has been introduced by P. F. Drucker, by showing the:⁵⁶

- concept of a knowledge worker, i.e. a person, who during work uses their brain more than manual skills,⁵⁷
- economic order, where knowledge is a key resource instead of labor, raw materials and capital,
- social order, where inequalities related to knowledge are a major challenge,
- political order where the government cannot solve social and economic problems.

⁵³ J. Morbitzer, *Edukacja wspierana komputerowo a humanistyczne wartości pedagogiki*, Kraków 2007, p. 291-301; J. Morbitzer, *Postmodernistyczne konteksty Internetu* (in:) J. Morbitzer (ed.), *Komputer w edukacji*, Kraków 2005, p. 175-183; J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 35.

⁵⁴ J. Morbitzer, *O nowej interpretacji niektórych pojęć pedagogicznych w dobie technologii informacyjnej*, op. cit., p. 35-36.

⁵⁵ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 213.

⁵⁶ P. F. Drucker, *The Age of Social Transformation*, The Atlantic Monthly, November 1994, p. 1; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 213.

⁵⁷ R. Daniluk, *Zarządzanie wiedzą - teoria i praktyka* (in:) E. Skrzypek (ed.), *Zarządzanie wiedzą i informacją w procesie doskonalenia. Materiały z konferencji naukowej*, Lublin 2001, p. 32; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 213.

In such a society what is not important is a traditional and general knowledge, that allows to understand a lot of things, because what is valuable is specialized knowledge, that allows one to do a thing. Thus, this knowledge will be positively verified in action. So what is important is the high quality of education, not its mass character. In a knowledge society, people need to learn how to learn. Also important is an ability to achieve lifelong learning and motivation in this direction. School in the considered society should focus on individual teaching and the realization of education, which means knowledge understood both as a substance, as traditional knowledge, and as a process described by the verbs know, be able, can, are perceived as a skills. It must be a school, that prepares students to be innovative, understood as a use of knowledge to create new knowledge. Therefore the knowledge society needs to create a process of gaining knowledge. Here a special role will be served by institutions of higher education, where theoretical knowledge is created and codified. Due to their ability, they will become basic social institutions. This new educational approach requires a redefinition of the educated person concept, and will be a source of many problems, not only organizational but also cultural and axiological. Thus, the knowledge society implies a need for a fundamental change in the role and functions of the education system. It is noted, that at the moment there is no country in the world, which has an adequate educational system for the knowledge society.⁵⁸

These thoughts also show, that the **modern school seduces people by the illusion of gaining attractive employment through certificates that it offers.** Extreme statements indicate, that the majority of today's students will live in a society governed by V. Pareto 20:80 rule, where 20% of people will have jobs. For example, it is said that in the 27 countries of the European Union there are now living about half a billion people, including 83 million students and 6 million teachers. Unemployment ranges between 7-10%, and 60 million people live on social welfare. At the same time, there is no guarantee of employment for 18% of young people, and 80 million are people with low qualifications. School losses and excluded groups are significant, because they range from 5 to 20% of the students. Meanwhile, 50% of jobs require a college education, and 40% of jobs a high school education. Hence people entering the labor market must undergo re-qualification repeatedly.⁵⁹

In modern societies, the **position of work also changes.** Time spent in a job and career decreases, because young people take up work late, there is extended annual leave, there is shortened work week, and there are developed forms of part time work. This is connected with a multiplicity of employment statuses and contracts of employment. The situation raises new challenges for education. In fact

⁵⁸ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 213-214.

⁵⁹ M. Balicki, *Reformy i tendencje rozwojowe europejskich systemów edukacyjnych na przełomie wieków* (in:) A. Cudowska (ed.), *Kierunki rozwoju edukacji w zmieniającej się przestrzeni społecznej*, Białystok 2011; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 147.

it becomes a replacement offer, filling time off from work. Lifelong education appears not only as a possibility, but as a necessity in human development. So school is a part of thoughtlessly rhetoric of success, which determinant is a well paid job in a big corporation. Thus, the majority of learners have a sense of social exclusion, failure and defeat.⁶⁰

For these reasons, the knowledge society concept is not perceived as an alternative name for the information society, but rather as the next stage of social development, as a **post-information society**, as humanity's destination point; but the process will be long and difficult, and probably it won't be a definitive goal.⁶¹

Sometimes the society contemplated is defined as an **advanced modern society**. So therefore one of the epistemic categories is risk, which socially valid interpretations effectively give mass media. This is because civilization risks crossing the borders of nation states and spread with the globalization of the world. They cause many threats for people's lives, more dangerous, because invisible, recognizable in as far as are they are defined by science. The main change in the **risk society** is the universalization of hazards and risks, and the dominance of risk perception staged by media. These new threats, as opposed to the well known social poverty, are extremely democratic, crossing borders, and humanity becomes a member of a global community of dangers.⁶²

An image of the modern world also creates an **individualization process**, expressed by:⁶³

- a liberation from historical forms of social and interpersonal relations, understood as traditional structures of power and security for human beings,
- a loss of traditional convictions about knowledge, belief and standards,
- a formation of a new kind of social bonds.

In view of the fragmentation of social identity into extremely individualized identities, a man rather than an unjust system of social relations is cause of his marginalization or exclusion. In this rhetoric **to man is assigned a fault, and he is burdened by the necessity of solving system contradictions**, for example between education and employment. Therefore, researchers formulated a thesis about a permanent overload of information, about the need to adopt a position on a permanent opening of individual biographies to another, spatially and

⁶⁰ A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 147-148.

⁶¹ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 214.

⁶² U. Beck, *Spółeczeństwo ryzyka. W drodze do innej nowoczesności*, Warszawa 2004, p. 348; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 143-144.

⁶³ A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 144.

culturally distant reality, that is available through a global network. In this way global society is becoming more present in individual biographies.⁶⁴

Individualization and customization also means **dependence on the market**, on institutions and this dooms people to an external standardization. Biographies of people are becoming more institutionally branded from an early age. First to act here are relevant regulations in the education system, then the system of work and social security.⁶⁵

In a situation which the individualization process creates, the **perception of the world becomes more and more private and separated from history, ahistorical**. Because of this kids do not know the life context of their parents or grandparents. Horizons of life and time perception are narrowed, everything shrinks to the present and rotates about the axis of the self. This carries serious consequences for all spheres of life, from the possibility of political control and influence, to a formation of everyday family life through mass and standardized television shows.⁶⁶ It creates new social forms, consisting in the overlap and combination of individualized privacy and seemingly separated institutional areas and sectors, such as industries, manufacturing, education, consumption, employment, etc. Depending on the economic situation and the labor market situation, institutions linked with individual biographies **generate generational disabilities or privileges** within certain social groups.⁶⁷

In modern societies there is observed a **de-massifying** phenomenon. Because technology allows for the customization of products, markets' disintegration on niches, the proliferation and differentiation of media for narrower audiences. Social structures and culture obtain a more diverse and heterogeneous character. With de-massifying are the diversifying of human needs and thus political demands. The growing variety of lifestyles causes more and more diverse expectations from politicians. Today, the governments of democratic countries are constructed by coalitions of many parties, not individual political parties. Therefore there arises a multi-purpose, fast-growing, mosaic democracy, which acts according to their own rules. There also grows various types of threats and social unrest, for which a perfect breeding ground are: illiteracy, unemployment, homelessness, poverty, and fanaticism.⁶⁸

⁶⁴ U. Beck, *Spółeczeństwo ryzyka. W drodze do innej nowoczesności*, op. cit., p. 200; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 144.

⁶⁵ A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 144.

⁶⁶ Ibidem, p. 144.

⁶⁷ U. Beck, *Spółeczeństwo ryzyka. W drodze do innej nowoczesności*, op. cit., p. 200; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 144.

⁶⁸ A. Toffler, *Zmiana władzy. Wiedza, bogactwo i przemoc u progu XXI wieku*, Poznań 2003, p. 345-346; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 144-145.

A characteristic sign of the current times is the high speed and dynamism of changes, or, reaching for the ideas of Z. Bauman, **liquid modernity**. This is because everything or almost everything in today's world is changing: fashions that people love; items that people pay attention to; things that people desire and fear, that give a hope and cause an anxiety. Also conditions of people life are changed, of work and planning for the future. Such a world of liquid modernity, constantly surprising: what now seems to be safe and in the right place, tomorrow might be a pitiful mistake.⁶⁹ In addition, many things are changing at the same time, causing overlap and an unpredictability of changes,⁷⁰ or just simply „*things happen as they happen, because of a lot of things going on at once.*”⁷¹ So people have to be prepared for change.

In this regard, the factor of socialization of the younger generation is stressed, it is a culture of instant habit and a necessity of living in immediacy, symbolized by triad: fast food, fast sex, fast cars.⁷² Therefore, the most poignant experience of post-modernity is **lack of confidence**. Different forms and options compete with each other, and none is able to prove that its claims to priority are based on something more robust than their own historically formed conventions.⁷³

A phenomenon of particular importance for many areas of the modern world is the processes of **globalization**. It contributes to the formation of a broad correlation in almost all spheres of life, such as political, economic, social, and cultural. A particular context of changes in the world also creates changes in a geopolitical situation. On one hand, the acceleration of Pacific states development, that induce the evolution in relations north/south towards overcoming existing dichotomies, while also the disintegration of opposing political blocks and transformations in the former communist countries contributed to the erosion of a previously dominant narrative, and to a search for new forms of political expression and social existence.⁷⁴

At this point it should be noted that at the current stage of development, the use of the notion of a knowledge society for many researchers, and for many reasons, does not seem accurate. Therefore unauthorized juggling of modern society notions is written about, with little regard for their integrity and without removing the

⁶⁹ Z. Bauman, *44 listy ze świata płynnej nowoczesności*, Kraków 2011, p. 5-6; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 170.

