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OFFICER AND COMMANDER
IN ASYMMETRIC WARFARE OPERATIONS

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Starting from the data of a field research conducted among soldiers with asymmetric warfare experiences from nine different countries, the author seeks to identify and shed light on the various problems that officers with command responsibilities had to face during their missions. A picture emerges of feelings and experiences relating to their first impression upon arriving in the theatre, relations with local armed forces, relations with the local population and local authorities, relations with NGOs, relations with other armies, the impact of the rules of engagement (ROEs), training and education, and operational experiences. The paper ends with a discussion of the lessons learned.

Key words: *asymmetric, operations, professional, local, armed forces.*

1. INTRODUCTION

Asymmetric warfare operations (1) require soldiers, but especially officers with command responsibilities, to make deep changes of mentality, professional attitude and also of tactics (2) with respect to the traditional preparation for conventional war operations, all themes on which an abundant literature has developed (3).

For commanders at all levels, operating in an asymmetric warfare environment means being prepared to act *"in the presence of civilians, against civilians, in defence of civilians where civilians are the targets, objectives to be won, as much as an opposing force"* [1]; it means forgetting some fundamental principles of combat and accepting to use minimal force and only when strictly necessary [2]; it means acquiring the ability to motivate one's men and to apply these limitations, accepting greater personal risk [3]; it means being able to assume governance roles in local realities that have very different cultures, norms and customs from those of one's home country [4], [5]; it means being prepared to manage a multiplicity of functions, not only military, simultaneously [6]; it means acquiring interoperability with military contingents of nations that are very different from one's own [7]; it means having to expand one's professional baggage into sectors and disciplines that are far removed from one's education and training [8] [9](Blomgren, 2008; Caforio, 2001).

It means all this and even more which, from time to time and form mission to mission, proves to be important and necessary.

In this framework of profound change of the international military context and of commanders' professionalism [10], [5], [11], [12] a project of a field research (4) was carried out by an international team of interviewers recording the assessments and experiences of the persons directly concerned, the results of which are being published in book form [13]. But beyond this choral effort, written by numerous authors, on the survey's general results, in this paper I would like to place the emphasis particularly on the experience of those who have lived asymmetric warfare operations in a command activity, drawing lessons learned that will be especially useful for their professionalism as officers and commanders.This paper is comprised of this brief introduction, a chapter devoted to analysis of the data collected (5) on the following aspects, deemed especially meaningful [9]:

a) First impression upon arriving in the theatre;

b) Relations with local armed forces;

c) Relations with local populations and local authorities;

d) Relations with NGOs;

e) Relations with other armies;

f) The impact of the rules of engagement;

g) Training and education;

h) Operational experiences;

and closes with a section devoted to discussion.

2. DATA ANALYSIS

2.1. First impression upon arriving in the theatre

The intervention of military units in asymmetric warfare operations generally occurs in the context of failed states also characterized by conditions of cultural and economic backwardness that provide fertile terrain to insurgents for propaganda and recruiting. Weakness or non-existence of a central government, its inability to control the territory, widespread existence of living conditions that are often at the limit of survival, and a lack or scarcity of basic infrastructure are for the most part situations in which unit commanders find themselves compelled to operate. This often occurs in countries in which the natural environment itself is hostile: deserts, mountains, harsh climatic conditions, namely circumstances that pose considerable logistical and organizational problems to commanders.

Recognition of this reality – always different from what was imagined before experiencing it in person – therefore very often constitutes the first observation, the initial impression upon arrival at the mission location by the interviewed commanders: an acquisition that is also necessary in order to properly plan one's command activity.

This recognition manifests itself in expressions like:

TURA03: *Smell and vision of misery and chaos surrounded me when the doors of the plane are opened. In the first days I thought*

there was no order and rule in this country. And the god had forgotten this geography.

TURA06: *I was in Afghanistan last year. My first impression was horrific. The living conditions of Afghan people was so bad. There is no security, anywhere and any time you can bump into an explosion.*

SAA5: *My first impression was a culture shock towards the state of deterioration of infrastructure.*

SIC49: *Culture shock. He was earlier in less developed countries like Lebanon and Albania, but Afghanistan is something special. On one hand this is feudal society.*

In addition to culture shock, the impact with the natural environment appears significant as well, shown by responses like:

ITC29: *A strange sensation: you go out from the plane and the first feeling is of heat, dust: it seems that you are inside boundless barracks. You have no idea of what can exist outside....*

KRA01: *I had a feeling of desolation due to hot weather over 50 degree C. and sandstorm. I was worried about life over the next sixth months since all the roads leading to the unit were located in desert.*

As well as the impact with the human environment:

SPAA02: *Regarding his first mission (Enduring Freedom, led by US), after the harsh impact of climate conditions, he was shocked by the economical inequality of the local society, with a narrow rich class and a broad poor class.*

SAC01: *The impression was one of hostility, emanating from the* government forces and also from the local population. The local forces were disorganized, not paid in salaries, but also tried to show some pride in their looks and actions. The rich citizens were very hostile and unwelcoming. Poverty was everywhere and nobody gave a damn.*

It is a question of an impact that refers to more than one theatre, although with different nuances, and that leads commanders to be concerned with the future living conditions of their unit during the mission, with frequent statements, as we have seen, of the type: *I was worried about life over the next sixth months since all the roads leading to the unit were located in desert.*

2.2. Relations with local armed forces

In many asymmetric warfare missions the military units deployed are called on to train and collaborate with local armed forces and police. The reconstruction of an efficient state depends on re-establishing general security conditions, guaranteed by prepared, efficient local forces that can ensure these conditions even after the departure of the intervening allied forces.

It thus seems particularly interesting to examine the opinions of the interviewed officers on relations with the local forces.

These relations are often difficult or, at the least, go through an initial period of difficulty and distrust. We see first of all a profound cultural gap between the soldiers from developed countries sent on mission and the local armed forces and

police. At best, there are difficulties of language comprehension and mentality. At worst, the mixture can include corruption, bad faith, double-crossing and money scams, often rife among the soldiers of the local forces. However, the situation differs depending on the theatre in which the asymmetric warfare operations take place. From the interviewees' responses, it is particularly negative in Afghanistan, Iraq, and in some Central African countries, better in the Balkans and Lebanon. The following interview sums up the situation well:

ITC16: *We met some difficulties in cooperating with Afghan armed forces, because we had to interact with persons who have a culture and a lifestyle very different from us. Their military preparation was very low. We had to train them and they behaved as children playing: anyway, we had the opportunity to see some results from the training. We carried out joint operations with them and they seemed rather motivated (but very bad equipped). Surely some of them was double crossing and there was the possibility to find some soldiers trained by us on the insurgents' side.*

Differences of course also exist from unit to unit, or even from soldier to soldier, whose motivations might be the salary, the desire to serve one's country, unemployment, and other contingent reasons. One must also consider the local soldier in the reality of his country, with the bonds that religion, tradition and customs impose on him. The religious factor can be particularly important in some theatres, as seen from the following statement by a Turkish officer:

TURA03: *There is sympathy towards our army members because of religion factor. Sharing the common value patterns put us in different position among other army members.*

Digging deeper into the reality of the individual theatres, for Afghanistan (on which the negative observations are especially numerous) it is claimed that the Afghan soldier lacks team spirit: each person seems to work by himself, does not have the idea of organization, does not care about planning; he has a different perception of the value of human life; sometimes he uses drugs. Others do not feel they have any duty to perform their service but they have to receive some form of reward, gift or bribe. Consequently, often the Afghan units remain in wait, expecting the ISAF forces to *"open the breach"*. An example of the difficulties of collaboration is given by the following response by an interviewee:

SPAA04: *Working alongside Afghan forces was very complicated, mainly due to cultural and idiomatic barriers as well as by professional procedures and huge technological gaps. Besides that there was a strong feeling of distrust between both forces.*

The situation for the countries of Central Africa is not very different, however. The South African officers had this to say about the local forces:

SAC17: *Armed forces: Poorly organized and trained. Lack of proper leadership. Corruption on higher*

level. Poorly equipped and poor facilities. Personal relationships with rebel groups on certain levels.

SAC02: *Sometimes it is expected from you to make financial donations to build a working relationship, but that is a trap. Eventually you can become an additional source of crime and not a serious work partner.*

And for Iraq:

BGC14: *You can't trust them. They are lazy and irresponsible. So many Iraqi people die every day because of their irresponsibility (Iraqi Ground Forces Command).*

The general, widespread feeling is that to rebuild reliable and efficient local armed forces according to Western parameters is going to take a long time; times not always compatible with the foreseen duration of the mandate.

2.3. Relations
with local populations
and local authorities

The reception of the forces by the local populations in the theatre of operations is often multifaceted and conditioned by various factors, such as:

1. the pressure of the insurgents on the population;
2. the tactical behaviour of the counterinsurgency forces: if they conduct combat operations locally, the people remain distrustful and hostile; if the activity is humanitarian aid, they show themselves to be friendly;
3. the population's disposition towards the country's legitimate government;
4. the historical experience of the local population;

5. the conduct of the counterinsurgency forces;
6. the cultural background of those forces: if there is a shared religion, the attitude is more likely to be favourable, as mentioned earlier;
7. the relationship with the local authorities.