⁷⁰ J. O. Green, *Nowa era komunikacji*, Warszawa 1999, p. 129; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 145.

⁷¹ G. W. Kołodko, *Wędrujący świat*, Prószyński i S-ka, Warszawa 2010, p. 40.

⁷² E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 170.

⁷³ Z. Bauman, *Prawodawcy i tłumacze*, Warszawa 1998, p. 155; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 145.

⁷⁴ J. Delors (presidency), *Edukacja. Jest w niej ukryty skarb. Raport dla UNESCO Międzynarodowej Komisji do spraw Edukacji dla XXI wieku*, Warszawa 1998; W. Rabczuk, *Strategiczne cele edukacji w świetle Raportu J. Delorsa i Białej Księgi Unii Europejskiej* (in:) R. Leppert (ed.), *Edukacja w świecie współczesnym*, Kraków 2000, p. 321-322; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 145-146.

internal contradictions. It is stressed that an acceleration of technology often results in an illusory acceleration of thought and research. Thus, a rather abstract, and maybe even hasty jump, from the notion of an information society to the notion of a knowledge society. One gets the impression of some inconsistencies and discontinuities of deliberations, arising from impatience and wishful thinking. They are also seen, when the information society without deeper explanation turns into an e-society, and when during universal and creative momentum there is said: e-business, e-world, e-everything. Of course, the electronic revolution is a fact. But such labels are often at a marketing and advertising level, not that of scientific discourse.⁷⁵

According to some researchers, in the present reality there is a real concept of a **knowledge based economy**, that reportedly is focused on sustainable growth, jobs, social cohesion and competitiveness.⁷⁶ At the same time in this economy a products value on the market is mainly determined by the intellectual contribution necessary to produce it, and not the cost of used materials and energy. Here of particular importance is the fact, that the most technologically advanced products are a result of elites' work, a few specialists with the highest qualifications. Their proportion of society is usually 2-3% of the total population. Thus, a knowledge based economy is a result of technological progress, that really exists, and is created by a true elite, but if from these elites is derived the knowledge society, must be accepted that it is not a mass but elitist society, so this contradicts the definition of the society, which includes the whole population.⁷⁷

Another term, which can be used to name the currently existing community, is a **learning society**. However, here the fundamental issue is not a prevalence or a continuity of education, but a change of its aims. No longer is it a solid education, that guarantees professional and social stability. Today, the relationship between education and employment has diminished. While a good education still increases the chances of employment, but less and less ensures and stabilizes them. The same applies to ensuring social position. Because it only applies to certain professions, in a limited way. Education loses importance as a guarantor of life's success, so it must lead to a re-evaluation of its role, both individual and collective. The decreasing of the utilitarian importance of education, should give way to the cultural values of education. So society is educated not only to make money, but because education is a way of life.⁷⁸

⁷⁵ L. W. Zacher, *Transformacje społeczeństw - od informacji do wiedzy*, op. cit., p. 123; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 214-215.

⁷⁶ A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 148.

⁷⁷ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 215.

⁷⁸ R. Galar, J. Lubacz, *Paradoksalne konsekwencje rewolucji informacyjnej w edukacji* (in:) J. Lubacz (ed.), *W drodze do społeczeństwa informacyjnego*, Warszawa 1999, p. 122; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 215.

However, past experience in the specified area seems to be quite different. This is because in the information society, people have easy access to universities, more often not connected with entrance examinations, and the process of education is an ongoing process, lasting a lifetime. It applies to people of all ages. The need to supplement knowledge and skills, is due to the rapid and continuous development of technology, because an inherent feature of the information society is scientific and technical progress. Therefore information society creates a new constantly learning man. The massification or democratization of education, that is manifested in the increasing of schooling ratios, accompanied by the unfavorable phenomenon, called the **flattening of education**, which means, that with a significant widening of the list of persons who completed higher education, it drastically decreases its average level. The reasons for this are complex. One of them is emphasized here repeatedly by the development of information technology, especially the internet, which offers a great facilitation of access to a rich collection of information, and often encourages plagiarism, which quite commonly replaces independent thinking and preparation of a thesis, dissertation etc. Hence a critical look at the society of knowledge.⁷⁹

W. Sztumski and J. Morbitzer added to the above, that a **development of the knowledge society is accompanied by a procession of stupidity mass**. Further to this, these authors point to some paradoxes associated with the development of the knowledge society, i.e.:⁸⁰

- a strong demand for mass education, that causes a significant deterioration of this processes conditions, and consequently reduces its quality, which is expressed by low scores in teaching. This is accompanied by the commercialization of higher education, and as it always happens in the private sector, is focused on maximize profit, or actually in the pursuit of profit; however, conducted in conditions of a shortage of appropriate materials and human resources, that finally cause overgrowth of school groups, and a difficult or even impossible teacher contact with learners. Higher education is also began by young and intellectually weak people, which further reduces the level of teaching and evaluation criteria. Furthermore, in many universities, both public and private, commercial students are treated more as customers than students. The result is a depreciation of the value of a university degree. This mediocrity not only refers to students, but also to academic teachers, their development and scientific life.⁸¹ Moreover, the value of education at university level depends on the preparation of candidates for students, but now there is observed an alarming decline in the quality of education in

⁷⁹ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 215-216.

⁸⁰ W. Sztumski, *Paradoksalne społeczeństwo wiedzy* (in:) http://www.sprawynauki.edu.pl/index.php?option=com_content&task=view&id=895&Itemid=35, 26.02.2010; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 216-217.

⁸¹ J. Gajda, *Antropologia kulturowa. Kultura obyczajowa początku XXI wieku*, Kraków 2008, p. 166-167; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 216.

primary schools, middle schools and high schools.⁸² In these schools everywhere are tests, that muddle students, forced to carry out unreflective thinking using simple algorithms learned by heart. Incidentally, this ailment also occurs in higher education,

– virtually unchanged for centuries is the education system, educational institutions, and the organization of education. In this case, questions are asked of how in conditions of the archaic class-lesson system and the substantial increase in group sizes, do students cope with the enormous growth of knowledge, whilst teaching programs are slimming; where it is difficult to reconcile the economic balance with adequate conditions and quality of education. In addition, mass education is not aimed at the creation of wise people, but at the preparation to practice in a profession using automated technical equipment and trained operations. Consequently progress and findings of research come from the best research elites, while the masses remain ignorant. Thus the gap between the small number of people educated at the maximum level, and the masses of people educated at minimum program is increased,

– a result of these negative trends, and **in contrary to the idea of a knowledge society, it is largely an ignorant society, deliberately fooled by governing elites.**

In a slightly different narration, the content illustrating the human condition in an individualized society mentioned above, is a situation where a necessity raises processes of change in education. Today it is one of the most exhibited areas of human activity. However often it is ignored, trivialized, simplified and adjusted to the current needs of the labor market. Its role has been recently reduced to distributing passes to the labor market, which are rather an illusion, because they do not give a guarantee of employment. Education in the individualized society, in the culture of consumption loses the position of moral authority in favor of mass media and popular culture; it is commercialized and manipulated by the rhetoric of economy. The peculiar logic of capital extends not only to professional training but also to public education.⁸³

So pedagogical categories, such as knowledge and education, but also ethical and axiological are captured by an economic discourse. This leads to the perception of schools, universities and all cultural institutions as places of human capital production. This manifests in the methods of organization, reform and

⁸² K. Denek, *Ku modernizacji uniwersytetu*, Forum Akademickie No 2 from 2009, p. 46; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 216.

⁸³ T. Szkudlarek, „*Koniec pracy*” czy koniec zatrudnienia? *Edukacja wobec presji światowego rynku* (in:) A. Kargulowa, S. M. Kwiatkowski, T. Szkudlarek (ed.), *Rynek i kultura neoliberalna a edukacja*, Kraków 2005, p. 14; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 146.

assessment. A consequence of this situation is a stimulation of competition between schools, selection policy and social divisions.⁸⁴

In such considerations there is also cited data that shows the growing phenomenon of **postilliteracy**, and **postanalphabetism**, which is one of the most important and socially harmful pathologies of the modern world. An especially prominent figure of postilliteracy is **functional illiteracy**. It means a loss of the ability to understand a text and the use of the information contained therein. Research shows that as many as 77% of Poles are functionally illiterate, while only 3% of respondents can fully understand and utilize the information. Moreover, this situation is getting worse year by year due to the declining readership of books and newspapers in favor of television viewing, which on the basis of a feedback mechanism and deepens illiteracy.⁸⁵ This is fully supported by studies of The National Library, which show that 50% of the Polish population simply does not read books.⁸⁶

R. Patzlaff is concerned with this matter is entered and created a **formula of one-third**, i.e. divided the developed countries population into three relatively equal parts, and thus created groups of people, that:⁸⁷

- read, because they have such a habit,
- read sometimes,
- do not read at all.

It is concluded that in highly industrialized countries the phenomenon of a loss of reading skills encompassing an average of one-third of the population is widespread.⁸⁸

Researchers claim that the examined phenomenon is the result of a negligence of schools, which are not able to encourage students to read good books and magazines as well not being able to protect students against uncritical immersion in the media world, especially in the world of television pictures, that negatively act on the ability to think abstractly.⁸⁹ G. Sartori extended this sentence, saying that

⁸⁴ Z. Kwieciński, *Nieuniknione? Funkcje alfabetyzacji w dorosłości*, Toruń - Olsztyn 2002; Z. Kwieciński, *Wykluczanie: badania dynamiczne i porównawcze nad selekcjami społecznymi na pierwszym progu szkolnictwa*, Toruń 2002; Z. Kwieciński, *Próba analizy krytycznej pierwszych egzaminów zewnętrznych w szkolnictwie powszechnym w roku 2002* (in:) K. Wenta, W. Zeidler (ed.), *Diagnoza pedagogiczno-psychologiczna wobec zagrożeń transformacyjnych*, Szczecin 2003; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 146.

⁸⁵ M. Howiecki, *Media, władza, świadomość społeczna*, Łódź 1999, p. 159-161; W. Bobrowicz (ed.), *Pedagogika i kultura*, Lublin 2009, p. 95; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 217.

⁸⁶ L. W. Zacher, *Transformacje społeczeństw - od informacji do wiedzy*, op. cit., p. 245; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218.

⁸⁷ R. Patzlaff, *Zastygłe spojrzenie. Fizjologiczne skutki patrzenia na ekran a rozwój dziecka*, Kraków 2008, p. 80; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218.

⁸⁸ R. Patzlaff, *Zastygłe spojrzenie. Fizjologiczne skutki patrzenia na ekran a rozwój dziecka*, op. cit., p. 97; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218.

⁸⁹ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 217.

television produces images and destroys ideas, impairs the ability of abstract thinking and the ability to understand, closes the approach to the world of ideas, thoughts.⁹⁰

Other thinkers state that the offer of media and the internet seems to give in many areas unlimited opportunities, but **man increasingly has no control over them**. Besides, in the cognitive society it **increases the group of excluded people** from the fast stream of information, knowledge and success. The number of secondary and functional illiterates is growing. So education is not a factor of social justice and equality, as is assumed in romantic visions. It is directly became clear that in education occurs a repetition and inheritance of social status. Education bears fruit only in the extensive stage, during primary education and the elimination of primary illiteracy. However completely fails at the higher levels of education.⁹¹

In this way, a natural question arises: is it possible to build a knowledge society, based on large a group of illiterates and in contradiction to knowledge? Therefore, J. Morbitzer predicted that society will be more and more polarized. This means that a very narrow elite, will have knowledge at the highest level, and will generate progress. Whereas the great mass of people will have shallow knowledge, superficial, in fact not useful for the development of humanity, or will not have any knowledge. So the idea of the knowledge society in this sense, seems to be utopian.⁹²

Reportedly the antidote to this ailment is indicated on several occasions: a change of the notion of knowledge, that means its transition from the human mind and location in the global network of resources, a resignation of its humanistic and scientific nature in favor of technical aspects. This in turn will facilitate the construction of a knowledge society, but whether this creature will be deserved of such a noble name is another question.⁹³ Moreover, here is a more dramatic question: „*Is it possible, that instead of the mass knowledge society there will be a society of stupidity, where simultaneously there will be great resources of knowledge (especially scientific and technical) and a highly advanced knowledge elite?*”⁹⁴

Among other things on this basis, the knowledge society can be seen as a possible next stage of development of the current information society. A lot

⁹⁰ G. Sartori, *Homo videns. Telewizja i postmyślenie*, Warszawa 2007, p. 27; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 217-218.

⁹¹ M. Cylikowska-Nowak, *Współczesne trendy w zakresie reform edukacji na świecie*, (in:) R. Leppert (ed.), *Edukacja w świecie współczesnym*, op. cit., p. 346-347; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 145.

⁹² J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218.

⁹³ Ibidem, p. 218.

⁹⁴ L. W. Zacher, *Transformacje społeczeństw - od informacji do wiedzy*, op. cit., p. 245; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 218.

depends on what model of development will be selected by mankind. Indeed, it might be:

- focusing efforts on sincere and lifelong learning, where the statement *I learn because I have to*, will be replaced by a beautiful and noble phrase, *I learn because I want to*.⁹⁵ This in turn is wide and difficult to implement, it involves a change in the mentality of people, who in learning and acquiring knowledge will see the value of autotelic, that is most important, a value in itself, the real purpose of education, not just a means to achieve other goals,⁹⁶

- consistent with **the ideology of transhumanism is an attempt at the improvement of man, by nano-technology, biotechnology, genetic engineering and neuropharmacology**.⁹⁷ K. Warwick took these successful attempts, having chips implanted twice, which is the first example in the history of mankind of a man transformed into a cyborg. The researcher concluded that the only reasonable path of human development is to combine himself with new technology. Assuming that this way will be successful, man will gain a richer intellectual capability, but he no longer will be a homo sapien. Improved in this way man will belong to the category of e-people, and his behavior and intelligence, as well as diseases and problems can not be foreseen today.⁹⁸

Furthermore many scientists foresee the possibility of the evolution of information society, not only to the knowledge society, but even to a society of wisdom, or a society of knowledge, wisdom and reflection. Although these names from an educational perspective are very appealing, their practical implementation does not seem, in the near-term, to be a real or possible future.⁹⁹

Perhaps they are the next steps in the development of humanity, but it is not clear whether they are compatible with today's ideas. At the moment it is not known whether the knowledge society will consist of intelligent individuals having an sufficient knowledge, or it will be a global online community, featuring collective knowledge, open intelligence, the mind of the world. It is not known whether it will even rise, as the condition for building the knowledge society is a radical change in the education system, including assumptions, structure, forms and the methods of work of the school, in fact a thorough reconstruction of the school for 21st century; the school has to be invented again.¹⁰⁰

⁹⁵ K. Denek, *Ku dobrej edukacji*, Toruń - Leszno 2005, p. 67; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 219.

⁹⁶ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 217.

⁹⁷ J. Morbitzer, *Człowiek w świecie technologii informacyjnych* (in:) J. Morbitzer (ed.), *Komputer w edukacji*, Kraków 2007, p. 149-156; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 219.

⁹⁸ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 219.

⁹⁹ L. W. Zacher, *Spółeczeństwo informacyjne w myśli współczesnej* (in:) M. Witkowska, K. Cholawo-Sosnowska (ed.), *Spółeczeństwo informacyjne. Istota. Rozwój. Wyzwania*, Warszawa 2006, p. 204; J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 214.

¹⁰⁰ J. Morbitzer, *Spółeczeństwo wiedzy - mit czy realny cel?*, op. cit., p. 219.

But here is a huge, shocking, but hope giving paradox. This is because group of people involved in the processing and transmission of information is increasing rapidly and creating the most intelligent generation in history, which is committed to higher and higher requirements, for which being wise is a fashion, it is cool. Apparently this situation changes the picture of a typical citizen, recipient of political programs. Because media and the internet expand the social interactions of human users of the electronic media, are almost **patterns of electronic citizens**. This community is made up of young people between 20 and 40 years of age, and 48% of them are women. People that use the internet especially often are called **super-connected**, and more than the group of unconnected, believe in democracy and the free market, want freedom. They seek to work together and establish contacts, to gain a new approach to collaboration, to share knowledge; they love to personalize and customize their needs, but they also want entertainment and fun at work, in school and social life, they also need speed, and not just in computer games. They appreciate the idea of diversity, understood as an engine of development, and willingly make changes, inter alia in essence of the use of the internet by transforming the network in place, where they share resources and communicate with people. Thus, the internet is no longer a place for information finding and becomes a forum where they are available, as well working together on projects for common benefits, where there are developed new ways to solve problems. Therefore, these people are more tolerant, much better versed in the social and cultural life. They spend more time on reading, than unconnected people. According to research, people surfing the web, are well informed, participate in public life, are advocates of freedom. They take part to a greater extent than the rest of society in local and national elections, and perceive technology as a tool for the democratization of social life, improving the quality of education and increasing economic opportunities. This is the generation that differs from the generation of their parents most in the history, the generation that from the bottom enforces a transformation of the education system and teaching methods focused on the teacher and based on issuing commands, to a model that places the student in the center of attention and is based on cooperation. Moreover, they prefer to speak directly, on their own behalf, than rely on local politicians.¹⁰¹

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¹⁰¹ M. Hausman, *Elektroniczny obywatel*, Wprost, 03.01.1999; A. Cudowska, *Tendencje rozwojowe edukacji w społeczeństwie zaawansowanej nowoczesności*, op. cit., p. 147; D. Tapscott, *Cyfrowa dorosłość. Jak pokolenie sieci zmienia nasz świat*, op. cit., p. 52, 84-88, 92; E. Musiał, *Edukacja szkolna w obliczu nowych mediów*, op. cit., p. 173.

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BRANCH OF INNOVATION AND INFORMATION TECHNOLOGIES



BUSINESS INTELLIGENCE TOOLS IN MILITARY APPLICATIONS

Prof. Józef JANCZAK, Ph.D.

Abstract

This paper presents selected aspects of the use of modern business intelligence tools in military applications. It shows a concept of integrated IT systems of management supported by the tools of business intelligence. The article presents the broad spectrum of the use of these tools in business planning. It introduces the possible areas of the military application of these solutions in the context of the process of the integration of the command systems used in the Polish Armed Forces, which has lasted for many years.

Key words – military, applications, business, intelligence

Introduction

There are changes in the activities of organizations¹, whose aim is to improve their performance. One of such changes is the modernization of IT systems used for the management support for information, decision-making and manufacturing processes. The growth of all kinds of autonomous Transaction Processing System² (TPS), observed since the 1950s, causes the multiplicity of the same data sources. There are differences in information obtained from the particular subsystems. In addition, there are problems related to various data formats generated by particular systems and also to the completeness of the data, as well as to the need to have the ability to use the appropriate IT tool supporting the process of the data processing.

¹ Management gurus, including P. Drucker and T. Peters, pointed to the need of changes in management even in early 70s and 80s, when companies were still based on the 'Byzantine' structure, the decisions were made centrally, and the employees were only obliged to carry out the general commands.

² They are included in the first generations of IT systems used in business operations. They are also called *Data Processing Systems*.

As a consequence, one cannot be sure whether the data obtained are reliable and can be used as a source of reliable information necessary to make decisions. It is also observed that the most important element of these systems, that is their efficiency, is decreasing.