Some examples follow.

For point 1:

ITC12: *In some village relationships are not easy; it happens that the local authorities fear to let you come in, because the threat of insurgents' retaliations. In fact retaliations are frequent.*

For point 2:

ITC18: *Local population is a victim of the situation: it is in favour of the coalition forces where and when they make humanitarian assistance; less in favour where military operations are carried on.*

ITC07: *We had a good welcome by local population, particularly when we intervened when it needed help (during the winter, for instance) or in the more far and isolated villages.*

For point 3 one must remember that, normally, military units that come into contact with individual villages represent the legitimate local government, with its bright spots and dark spots. Some testimonies:

SAC01: *The local government was a nightmare, to say the least. To get something done was a laborious process involving lengthy debates and decision making. Money inevitably had to change hands. Corruption was strongly suspected.*

PHIC20: *I have learned that when you enter a village, you are the lobbyist for government programs; you are the face of government.*

As far as the local population's historical experience is concerned, its attitude appears to be clearly influenced by past experiences and can be differentiated from group to group. For example:

SAC53: *Local population: It was interesting that the Tutsi got on very well with the white officers – they are the minority. The Hutus were less friendly. All the interpreters were Tutsi and this was problematic as they hate the Hutus.*

Conduct is an essential aspect of the ability of the counterinsurgency forces *to win the hearts and minds* of local populations. Adopting correct, impartial behaviour is the key, also in view of the fact that a foreign force present on the local territory is inevitably perceived as an invader. Examples:

TURA03: *People accept all soldiers as invaders without country classification. They just want to get some benefit like money or food from you. This is the way most of people behave us.*

SAC01: *Local population: Burundi/DRC: The local population definitely saw the opportunity to exploit the RSA soldiers to the maximum. We utilized their local knowledge and rewarded them accordingly. But nothing you got was for free. Social, sport etc. interactions always had a price you had to pay. Unfortunately our soldiers exploited their poverty status by exploiting their ladies.*

PHIB14: *We always emphasized the highest standard of discipline because whatever efforts we have, if the soldiers commit mistakes, the whole organization will be affected.*

The benefit of a common cultural and religious background is especially the case for Islamic culture, as many asymmetric warfare operations have been and are being carried out in Islamic countries. A Turkish official states, for example:

TURA25: *Local people had the same culture like Turkish people. So that Afghan people and Turkish officers were able to understand each other easily. Also the religion was an important factor to establish good relationship with local people.*

The relationships of the commanders deployed in asymmetric warfare operations with the local authorities are often negative. Corruption, collusion with the insurgents, and attempts to exploit the situation and the military units are very often the prevalent connotation of the local political, but also military, leadership. The examples of negative assessments of this type are extremely numerous. Here are a few of them:

DKC20: *I worked with authorities in the form of officials, politicians, police and army. Basically I did not trust government officials and police. They were corrupt, secretly helped our enemies and committed atrocities against the local population. The contact with them was necessary and was respectful, though I felt resentment and a sense of moral corruption by talking to them.*

ITC08: *Local authorities were not always collaborating: in some case we registered persons who run with the hare and hunt with the hounds; in other cases corrupted authorities.*

Some cases of positive relations are cited as well, such as that of an Italian colonel who says:

ITC17: *The head of the village is very important and I had with several of them a very positive relationship, including some warning on possible threats. Distribution of relief was through local police or Afghan army; the heads of the villages indicated the poorest families.*

2.4. Relations with NGOs

The relationship between military commanders and non-governmental organizations (NGOs) appears to be one of mutual distrust which, in the judgement of the commanders, arises from poor preparation of the members of the NGOs in peace operations in general and in the context of asymmetric warfare in particular. The NGOs are seen as a problem from which, insofar as possible, it is best to keep one's distance. The testimonies in this sense are numerous:

SAC53: *We avoided the NGOs like the plague. Most were staffed by young European women who were passionate about what they were doing, but did not know actually what to do. They considered the military as an obstacle. Their objectives and the military objectives were not always the same.*

SPAC18: *In the case of those NGOs there is ignorance or misunderstanding about the peace forces role, and that creates false expectations.*

The biggest problem that is posed for commanders at the various levels is that of monitoring NGO operators' activities, aimed at keeping them from getting themselves into dangerous situations or from interfering with the military activities. Some examples:

SAC50:*International organizations, NGOs, press, etc: Difficult to engage with because they wanted to be seen as being unrelated to the military, regardless of what your main responsibility is.*

DKC20: *I felt that many NGOs considered themselves as superior and that we (soldiers) were part of the problem.*

Thus, comparison is inevitable between the organized and at times schematic military mindset and the spontaneous, voluntaristic, at times anarchic mentality of NGOs. For example:

SPAC06: *I had more relations with NGOs, especially in Kosovo. I don't like the way they work. Our procedure is more ordered, clearer. What I saw is NGOs didn't have a clear idea of what their mission was. My feeling was that they didn't do their work properly.*

2.5. Relations with other armies

One salient characteristic of asymmetric warfare operations is generally cooperation between armed forces of many nations, many more than in past experiences of conventional wars. This happens because peacekeeping has become an indispensable condition for development of the industrialized world, and every country of this world is called on to help keep the peace in accordance with its possibilities.

Such cooperation involves big problems of integration and coordination that are generically

lumped together under the term "interoperability". Interoperability has constituted the leitmotif for international alliances like NATO (and others), which has accomplished a huge organizational task by creating "standard operating procedures" (SOPs). Interoperability thus appears to be pretty much guaranteed among the countries belonging to these alliances, while it must always be strived for and achieved with and between third-party countries. Cultural differences, though, cannot be codified and are more difficult to harmonize.

For the NATO countries it must also be said that, since SOPs are better for dealing with technical and operational problems than human ones, interoperability is more easily attained for services that have easily codifiable technical procedures, such as navies and air forces, while for ground forces, where the human factor takes on greater importance, the difficulties appear to be greater.

This situation is also the case for the interviewees of our research, taking into account that all of them belong to countries bound by international alliances (NATO, SEATO, etc.). This means that the responses of the interviewees belonging to navies and air forces for what concerns relations with the forces of other countries are of the following type: ... *coordination was easy with the navies who belong to NATO, because we have a common cultural background, common procedures*.

Examples of issues with interoperability problems between the soldiers of countries belonging to

Western-style international alliances and those of third-party countries are frequent, with statements of this sort:

SPAC05: *We had contact with troops from India, Indonesia, Malaysia... the relations with the Polish were rather good. With the rest it was quite indifferent, even bad. We had many misunderstandings with the Indonesians. Our procedures were way too different.*

While relations with members of the same alliance generally prove to be easy:

ITC07: *We worked with American, French, Spanish, Canadian colleagues without problems of interoperability.*

There are a few exceptions, however, that highlight the existence of a cultural gap between the soldiers of the largest powers (US, France, UK) on one side and the others, where, for the former, judgments like the following one are also expressed:

SAC02: *Experienced people from the major powers (France, UK, etc.) as dominating and arrogant, mostly working in the interest of their own countries and not the mission.*

BGC06: *A little arrogant, especially the British...*

DKC21: *I must admit that I very quickly grew tired of the Americans, whose style is somewhat more hierarchical and vociferous than what we know.*

Or behaviours hard to reconcile with a multinational environment are pointed to:

TURA24: *Most of the military personnel were US in NTM-A HQ. So, US folks were conducting daily life as if it was a pure US HQ. They were doing some ceremonies according*

to US traditions since they were the majority. I respected their rituals. But in a multinational environment there must be multinational culture and daily life. I don't have to celebrate US special days or I don't have to eat meal on a dining table covered by a US flag.

Or which create feelings of relative deprivation in comparison:

KRA03: *I felt that welfare support for soldiers in the US military was enormous (e.g., welfare facilities such as gym, swimming pool, BX, mess, etc., and programs for leisure time through voluntary participation). On the contrary, I felt support in our case is insufficient, and leisure time programs sometimes appeared as a burden like an event or daily routine.*

Cultural affinity instead works positively, such as in responses like the following ones:

SIC 42: *Also with allied forces relations were excellent. He worked together especially with Italian alpines who have similar mentality like Slovenes.*

PHIS08: *I have participated in Philippine Humanitarian Support Mission in East Timor for 6 months in 1999. I am good friends with members of Australian Army. When I was in East Timor, we often shared our ideas about our political/country setting and our military experiences. The Philippine military has more in counterinsurgency operations; but the Australians have more in technology.*

SPAC17: *There was more affinity among non-English-speaking countries or with certain difficulties to speak English (Spain, Italy and France) on one side and among English-speaking countries or akin on*

the other (English, Irish, American, Scandinavian, Dutch, Swiss, etc.).

As it can be seen, the human factor and its role in interpersonal relations remains a major problem for commanders with respect to technical interoperability and operating procedures.