The above situation has become a catalyst for the gradual implementation of the new Integrated Management Information Systems IMIS³. The role of these systems in the market economy is strengthening⁴. Nowadays, they are organized modularly. They are characterized by a variety of technical, technological and organizational solutions. Their main task is to support the processes of management in organizations, seen as a multi-stage, sequential process of making decisions. However, to support the decision-making processes effectively, it is important to fulfill certain requirements, such as:

- having common data resources for the entire organization;
- the unification of methods for obtaining, collecting, searching, processing and sharing data;
- defining seamless ways for the user to conduct a dialogue with the system;
- using a seamless methodology and tools of implementation, maintenance and development in the entire organization;
- ensuring the system functioning in the direct access mode, which enables sharing necessary data for their implementation and use in the right time;

The integrated management information systems currently used are of the ERP class (*Enterprise Resource Planning*). They are mainly focused on manufacturing organizations (companies) and resources planning. They have an ability to record daily activities and operations taking place in the organization. They provide for the collection and organization of large amounts of data. However, they are inflexible and they often support only a selected part of a business process taking place in a company. Therefore, they do not allow to see one to the company either as a whole or from a selected perspective.

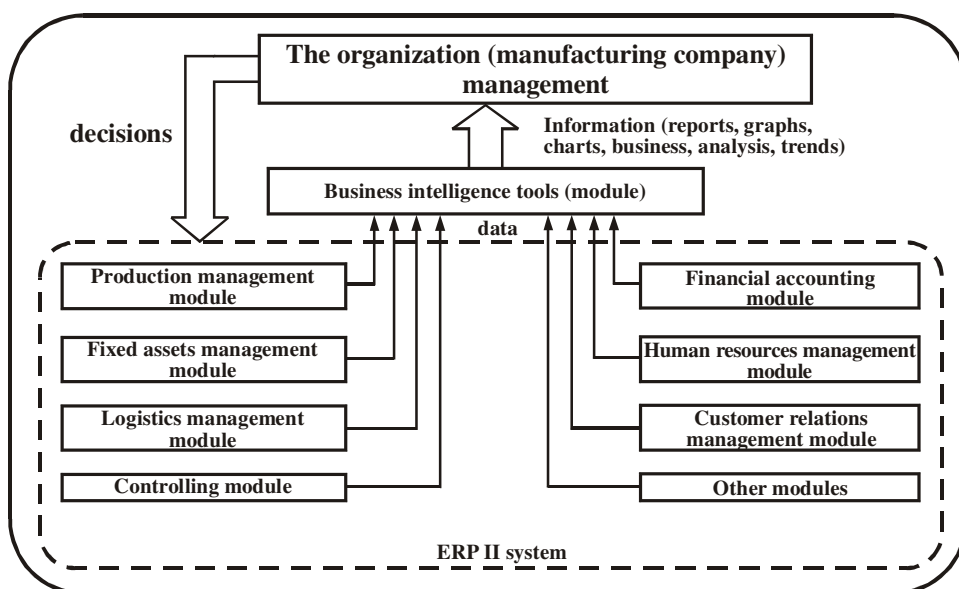
It turns out that the use of ERP tools to conduct analysis or to operate reports is inconvenient, and sometimes even impossible. The greatest difficulties occur when the standard, pre-defined reports supplied with the systems are not enough. Besides, the reports miss the most basic elements necessary for the presentation and the analysis of the data related to:

³ The most often mentioned main benefits related to the use of the integrated systems is, among others, a higher quality decision-making support through: providing multi-sectional and at various levels of management information for the company's management; covering all key areas of a company (finance, logistics, production, human resources, etc.) with information channels; the increase in the reliability of information due to its input into the system at the source; costs control based on their measurements at the source; budget simulations and financial analyses which are the basis for the forecasts, both short and long term; the management of a stream of materials, raw materials, intermediate products and services in the logistics chain; the mechanisms ensuring the security of data resources (only authorised users access, regular archiving, etc.).

⁴ Problems with IT systems integration are also noticed in military organizations command.

- the graphic visualization of results;
- mechanisms for detecting and tracking trends;
- common dimensions which allow for the detailed analysis of the organization's results.

An effective way of obtaining and preparing data provided by these systems are the solutions, which belong to the decision support systems⁵ called Business Intelligence⁶(BI). The concept assumes that each of the modules of the integrated system, supporting one of the areas of the organization or a part of it, is integrated with the Business Intelligence tools (module) which collect data coming out of these modules and transmits them to the organization's management, of course, after processing the data into some useful form of information. The areas of Business Intelligence tools functioning in an organization (manufacturing company) using IMIS is shown in Figure 1.



Source: Own study

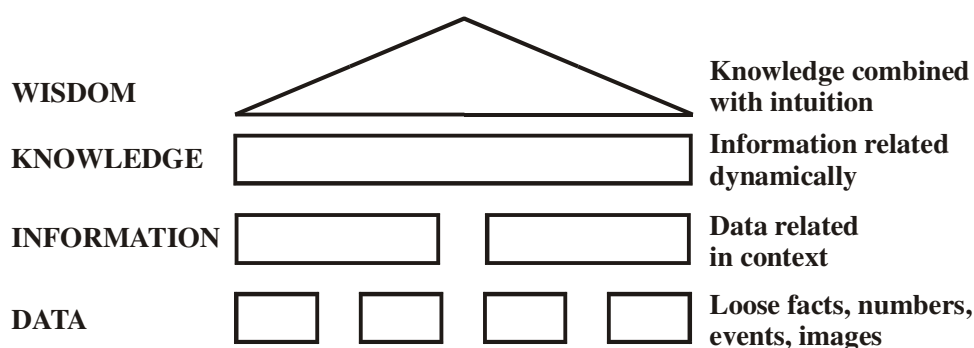
Figure 1. The areas of BI tools (module) functioning in an organization (manufacturing company) using the Integrated Management Information Systems IMIS

⁵ Decision support systems have evolved over the past several years, initially from the *Executive Information Systems* (EIS), through *Decision Support Systems* (DSS) and *Executive Support Systems* (ESS) to *Business Intelligence* (BI).

⁶ The author of the Business Intelligence term is Hans Peter Luhn. After World War I, he emigrated to the USA, where he first was involved in the textile industry but, eventually, he joined IBM.

General characteristics of Business Intelligence tools

The English term Business Intelligence⁷ (BI) is most often translated into Polish as business analysis with the right tools, and in terms of the system as a business support system or a system of analysis and reports. It has a very broad meaning. It can be presented, most generally, as a process of creating a pyramid of knowledge, that is transforming data into information, and information into knowledge, with the use of available modern tools in the area of information technologies which enable the creation and use of a wide range of applications ensuring a performance boost and an increase in the effectiveness of particular activities. Semantic relations of the terms: data – information – knowledge – wisdom are shown in Figure 2.

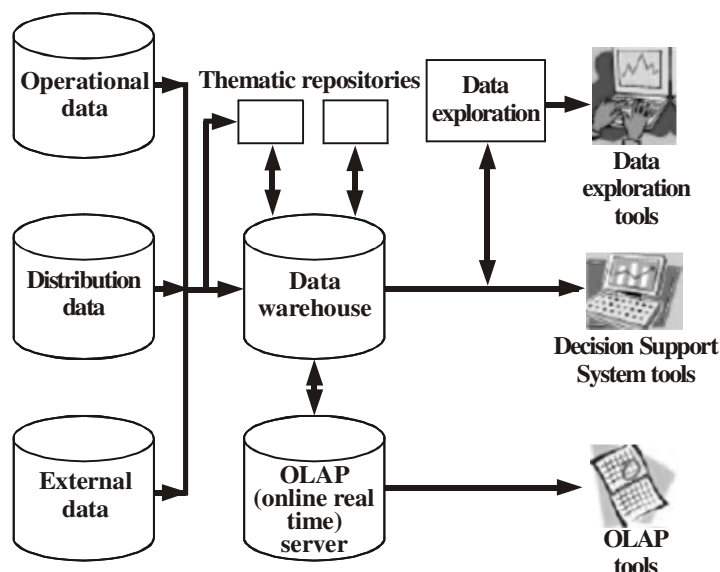


Source: Own study

Figure 2. Semantic relations of the terms: data – information – knowledge – wisdom

It is assumed that the effective use of the Business Intelligence tools depends largely on the creation of *Data Warehouses*. Data collections in Data warehouses are usually updated – depending on the needs – in real time, daily, weekly or monthly. Data Warehouses, in the structural and functional sense, are generally multidimensional, deductive databases. The data collected are often virtual and their structure is designed so as to be able to fulfil the already defined or potential needs of the information users. This allows making the required information accessible immediately as well as conducting complex analysis and simulations of ‘what if’ type. The architecture of a data warehouses used in the Business Intelligence (BI) solutions is shown in Figure 3.

⁷ The term BI – Business Intelligence was introduced by Gartner Group Co. in 1989 as ‘a set of concepts and methodologies which aimed at improving business decision making through the use of fact-based systems.’ Gartner Group is a US-based consulting and opinion providing company with a high reputation in the field of information technology. Its customers, subscribing one of the several IT services offered, also acquire the right to be consulted by telephone, fax or Internet.



Source: J. Janczak, *Systemy informatyczne wspomagania zarządzania i dowodzenia*, Wyd. PTM, Warszawa 2011.

Figure 3. The architecture of a data warehouses used in the Business Intelligence (BI) solutions

These solutions allow for the unifying and linking of the data, which have been stored in the resources of various information systems used in an organization so far. The idea of data warehouse creation makes the functioning of Transaction Processing Systems simpler. On the one hand, it discharges the systems from creating reports. On the other hand, it enables the simultaneous use of various systems.

In the presented Business Intelligence (BI) concept, standard reports are generated or the Key Performance Indicators are calculated. On their basis, hypotheses are made and then the process of their verification through the so called detailed data 'cross-sections'. To perform these activities, various types of analytical tools are used, e.g.:

- online analytical processing OLAP;
- data mining.

Online real time technology (OLAP) takes a special place among all the advanced solutions in this scientific field. It is used to support more advanced systems – information management and decision support systems. Systems of that kind need very quick access to still larger and larger databases. The growing performance parameters of the hardware often cannot meet these increasing requirements. The structure of data warehouses includes multidimensional OLAP cubes, which consist of:

- measures, including numerical indicators (how many?);
- dimensions, representing descriptive data (who?, what?, when?, where?);

- levels, which reflect a hierarchy functioning in an organization and allow end-users to increase and decrease the level of details within the dimension analysed.

A multidimensional OLAP cube is optimised for fast and secure access to multidimensional data. There are usually at least several dimensions defined in a data warehouse, such as: time, customer / client, product, location, sales office, etc.

Nowadays, there are solutions for Business Intelligence (BI), in which OLAP technologies are replaced by the technology using the concept of associative databases (in-memory). Thanks to that, there is a possibility to integrate Business Intelligence (BI) tools with the external systems (e.g. ERP, CRM) and to reduce the time of implementations significantly (measured not in months, but in weeks). Data, after loading and sizeable compression, are analysed in operational memory, and the calculations are accomplished with great speed. Even in the case of enormous volumes of data, reaching billions of records, the results are available in fractions of seconds.

The technology of data exploration (Data mining) is, in turn, used to support the decision making process. It is used to explore (mine) and make the general rules and knowledge stored in very large databases accessible for users. In this method, it is not particular, elementary information, which is looked for, but it is the question whether in the collected data there are any correlation and trends which are asked. That kind of technique is used by:

- retail banks, looking for patterns and client types;
- organisations evaluating suppliers or customers, which want to establish models of production, supply and distribution;
- marketing departments – to examine preferences and attitudes of former and potential clients.

Business Intelligence (BI) tools are dedicated for executives and experts, who deal with analysis and strategy. The solutions create the possibility to generate automatically the Business Balanced Scorecard (BSC), to build and verify budgets constantly and they open the door to explore data (Data Mining) and support the situation control in an organisation. The implementation of such solutions can have an impact on, among other things, costs reduction, operational effectiveness improvement and revenue increase. It can enable not only the reduction of the time needed to prepare reports, but also easier and more insightful data interpretation.

It is a misunderstanding, however, to expect the BI systems to provide simple, clear answers, and even to indicate ‘the only right solution.’ This kind of expectations is practically impossible to achieve due to the users’ ignorance as far as the rigors of statistics are concerned.

Most solutions related to the Business Intelligence tools, which are available on the market, are based on the use of a database management system (*Microsoft SQL*

Server)⁸ and on database technologies (*Oracle Database*)⁹, related to data warehouses such as data architecture, data transformation, on-line analytical processing (OLAP). Also, various types of Business Intelligence tools are used: reporting, analytical and data mining tools.

Reporting is based on data formatting, usually in the form of tables or histograms. Performance management involves analysis of the most significant business indexes. The last area, that is analysis, focuses on searching for answers to the questions previously defined for the system. It is done in a similar way to the queries implemented in database systems based on SQL. Here, the reporting, report processing and management tools are used, e.g.: *SQL Server Reporting Services* (and many other, similar ones), data visualisation (*Dashboard*); calculation tools e.g. Microsoft Excel spreadsheets, in which OLAP cubes are used directly or the OLAP query language for SQL Server is used. There are also solutions known as MDX (*Multi Dimensional Expressions*), which are used to extract information and present data in the form of a report.

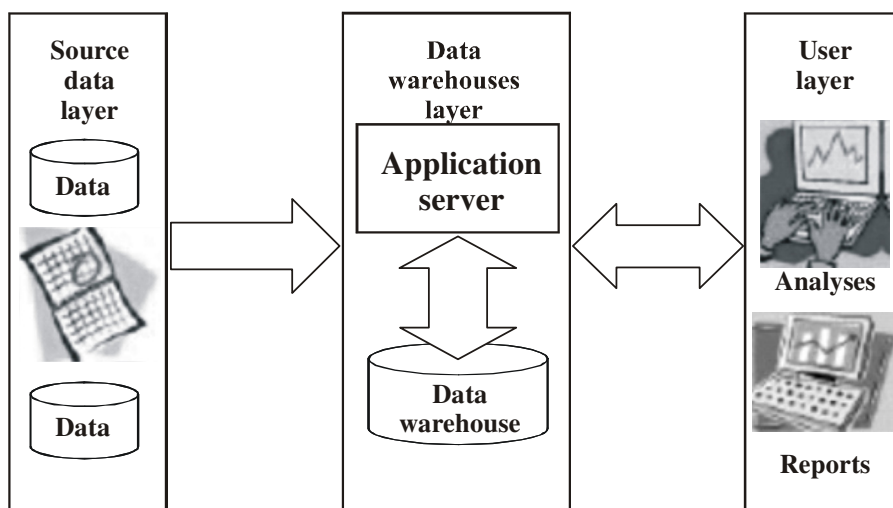
Business Intelligence tools allow a user to extract a large subset of data from a data warehouse, and then to filter it, sort it, put it up in tables and manipulate it in different ways, until the data are presented in the right way. In the case of that kind of tools, it is usually the user who is responsible for the presentation of information.

An integral part of Business Intelligence (BI) tools is a set of data exploration subsystems: ELT (*Extraction, Transformation, Loading*), used for the transmission of data from data warehouses in order to transform them. Very often, while implementing this system in an organization, it is necessary to make the decision on the choice of the appropriate environment for the databases, in which the information resources can be stored. These systems work directly with a data warehouse.

Applications for data exploration enable, first of all, the data analysis. Using the artificial intelligence algorithms, they try to find some patterns in the data. The classic examples can be: fraud detection, customer behaviour analysis and other situations in which analysis by a human is practically impossible due to a huge amount of data. An example of Business Intelligence (BI) tools architecture is shown in picture 4.

⁸ Microsoft *SQL Server (MS SQL)* is database management system. It is the main database product of Microsoft. It uses the query language - *Transact-SQL*, which is the development of ANSI standard (*American National Standards Institute*) / ISO (*International Organization for Standardization*).

⁹ *Oracle Database* is an official name of the relational database system (*RDBMS*) created by Oracle Corporation.



Source: J. Janczak, *Systemy informatyczne wspomagania zarządzania i dowodzenia*, Wyd. PTM, Warszawa 2011.

Figure 4. An example of Business Intelligence (BI) tools architecture

The aim of Business Intelligence (BI) tools is to optimize business decisions. It is possible through the use of a set of concepts, methods and analytical processes. As mentioned above, data mining plays a significant role in their functioning. The appropriate data extraction from the central repositories of historical data allows the updating of analytical systems on-line. Therefore, nowadays, business support systems may include decision support systems (DSS).

Business Intelligence (BI) tools also include solutions, in which decisions are made on the basis of a given algorithm. They are built into transaction processing systems as a function of the automatic response to the stated activities. With their help, it is possible to, among other things,:

- send a customer a notice on an order fulfilment;
- generate an electronic order after a decrease in material reserves below the outlined minimum has been detected, with the use of EDI¹⁰ (*Electronic Data Interchange*) systems.

For lower levels of management, so called ‘linear,’ there are dedicated solutions for business monitoring BAM (*Business Activity Monitoring*). BAM systems provide information on the current state of processes. They enable incoming data processing in real time. There is also a possibility of selecting presentation techniques according to the user’s needs. They also offer

¹⁰ The purpose of EDI is to eliminate the multiple data input as well as the increase in speed and accuracy of the information flow due to the connection of relevant computer applications between companies participating in the exchange. The use of EDI allows to improve the availability of logistic information in time, to expand and specify data, and also to reduce the labour-absorbing process. Effective implementation of EDI requires direct communication between computer systems, both buyers and sellers of the product.

a visualisation of the current state, which is implemented in the form of pictures. Viewing the data is easier, there is no need to go through the morass of numbers. Data visualisation and reports are implemented in the Management Dashboard, which ensures an attractive way to present the results in a similar form to the control panels.

Together with the spread of the Internet, Business Intelligence tools include newer types related to electronic business intelligence¹¹.

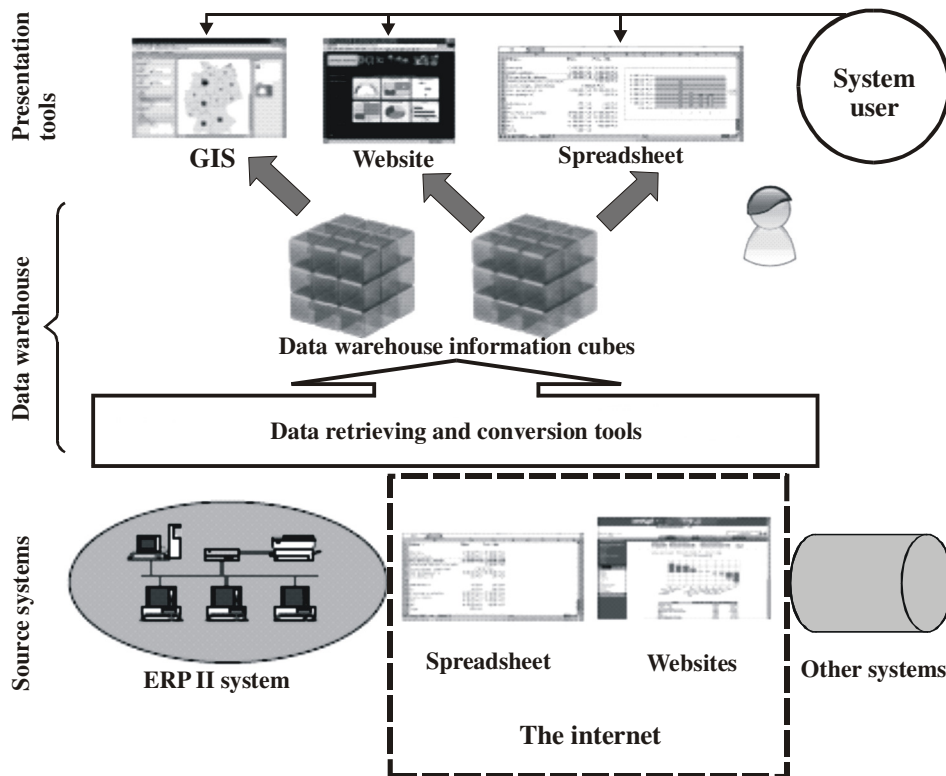
E-business intelligence tools (e-BI) are used to retrieve data from various sources (most often from data warehouses and the Internet) and to process them in order to obtain decisive information for the users at all levels of management. Data warehouse, like in traditional BI systems, is a major source of data, also for e-BI. It has a special structure for analysis. Data can be converted to the warehouse from other IT management support systems, including integrated systems, transaction processing systems, and from other sources like spreadsheet files or corporate portals of companies listed on the Internet or websites. Then, predesigned multidimensional structures, so called information OLAP cubes, are organised. Data presentation can be carried out with the use of any tool, for example a spreadsheet. Thus, e-BI tools enable:

- the collection of data from different sources such as integrated transaction processing systems, database files, spreadsheet files, World Wide Web documents;
- the structuring and standardisation of collected data in the form of data warehouses in such a way to allow the data analysis;
- the presentation of information in obtained this way to the users with the use of any presentation tool, such as a spreadsheet, website or geographic information system (GIS).

The list of e-business intelligence tools in relation to other IT systems is presented in Figure 5.

There are a lot of companies on the Polish market offering IT solutions for e-business intelligence tools. The leaders in the field are SAP Business Objects Business Intelligence solutions. They allow teams to achieve exceptional results thanks to self-service access to relevant information by all people within the organization.

¹¹ A contemporary and widely available Business Intelligence (BI) tool is the Google service. It is not a system designed for a specific company but for all Internet users, thus Google is one of the kind. Its aim is to penetrate the resources of the Internet and to make the information about the resources available in the search results. The Google intelligence determines the types of websites content, classifies them, determines their attractiveness for the users seeking information and prioritizes them. It can associate facts, themes and topics, similar meanings of single words or longer phrases, as well as look up information in other languages than the submitted query.



Source: J. Janczak, *Systemy informatyczne wspomagania zarządzania i dowodzenia*, Wyd. PTM, Warszawa 2011.

Figure 5. The list of e-business intelligence tools in relation to other IT systems

The use of Business Intelligence tools in management

The aim of the Business Intelligence (BI) tools is the collection, storage, and sharing of data as well as knowledge management with the use of a variety of analytical tools. Intelligent analysis of data is obtained through OLAP and Data Mining techniques and the technology of data warehouse. Assumedly, Business Intelligence (BI) tools should improve the management of an organization's knowledge at particular levels, which are presented in Table 1.

It is emphasised that new information and communication technologies have imposed changes in the manager's attitude to managing an organization. The Business Intelligence (BI) tools are different from the existing models of decision support in terms of technology, and the way of decision support. As far as the technology is concerned, the changes include, first of all, data warehouses, advanced analytical techniques, data visualisation techniques and systems which can learn. The synergy of the solutions mentioned above creates an intelligent environment to make decisions in an organization.

Table 1

Tasks of Business Intelligence (BI) at different levels of management

Management level	Tasks of Business Intelligence (BI) tools in management
Strategic	<ul style="list-style-type: none"> – setting goals and observing their implementation; – performing various comparative summaries, conducting development simulation; – forecasting future results under certain assumptions.
Tactical	<ul style="list-style-type: none"> – decision making support in marketing, sales, finance, fund management; – future actions optimisation and modification of financial and technological factors in the implementation of strategic objectives.
Operational	<ul style="list-style-type: none"> – analyses carried out on a regular basis (<i>ad hoc</i>); – providing information on current operations, finances, sales, cooperation with suppliers, clients, customers, etc.

Based on: C.M. Olszak, *Zarządzanie wiedzą w organizacji jest coraz wyraźniej związane z rozwojem i wykorzystaniem systemów Business Intelligence*, http://bezpieczenstwo.igd.pl/artykuly/45628_3/Wiedza.biznesowa.html (2013.07.09).

Business Intelligence (BI) tools can be used by various people in an organization (management, specialists, employees, customers, business partners) while making decisions. In particular, they allow the:

- customisation of knowledge for decision-making persons;
- creation of new disciplines in a decision-making process;
- recognition of new skills necessary for knowledge workers;
- creation of electronic markets.

Business Intelligence (BI) tools are a kind of specific combination of data, information, processes and technologies for intelligent data analysis. Their features, which decide on the creation of analytical skills in organizations, include first and foremost:

- abilities to conduct different kinds of analyses and forecasts (sharing planning tools, multi-module scorecards, sending e-mails automatically, sending warnings);
- possibilities of data mining and multi-user service within the company and out of it;
- distributed data resources support;
- the speed of delivering information to potential users and the high readability of data (using data visualisation techniques).

Due to the use of Business Intelligence (BI) tools, and especially e-BI, it is possible, in practice, to determine mutual correlations between data on-line and to look for cause-result links between them. Data mining allows for the drilling of data and the detection of patterns and links between data stored in data warehouses.

The typical areas of Business Intelligence (BI) tools application in organizations (manufacturing companies) include among other things:

- decision-making (strategic, tactical, operational);
- finance (risk analysis and profitability of investment, efficiency analysis, expenses management, budget planning, fraud detection);
- sales and marketing (market analysis, customer relation management, sale results planning and analysis, identifying market segments and new markets, customer profitability, customer segmentation, analysis of promotions and effectiveness of campaigns, product analysis);
- production and logistics (optimisation of production processes), quality management, planning according to *Just-in-Time* strategy;
- identification of partners and management of the chain of added value creation, supply chain management (efficiency and optimisation of distribution, demand planning, inventory control);
- human resource management (working time planning and optimisation, wages planning and analysis, staff turnover analysis), statement of salary components in terms of the organization structure, employees, remuneration, personal data, wages analysis, method of employment, etc.

The use of BI solutions is, thus, to allow an organization to provide strategic information, including its clear graphic presentation. Thanks to the cooperation of Business Intelligence (BI) modules with other subsystems (financial-accounting, logistics, human resource management, and customer relation management), it is possible to analyse all kinds of information which is already in the organization's resources, as well as to control the evolving situation, which, in turn, enables a quick adaptation and gaining of a competitive advantage. BI solutions, providing tools for data exploration, allow one also to discover new possibilities, to identify and recognise trends and to detect intuitively events important to business, which, as a result, increases the effectiveness of the operational, tactical and strategic activity in an organization (manufacturing company).

Business Intelligence BI tools are widely used in the process of supply chain management in logistics. This observation shows that they partly replaced the tasks of ERP (*Enterprise Resource Planning*) systems. They are also used by experts in building relations with customers and on modelling various types of processes that the organization deals with at a particular moment. An important function is also be the use of the systems to observe the activities of competition.

For medium-size and small organizations, the area of BI tools application may cover only a part of their business. For example, it can be a financial, human resources or logistics department. However, one of the advantages of these solutions is the possibility of their modular implementation, and then their development together with the development of the organization and its needs. Thus, there is their full scalability and possibility to update the software.

The conclusions emphasize that Business Intelligence (BI) tools are used to monitor the organization condition and to improve the performance of business analysts on the basis of collected data. Therefore, over time, they will become basic

IT tools used in organizations of different types, not only manufacturing and economic ones. It is important that the information generated by BI tools in the form of reports is clear, reliable and understandable to a system user. The implementation of that kind of system enables an increase in the efficiency of the information exchange between departments or employees in the organization.

The possible use of Business Intelligence tools in the field of the military

The area of the use of Business Intelligence (BI) tools is very wide and they can be used in many areas of life, not only economic life. The aim of Business intelligence (BI) tools is – as emphasised above – the collection and sharing of data as well as knowledge management with the use of various analytical tools. Business Intelligence is obtained through OLAP and Data Mining techniques and the data warehouse technology.

Business Intelligence (BI) tools can also improve the management of knowledge in the field of the military at particular levels of command, which is shown in Table 2.

Table 2

The use of Business Intelligence tools at particular levels of command

Command level	Tasks of Business Intelligence (BI) tools in management
Strategic	<ul style="list-style-type: none"> – setting strategic goals and observing their implementation; – performing various comparative summaries, conducting the simulation of a military situation development, for both own troops as well as the location of the enemy; – forecasting future military activities.
Operational	<ul style="list-style-type: none"> – decision making support for operational activities; – future-activities optimisation and modification of operational and technological factors in the implementation of strategic objectives.
Tactical	<ul style="list-style-type: none"> – Decision making support for tactical operations; – analyses carried out on a regular basis(<i>ad hoc</i>); – providing information on current military operations, the state of their manning, equipment, stores and supplies.

Source: Own study.

A result of the Business Intelligence (BI) tools application in the area of the military can be the quick access to information on, among others:

- the situation of friendly troops and the position of the enemy;
- decision making support for operational and tactical activities;
- the amount of available supplies, e.g. drinking water, food; fuels and grease;
- the possibility of transport, e.g. vehicles, armoured personnel carriers, helicopters, air planes;

- the number of vacancies in the institutions subjected to the health service, taking specialisation and the time of arrival into consideration;
- the scope of engineering machines, e.g. removing landslides on communication lines; temporary road reconstruction; removing obstacles;
- the number of beds in the areas conterminous with the areas at risk;
- logistics expenses;
- future logistics needs on the basis of data gained as a result of a computer simulation.

Thanks to Business Intelligence (BI) tools it is possible to monitor and analyse the level of needs of sufferers in a very complex situation, and the amount of data derives from many databases and is infinite.