2.6. The impact of the rules of engagement

In operations whose ultimate aim is always that of re-establishing peace and that take place in most cases in the middle of civilian populations, special importance is taken on by the "rules of engagement" (ROEs), i.e., the rules that govern the conduct of the units deployed in action, with the chief goal of avoiding civilian casualties while still protecting the safety of the soldiers on mission. The particularity of these missions is therefore that of avoiding civilian casualties and collateral damage as much as possible in a delicate balance with the need not to expose one's soldiers to unnecessary risks. ROEs are created and refined for this purpose.

ROEs have first and foremost a political value. They are decided in the political sphere and differ from theatre to theatre, in an effort to shape them in accordance with the local situation.

On the military side, ROEs are highly unpopular due to the limits they pose on commanders' freedom of action and to an alleged contradiction with the soldier's professional parameters. Some examples of these positions:

ITC16: *ROEs: they are not always understandable, because they are written by politicians.*

SPAC06: *ROEs should be settled by the commander-in-chief of the deployed troops, as he witnesses the ongoing reality.*

SAB09: *The ROE was a challenge because in certain instances the local population indicate they will attack you for no apparent reason and you can't shoot unless the mission commander gave permission otherwise. The UN protects the locals and then the peacekeepers – your word means nothing.*

SPAC16: *ROEs I think they are very restrictive, even affecting negatively the safety of the personnel deployed in the operational zone.*

In particular, improper use of equipment and weaponry is a frequent complaint:

ITA01: *Our aircraft (Tornado) is organised for ground attacks, but it has been employed for air reconnaissance only: a very limited use of this kind of aircraft. It was forbidden to use bombs, for fear of collateral damages.*

But perhaps the most widespread complaint regards the differences in ROEs depending on the country the contingent belongs to. Indeed, various countries set limitations (in general risk limitations) – called "caveats" – on the use of their personnel, with negative consequences both on the morale of the personnel and on the ability to command them. Various examples include:

TURA08: *In Afghanistan since we had many national caveats, I couldn't work with our allies in many areas that NATO soldiers are having engagements.*

SIC01: *ROE did obstruct their work in the field, especially regarding their monitoring tasks with the ANA. He [the commander] trained them, mentored them, however, because of ROE, he was not allowed to follow them in the field. Members of ANA did not understand this.*

DKA04: *But it could be very difficult to work on tasks with many different units, each with their own ROE or interpretation of this.*

BGC02: *National caveats are imposed to limit the participation of the Bulgarian troops in dangerous situations. This is a problem.*

And at times, political tactics put the troops on the ground in difficulty, as in the case that follows, recounted by a Bulgarian lieutenant colonel:

BGC17: *ROE Yes. We had been requested by the German contingent to guard a school of civilians, if necessary. For months we have not received response from Bulgaria. This was an embarrassing situation, especially given the fact that we were completely on their (German) logistical support.*

2.7. Training and education

The participation of military units of the countries considered in this study in asymmetric warfare operations constituted an important, significant screening both of commanders' education for the military profession in general and of their specific preparation for this type of mission. This appears to be even more true for the militaries of the medium-sized powers considered in this study, which had not had many other occasions to put themselves to the test in the recent past.

The general framework that emerges from the interviews is that of a positive assessment of the professional preparation of the units sent on mission, with differing degrees of intensity for the various countries considered: a more generalized positive assessment for the Danish, Italian and Spanish respondents, a less convinced judgement for Turks and Bulgarians. Even the most satisfied respondents, however, note the scarce availability in their home countries of the equipment that would be used on the mission (6):

SPAC18: *We must make an effort to provide the units that are to take part in a mission the equipment, weapons and vehicles they will have to deal with on the operational zone, so that they have a proper training.*

ITC16: *TRAINING AND EDUCATION: adequate to the situation. We can improve our training if we get more means at home.*

Opinions on the specific preparation for the individual mission offer a different picture. Numerous respondents (from more or less all of the countries) feel that their preparation was inadequate.

SAA03: *It was evident that more than half of the members deployed were not properly trained for the specific operation.*

BGA52: *I lacked adequate pre-deployment training.*

DKA04: *My basic training was good. The more specific training for the mission was very poor.*

SIC38: *Training and preparation was almost completely out of reality. Especially training in Hochfelzn, Germany, was waste of time and money. The best preparations began, when you came into battle theatre and when your forerunners were informing you what's going on.*

And, as this last interviewee declares, it is the on-the-ground experience, the contact with one's predecessors that is the most important element of the preparation, an element that enters into action only after the start of the mission, however.