Business Intelligence (BI) tools can be very helpful in military logistics management. Logistics management has recently become one of the fastest growing areas of analysis. The spread of automated transport systems and transaction systems in supply chain service as well as systems for electronic data exchange, contributed to the rapid growth of the amount of data related to the field. Military and civilian organizations, taking part in the logistics processes, should have a possibility to quickly assess the key indicators related to the supply chain.

Business Intelligence (BI) tools provide solutions to the problems arising at key points of the supply chain, such as:

- organization supply chain planning – BI creates an optimised model of production, packaging and distribution, and finds the most effective way to serve a customer, with a high level of individualisation of choice;
- transport management – the information provided by BI reduces the costs of inbound, outbound and internal transport;
- suppliers management – BI supports the searching for and evaluating of suppliers and future purchases planning; on the basis of quantitative and qualitative evaluation, it is possible to make assessments in order to create and improve the relations with the suppliers;
- demand and stock planning – BI, on the basis of the history of demand for the stock, allows one to optimise the size and structure of the stock, and with the use of a Web interface, to generate orders and send them via e-mail automatically;

Business Intelligence (BI) solutions for the area of logistics mean, first of all, monitoring the basic processes affecting significantly its competitiveness. Business Intelligence (BI) tools allow managers to analyse both trends, as well as basic data. They also allow one to adjust the amount of stock and distribution channels quickly, to detect problems with the suppliers work, as well as to recognise the causes of too high supply chain operating costs. All the features together form an efficient reporting system, which improves the distribution and stockpiling procedures and also improve the communication in the area of the supply chain.

Summary

It is estimated that Business Intelligence (BI) is becoming a concept of management (organisational and technological) which enables information organization in order to improve the process of management and command. It consists of tools for obtaining, cleaning, combining and analysing data, and then sharing the processed information in order to make quick and accurate management decisions.

Modern Business Intelligence (BI) tools provide comprehensive coverage of phenomena related to the use of solutions, which are provided in decision-making support, in management and command, and in the area of logistics. Data, information and knowledge come not only from the system itself, but also from outside.

Business Intelligence (BI) tools make a technologically advanced system, which supports the decision-making process, allowing the users to choose the data they need from one or many sources, that is integrated IT management system modules, which are graphically presented in Figure 1.

Business Intelligence (BI) tools include applications dedicated to the analysis and presentation of the organization and its environment results. They provide relevant data to the managers at the right time. Multidimensional analyses and automatically generated reports are the source of comprehensive information allowing the formulation of an assessment of observed phenomena as well as they are the basis to make the appropriate and quick decisions, not only the business ones. The use of BI allows an organization to provide strategic information and and present it in a graphically clear form.

Business Intelligence (BI) tools can support the monitoring of the organization's condition as well improve the performance of business analysts on the basis of collected information. That is why they are becoming the basic IT tool used in many modern organizations.

The main addressees of the solutions related to the use of Business Intelligence (BI) tools are managers and experts who provide decision-making support. That kind of solutions are already used in many industries. The use of Business Intelligence (BI) tools in modern organizations has wider and wider application. These solutions can be also used for strategic, operational and tactical planning for the military.

In the opinion of the writer, Business Intelligence (BI) tools should become the subject of interest in the military applications, especially that the attempts at existing solutions integration in the area of Polish Armed Forces appears to be inept.

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COMMENTARIES, REVIEWS AND REPORTS



American prospective on European Security

Col. Bogdan GREDA, Ph.D.

The Defense Forum was organized by the Faculty of Management and Command of the National Defense University on 18.04.2013. The US Deputy Assistant Secretary of Defense for Space and Security Policy Mr. Frank A. ROSE¹ was a special guest of this event. The topic presented by F. A. Rose was: "Missile defense, allied cooperation, relations with the Russian Federation, Polish bilateral cooperation and the United States."

The first part of the lecture concerned the implementation of the European Phased Adaptive Approach (EPAA). F. A. ROSE pointed out that since 2009, the United States Government has focused on carrying out the vision articulated by President Obama when he announced that the EPAA would "provide stronger, smarter, and swifter defenses of American forces and America's Allies," while relying on "capabilities that are proven and cost-effective."

EPAA Phase One gained its first operational elements in 2011 with the start of a sustained deployment of an Aegis BMD-capable multi-role ship to the Mediterranean and the deployment of an AN/TPY-2 radar in Turkey. With the declaration of an Interim Operational Capability at the NATO Summit in Chicago, this radar transitioned to NATO operational control. Demonstrating their support for both NATO and the EPAA, Spain agreed in 2011 to host four U.S. Aegis-capable ships at the existing naval facility at Rota. These ships will arrive in a 2014- 2015 time frame, in time for EPAA Phase Two.

With regard to the second phase of the EPAA, American guest pointed to the agreements with Romania that was ratified in December of 2011 to host a U.S. land-based SM-3 interceptor site beginning in the 2015 time frame. This site,

¹ At the State Department, he is responsible for overseeing a wide range of defense policy issues, including missile defense policy. In that capacity, it was his responsibility and privilege to negotiate the details of the Ballistic Missile Defense (BMD) agreements with Poland, Romania, and Turkey that will enable the United States to implement the European Phased Adaptive Approach (or EPAA), the U.S. contribution to NATO missile defense.

combined with BMD-capable ships in the Mediterranean, will enhance coverage of NATO from short- and medium-range ballistic missiles launched from the Middle East. Furthermore F. A. ROSE stressed that the final stage of the project's third phase involving the location of missile defense elements on Polish territory, which to be conducted depends on the ratification of the agreement by Poland. The Ballistic Missile Defense Agreement between the U.S. and Poland entered into force in September of 2011. This agreement places a land-based interceptor site, similar to Phase 2, in Redzikowo, and includes the SM-3 Block IIA interceptor. This EPAA Phase 3 site is on schedule and on budget for deployment in a 2018 time-frame. The interceptor site here in Poland will be key to the EPAA. Not only will it protect Poland itself, but when combined with the rest of the EPAA assets, Phase 3 will be able to protect all of NATO Europe against ballistic missile threats from the Middle East.

In the next part of the lecture, F. A. ROSE presented the position of Secretary of Defense HAGEL concerning policy changes to U.S. missile defense policy in order to strengthen U.S. homeland missile defenses so as to deal with the growing ballistic missile threat from Iran and North Korea. He said that, one of these policy changes is that the SM-3 IIB missile defense interceptor program - the core element of EPAA Phase 4 - is being restructured into a technology development program. With the SM-3 MB interceptor, Phase 4 would have provided an intercept capability against ICBMs launched at the U.S. homeland from the Middle East. However, the SM-3 IIB program has experienced significant delays, in part due to the U.S. Congress underfunding this interceptor. So as you know, the SM-3 IIB interceptor will no longer be developed or procured. The United States will instead strengthen its homeland defense by procuring additional Ground Based Interceptors - GBIs- for deployment at their existing missile defense site in Fort Greely, Alaska.

As stated by the American visitor, increasing the number of deployed GBIs of the current status of 30 to 44 will provide a nearly 50 percent increase in defense capabilities.

To sum up the first part of the lecture concerning the implementation of the EPAA project, F. A. ROSE underlined that the U.S. commitment to Phases One through Three of the EPAA and NATO missile defense remains ironclad, including the planned sites in Poland and Romania. Like the Administration, the U.S. Congress has supported, and continues to support full funding for Phases 1 through 3. These U.S. missile defense deployments to Europe will provide the necessary capabilities to provide ballistic missile defense coverage of all NATO European territory in a 2018 time-frame.

The second part of the lecture concerned U.S. cooperation with NATO Allies aimed at implementing the project of NATO missile defense. Mr. F. A. ROSE said that after thorough and steady progress within NATO, on May 20-21 of 2012, the NATO Heads of State and Government met in Chicago for a NATO Summit and

announced that NATO had achieved an interim BMD capability. This means that the Alliance has an operationally meaningful standing peacetime BMD capability. NATO also agreed on the BMD-related command and control procedures, designated the Supreme Allied Commander Europe as the commander for this mission, and announced an interoperable command and control capability. To support this interim BMD capability, the United States has offered EPAA assets to the Alliance as their voluntary national contributions to the BMD mission. The AN/TPY-2 radar deployed in Turkey is under NATO operational control. In addition, U.S. BMD-capable Aegis ships in Europe are also now able to operate under NATO operational control when threat conditions warrant. F. A. ROSE stated that these decisions have created a framework for Allies to contribute and optimize their own BMD assets for our collective self-defense, and that the United States welcomes and encourages such contributions from Allies. NATO BMD will be more effective should Allies provide sensors and interceptors to complement the U.S. EPAA contributions. Several NATO Allies already possess land- and sea-based sensors that could potentially be linked into the system, as well as lower tier systems that can be integrated and used to provide point defense such as PATRIOT. It is important that the systems contributed by Allies be interoperable with NATO's Active Layered Theater Ballistic Missile Defense - or ALTBMD - command and control capability.

The next part of the speech involved cooperation with the Russian Federation. F. A. ROSE pointed out that the USA is developing this missile defense cooperation with NATO and is also seeking to work cooperatively with Russia simultaneously. The USA remains convinced that missile defense cooperation between the United States and Russia (and between NATO and Russia) is in the national security interests of all countries involved. For that reason, missile defense cooperation with Russia remains a Presidential priority for this Administration. In Chicago, the NATO Allies made a very clear statement of USA intent regarding strategy stability and Russia's strategic deterrent. NATO declared in the Chicago Summit Declaration that "...the NATO missile defense in Europe will not undermine strategy stability. NATO missile defense is not directed against Russia and will not undermine Russia's strategic deterrence capabilities." Through transparency and cooperation with the the United States and NATO, Russia would see firsthand that this system is designed for ballistic missile threats from outside the Euro-Atlantic area, and that NATO missile defense systems can neither negate nor undermine Russia's strategic deterrent capabilities.