ITC23: *In Afghanistan we had to learn on the field, because the theatre was very different in respect to the previous ones (Bosnia and Iraq).*

ITC90: *Adequate, but you specially learn by more experienced colleagues and you build your own experience, step by step.*

Here, too, the comparison with the armed forces of the major powers again comes to the fore:

ITA03: *TRAINING AND EDUCATION. Adequate, but I suggest an improving of resources, so that we can carry out a training equivalent to that of the Americans and British.*

With regard to proposals for better preparation for the mission, mostly what emerges is acknowledgement of the profound difference of command action in an asymmetric warfare context compared to conventional warfare, and therefore of the necessity of specific preparation:

SAB01: *I think more training in the asymmetric field would have assisted me in handling the situation. Conventional war is simple and straightforward. My training was definitely inadequate for the task I was given and that goes for everyone*

who was under my command. More emphasis during training should be placed on irregular or asymmetric warfare.

These are followed by a series of specific observations such as that of making more use of experiences gained in the field, improving knowledge and comprehension of the "lingua franca" (i.e. English), training units in environmental contexts more similar to that of the mission, developing, especially in cadres, greater cultural knowledge of local populations, and improving officers' knowledge of rules and procedures for working in multinational formations. Some examples:

ITA02: *TRAINING AND EDUCATION: adequate; what was very different in respect to the training is the operation environment (high mountain) that would need a different training, not possible in Italy. Besides that, it would be convenient to make more night training.*

TURA19: *The major problem is lack of speaking English and the listening English skills of our personnel.*

BGA16: *There must be interactions between people who have occupied a position in past mission and people who are about to hold it after. There must be more detailed information about the environment in which someone is going to work.*

2.8. Operational experiences

The range of new experiences that the interviewed sample reports encountering in the operations in which they took part in the various theatres includes numerous aspects of asymmetrical warfare. A good number of these constituted experiences they had never before had, first and foremost the "baptism of fire". Coming under enemy fire for the first time was experienced as an important event by most of the interviewees, irrespective of home country, and its perception appears significant in all the recorded interviews.

ITC94: *It was a strong emotion to be under fire.*

DKC1: *In Iraq, we were under rocket fire for 85 days, where we fell down on our stomach.*

It is also interesting to note the variety of situations in which coming under fire took place: air support, anti-piracy interventions, ambushes, mopping-up operations, improvised mines, suicide attacks, salvos of rockets and mortar rounds directed at the base. Examples:

ITA04: *We were ready to take off in 30'. We made infiltration operations, exfiltration from dangerous zones, reconnaissance, convoy escort, medical rescue. In Afghanistan land is very mountainous and radio communications are difficult. I was involved in fire conflict several times: it happened also that my helicopter was hit.*

TURA01: Y*es, I have operational experiences. I took part in counter-insurgency operations as a company and a battalion commander. I was wounded twice in action. Most of these operations were small unit size operations in harsh conditions (i.e. mountainous, highly vegetated areas).*

PHIC17: *...the detachment was ambushed. I went back to Maitum where the command center is to wait for reinforcement. One soldier was wounded as the platoon was pinned down by rebel MILF forces.*

All this did not happen in a typical war environment but prevalently among the civilian population, where the aggressors are often intermingled and disguised.

BGC14: *There were bullets coming "from nowhere"...*

PHIB9: *Definitely there were women and children combatants.*

PHIC14: *In one engagement, I hesitated for a moment because the rebel was a female.*

Operations certainly and severely tried the preparation and character of soldiers and the abilities of commanders. The former often had to get on-the-ground experience before acquiring a true command capability and did not escape from the general rule for these types of operations, namely that the novice has to learn from the more experienced.

SAB01:   *OPERATIONAL EXPERIENCES: I learnt from on the ground operations, everything happens quickly. Instinct and training and a bit of luck takes over. The lack of training that the rebel groups have gives you an advantage but the anger, willingness, aggression, unprofessionalism of the rebel groups gave us problems.*

But also those who were not directly involved in fire fights constantly lived under this threat, especially in theatres like Iraq and Afghanistan. Overall it seems clear that the asymmetric warfare environment often leads to risk perceptions typical of war.

The richness of experience gained in the operations in which the officers of the sample participated thus constituted an entirely respectable training process, with a view to that constabulary soldier whose birth Morris Janowitz [2] predicted fifty years ago.

3. DISCUSSION

The data analyzed in the preceding sections show both the command problems encountered by officers in asymmetric warfare contexts and the possible (or desirable) solutions.

The national environment presents commanders first of all with a significant challenge at logistical level, as well as one involving the morale of the soldiers, relegated to living long periods in much harsher conditions than those normally experienced in the homeland. The importance of motivating one's subordinates and creating occasions and structures suitable for alleviating the hardships of life on operations constitute the main problems of officers with command responsibilities.

On the one hand, the unreliability of the human environment contributes to creating feelings of risk in the soldier, while on the other it lends itself, due to the poor living conditions and the well-being gap compared to the contingent's home country, to strengthening the humanitarian motivations, especially if they are adequately valued by the commander.

Closely tied to the specific theatre of operations is the ease or difficulty of establishing and maintaining good relations with the local armed forces for whom the commanders of the units on mission often perform a mentoring function. The shortcomings that often characterize the soldiers of these forces in terms

of both equipment and motivation constitute a major challenge to the command and coordination skills of the commander on mission in the territory. Contexts where these problems are on display require a long and extensive educational effort regarding the local forces, a job that often exceeds the duration granted for the mission itself. A part of this picture is also the necessity of instructing one's own personnel to be on guard against displaying attitudes of superiority or disdain for the culture of the local armed forces.

As already evidenced by Abrahamsson [1] one of the peculiar characteristics of asymmetric conflict is that the strong side forces are forced to operate and even to fight in the midst of local populations, to act on their behalf even in the presence at times of latent hostilities, under a constant threat from insurgents dressed in street clothes and who blend in and become indistinguishable from the civilians. Every commanding officer, at any level of command, thus finds himself having contacts and relations with both local populations and local authorities.

These relations are not always easy, and one premise is that the officer must understand the mood of the population and the attitude of often corrupt authorities, sometimes forced to steer a middle course between insurgents and intervention forces. The result is the necessity of being able to develop a humanitarian aid programme that is sensitive to local moods and needs and suitable for winning hearts and minds, as stated by the theoreticians of asymmetric warfare [3].

The research data, illustrated in the section devoted to their analysis, show the changeability of the attitudes of populations in accordance with the type of action carried out by the units on mission; the difficulty of overcoming cultural prejudices against the intervention forces; the necessity of not appearing as occupation forces; the embarrassment of also representing often corrupt and inefficient local governments. It is in these relations that the asymmetric warfare environment presents all its specificity and is often an absolute novelty for the deployed forces.

In the field of humanitarian aid, then, as well as in reconstruction activities, commanding officers often find themselves cooperating with civilian organizations whose work should extend and supplement that of the military units. This is a collaboration that is not always easy, especially in the case of NGOs, which leads some interviewees to make statements like: We avoided the NGOs like the plague. The difficulty often arises from the lack of a higher coordination activity able to harmonize two deeply different human environments. The NGOs in fact appear to be comprised of young people characterized by a spontaneous, voluntaristic, at times anarchic mentality who often lack concrete operational experiences and frequently put themselves in situations of personal risk that must then be resolved by soldiers, the very forces from whom the NGOs strongly want to distinguish themselves.

It is a difficult collaboration to implement, therefore, one in which the commander must know how to bring both diplomacy and authoritativeness to bear.

As we saw in the preceding section, the problem of operating in collaboration with contingents from many different countries, characteristic of modern asymmetric warfare operations, is not only a matter of interoperability. A significant human relations problem between soldiers who come from very different cultural contexts is also present. For example, American and Turkish soldiers, members of the same alliance, can easily share military technologies and deployment methods, while their respective cultural backgrounds and their behaviours remain profoundly different.

And it is precisely from the standpoint of human relations that feelings of relative deprivation are created [14], in an amalgam of groups of soldiers belonging to different countries (Latin versus Northern European countries, for example) and/or religious faiths. Collaboration with the commanders of other contingents to prevent or smooth over any contrasts or misunderstandings is therefore a constant concern for the officer with command responsibilities.

The rules of engagement and the resulting operational activity require a command activity that is above all educational, wherever it appears difficult to get soldiers exposed to risk situations to contain and calibrate their response. As we have seen from the data, widespread contestation of the ROEs appears due to fears or feelings that the soldier's safety is not given sufficient consideration.

In operations undertaken in asymmetric warfare environments a military unit can also find itself involved in a fire fight. Now, if one considers that the majority of the soldiers of the countries examined here had never before undergone the so-called "baptism of fire", one immediately grasps how challenging and crucial the commander's task of generating proper conduct of his subordinates in such situations is.

And it is chiefly the result of effective prior training that enables the commander to achieve such conduct in the face of an armed attack. The data obtained from the officers' opinions regarding the training received prior to deployment on mission thus appear particularly meaningful. On this point two prevalent opinions are found: the first is that the general military training received appeared adequate for the asymmetric conflict situations encountered; the second is that the training for the specific mission (knowledge of the terrain, the culture, the social organization, the history) was often superficial or lacking.