American delegates remarked, that in spite of developing ways to cooperate with Russia on missile defense, it is important to remember that in keeping with its collective security obligations, NATO alone bears responsibility for defending the Alliance from ballistic missile threats. This is why the United States and NATO cannot agree to Russia's proposals for "sectoral" or "joint" missile defense architectures. Just as Russia must ensure the defense of Russian territory, NATO

must ensure the defense of NATO territory. NATO cannot and will not outsource its Article 5 commitments. As ballistic missile threats continue to evolve, the USA cannot place limits or constraints on its ability to defend itself, its allies, and its partners. This includes any limitations on the operating areas of their BMD-capable multi-mission Aegis ships.

The last part of the lecture concerned cooperation with Poland. F.A.ROSE said that „We can't talk about BMD cooperation without talking about our cooperation right here with the Republic of Poland”. He also remained that the USA has an enduring Aviation Detachment deployed in Łask, which supports the joint training of U.S. and Polish Air Forces. Furthermore, he also mentioned the USA's vibrant and longstanding cooperation with Poland on other efforts to combat the threat of WMD and their missile delivery systems. As an example he announced that former President Bush chose Warsaw as the site of his May 2003 public call to create a common global effort to stop WMD and missile-related shipments to and from states of proliferation concern. Poland and the United States then worked closely to heed that call by establishing the Proliferation Security initiative. Over the following decade, 100 other nations from every part of the world joined our two countries in the PSI to improve our common efforts to take action against WMD shipments. Rose also stressed that next month Acting Under Secretary Gottemoeller will have the great pleasure of leading the U.S. delegation at the PSI Tenth Anniversary meeting in Warsaw not only to mark the occasion, but to continue efforts to meet the call that President Obama made in the 2009 Prague speech to ensure the PSI is a durable international effort.

F.A. ROSE underlined that, Poland is a leading nation on defense modernization. Where many NATO countries are reducing their defense modernization, Poland is focusing on it - and the "it" that I follow most closely is the Polish efforts to upgrade its Integrated Air and Missile Defense System. This has been a topic of considerable discussion with Polish counterparts. He expects it will be a topic of continued discussion. It is clear to him that the Government of Poland intends to embark upon a substantial effort that will provide for a greater national expertise which will be able to contribute to NATO air and missile defense capabilities. He also stressed that Poland is not only working on defense modernization - it is also a participant in the U.S. Strategic Command's NIMBLE TITAN multinational missile defense war game. Polish military, Ministry of Defense and Ministry of Foreign Affairs officials are working closely with over 20 countries and NATO to collaboratively think through how regional and global coalitions might be able to innovate with equipment, tactics, techniques and procedures to provide the best and most agile defense. In a world where the threats and the technology to defend are constantly evolving, it is our responsibility to think through the problems to reach the best and most efficient solutions.

To sum up, the deputy assistant secretary of defense for space and security policy said that America is proud of how much it has already achieved by working with its allies and partners to counter the threat from ballistic missiles, but admittedly, there is still much to do - and they are looking forward to achieving higher levels of BMD cooperation and effectiveness.



Christopher Kinsey, Malcolm Hugh Patterson, *Contractors & War. The Transformation of US Expeditionary Operations*, Stanford University Press, California 2012

Lt. Konrad REJ, M.A.

Armed conflicts in the past two decades have changed the way of conducting operations and set conditions for the development of private military companies (PMC *Private Military Companies*). Limited defense budgets after the Cold War, the reduction of the number of troops, a technological revolution and a new kind of conflicts are, in a nutshell, the main reasons for the growing importance of *contractors*. Starting with the war in the Balkans in 1991 through to the war in Iraq in 2003 and to NATO's present ISAF operation in Afghanistan, PMCs have created a picture of contemporary wars, often arousing extreme emotions. However, the development of military service contracting, e.g. in the United States, dates back to the 1950s, but its concept was to exploit the potential of private enterprise in the logistic support process. It was only more modern conflicts that brought about the need for expanding the list of services to include logistic support of U.S. expeditionary operations, training services and armed protection, the most glaring example of which was the contract executed by the Blackwater company in Iraq.

For many years, the subject of the privatization of military services has been present mostly in English literature. Unfortunately, Polish literature is very fragmentary on the discussed field and, apart from a very few Polish translations, of which the best proposal is the book entitled *Servants of War* by Rolf Uessler (*Servants of War. Private Military Corporations and the Profit of Conflict*, 2008) we are condemned to read exclusively in English. A lack of Polish researchers' interest in the activities of private military companies can be explained by several factors: firstly – the scale of Polish military involvement in international affairs does not require the participation of Polish companies in the war zone, secondly – the services contracting system in the Polish Armed Forces, functioning since 2008, still has no complexity in many areas and is rather an attempt to solve short-term problems; and finally – on the international market, dominated by American and British contractors, there are no Polish companies. Polish ex-military, in most cases experienced special forces operators, are only contractors working as freelancers for respected Western companies. The most famous Polish contractor, although it would be more appropriate to use the word “mercenary”, was Jan

Zumbach, the legendary commander of 303 Squadron, who in 1962 organized the air force of Katanga, fighting with the Democratic Republic of Congo after the secession announcement.¹

Released in July 2012, "Contractors & War. The Transformation of U.S. Expeditionary Operations" by Christopher Kinsey and Malcolm Hugh Patterson, is the third and most recent publication dealing with the subject of private military companies, which appeared as part of the Security Studies series published by Stanford University Press. Both editors, normally working as lecturers, have written several books about PMCs. Christopher Kinsey is a university teacher of international security in the Department of Defence Studies at King's College London, one of Europe's top universities, and is the author of *Corporate Soldiers and International Security* (Routledge, London, 2006). Malcolm Hugh Patterson is a teacher of law and international relations at the University of New South Wales in Sydney and he wrote a book entitled *Privatizing Security. A Corporate Adjunct to United Nations Peacekeeping and Humanitarian Operations* (Palgrave Macmillan, London, 2009).

The common opinion on private military companies is quite close to the image from photographs showing well-armed civilians protecting American officials during the war in Iraq. This picture is obviously the most visible example of the presence of contractors, however, the catalogue of their services includes logistic support, transport, training the army and the police, and maintaining more and more advanced weaponry. *Contractors & War* is based solely on the U.S. experience in Iraq between 2003-2010 and the operation in Afghanistan which started in 2001, and is aimed at readers willing to deepen their knowledge on the impact of private military companies on military operations conducted by the United States.

The more than 300-page book consisting of twelve separate articles was divided by Kinsey and Patterson into four parts. The first one is an attempt to determine the prospects for the development of private military companies in the United States. The second part is a look at the contractors involved in the stabilization and reconstruction operations (*Stabilization and Reconstruction Operations, SRO*). Legal issues, including status and criminal liability of PMCs are included in part four and the last part presents administrative challenges connected with the management of projects performed by the private sector. The division of the book according to topics most important in recent discussion over the role of contractors allows the reader to figure out how much their role has increased in today's operations, and which aspects of the business will require changes, especially from the U.S. government's side. With its well-thought-out structure, the book *Contractors & War* is able to provide the reader with a view of the whole discussion about private military companies, and each of the four chapters can easily constitute a basis for writing a comprehensive monograph.

¹ Jan Zumbach, *Ostatnia Walka. Moje życie jako lotnika, przemysłowca i poszukiwacza przygód*, Oficyna Wydawnicza Echo, 2007.

Among the authors we will find many teachers who have been analyzing the subject of PMCs for many years. Among them there are: Robert Mandel, the author of one of the first books on the subject – *Armies Without States. The Privatisation of Security* (Lynne Rienner Publishers, London, 2002), Kateri Karmola and Allison Stanger. Apart from them, Kinsey and Patterson invited to cooperate those who know contractors from a quite real perspective: soldiers, employees of international NGOs and government officials, such as Stuart W. Bowen, who was in charge as Chief Inspector for Iraqi Reconstruction (*Special Inspector General for Iraqi Reconstruction*, SIGIR). Their articles increase the value of the book by giving it often a completely new point of view.

Contractors & War examines the basis of the PMC phenomenon, outlining that the influence on relations between contractors and the state is exercised almost entirely by the U.S. government. On the other hand, and this is one of the most interesting observations pointed out in the book, contractors provide a means to extend the capabilities of armed forces and to conduct missions that previously would simply have been described as unrealistic or too ambitious. According to one of the authors, a former soldier William Flavin from U.S. Army War College in Carlisle, private military companies must see themselves handled from the doctrinal point of view which will define their place in the national security system. Almost all authors of articles express the belief that the U.S. will continue to use PMC's, although the level of their involvement will vary, following U.S. international policy and the nature of future conflicts.

This book deals with many topics, but some of them deserve extra attention. It's worth taking a deeper look at Ryan Kelty and Darcy Schnack's article concerning the relationship between soldiers and contractors – only a few authors have dealt with this issue so far. Another interesting thing is Samuel Worthington's article on relations between NGOs, soldiers and contractors. The work by Kateri Carmola analyses private military companies' negative impact on the of conduct of Counterinsurgency (COIN) operations by soldiers and a different "risk culture" among contractors. Another advantage of the whole book is the extensive bibliography, which allows those interested to find unknown publications and analyses.

The book was written solely on the basis of U.S. experience and responds to questions about the PMC from the point of view of American authors. I think it's one of the very few critical comments about the publication. The increasing role of contractors can also be noted among European NATO armies: the British, French and German, of course in each of them in a different way which takes into account national tradition and the size of military involvement around the world. *Contractors & War* requires from the reader some background knowledge built around specific events and realities of wars in Iraq and Afghanistan, so it is difficult to recommend the book to readers who are just starting to seek information on contemporary contractors – that is the last comment about the book.

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