4. CONCLUSIONS

Wishing to glean from the research data a set of lessons learned, albeit one that is by no means exhaustive, we can say that an officer and commander in an asymmetric warfare environment should:

a.   know how to create a logistical organization capable of functioning in particularly difficult and isolated environments;

b.   be fully aware of the importance of relating properly with all the other actors present on the territory (local armed forces, civilian populations, local authorities, other coalition forces, international organizations, both humanitarian and not);

c. acquire the ability to operate (and, if necessary, fight) in the midst of civilian populations, respecting them as much as possible;

d. be able to achieve an "interoperability of human relations" between one's own soldiers and those of the other contingents of the coalition;

e. attend to the motivations of his men, in particular those most functional to the mission;

f. possess skills in the preparation, command and control of his men in the emergency situations typical of asymmetric conflict;

g. be aware that also commanders often have to get on-the-ground experience before acquiring a true command capability;

h. be able to interpret and explain ROEs to subordinates, as well as update them to the specific mission;

i. be able to cope with stress situations of one's personnel, resulting both from mission events and from prolonged separation from the family, as well as reintegration into the social life of the home country upon returning from the mission.

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ENDNOTES

(1) An asymmetric conflict typically involves two actors, one "strong" and one "weak". In this kind of conflict, strong actors typically have a lower interest in winning asymmetric conflicts because their survival is not immediately at stake (see Caforio, 2008). According to Richard H. Shultz and Andrea J. Dew (Shultz & Dew, 2006), since the end of the Cold War conventional militaries and their political leaders have confronted a new, brutal type of warfare in which non-state armed groups use asymmetrical tactics to successfully fight larger, technologically superior forces.

(2) Military professionals thus find themselves faced today with a situation that requires not a simple update, but a substantial change in their preparation and professional performances. Indeed, "the change from an invasion defence towards a defence based on flexible response puts the military profession under the strain of changing large parts of its expert base, as well as ethical norms and corporate traditions" (Abrahamsson & Weibull, 2008: 13). What capabilities, then, are needed to deal with these demands? All the authors (see Moskos, 1976; Blomgren, 2008; Gentile, 2008; Nagl, 2009) agree in believing that the traditional military preparation for conventional conflicts constitutes the indispensable base also for the vast range of operations in asymmetric warfare. This preparation is no longer sufficient, however, and other skills appear necessary for the military professional faced with a new scenario (see also Caforio, 2012). For the ethical aspect see van Baarda, Th. A. and D.E.M. Verweij, 2009.

(3) So plentiful that it is not possible to give an accounting here. In a general sense and by way of example we can cite: Abrahamsson & Weibull, 2008; Caforio, 2008 and 2012; Fitzpatrick, 2009; Hoffman, 2007; Kaldor, 1999 and 2003; Nagl 2009.

(4) The research was carried out in the period July 2010 – February 2011 on a sample that included 237 officers (158 army, 30 navy, 45 air force, 4 other forces), questioned by means of in-depth semi-structured interviews by a group of researchers from the nine participating countries (Bulgaria, Denmark, Italy, Philippines, Slovenia, South Africa, South Korea, Spain and Turkey). The choice of the participating countries was made by excluding the strongest powers and the countries who are the largest contributors, which seem have been studied extensively before: we tried to find out more about the experiences of soldiers from middle-sized powers and small countries, not so dominant in the international arena. For more detail on the research as a whole, see Caforio 2013b, forthcoming.

(5) In the text that follows, the various testimonies are reported using the code employed in the research itself. In particular, the first letters indicate the home country (for example, IT for Italy, PHI for the Philippines, etc.), the next letter indicates the armed force the interviewee belonged to (C for army, B for navy, A for air force), and the number that follows is the serial number that identifies the individual interview.

(6) The explanation is that small and medium-sized military powers found themselves having to concentrate their best resources in the field and little remained back in the homeland for training.

MANAGING DEFENSE RESOURCES.
IS THERE A 'LANGUAGE OF LEADERSHIP'?

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Focusing on President Barack Obama's statement on defense strategy in response to $450 billion cuts required by the Budget Control Act of 2011, the present article examines why a leader's ability to craft and articulate a message that is highly motivational is so critical nowadays and epitomizes on the new language skills of leadership. Moreover, it looks at a concrete example of how a modern leader can bring about understanding, acceptance, commitment and confidence in his national missions through his/her choice of words, values, and beliefs. It also explores the importance of rhetorical techniques such as quotes, metaphors, rhythm, etc. in causing excitement and enthusiasm about the leader's message to the nation.

Key words: *human resources management, defence resources management, language of leadership, management tools*

1. INTRODUCTION

Among the most valuable management assets, language holds a place apart. At any command level, it can be stated beyond any doubt that the language of leadership has always been a powerful management tool.

The era of managing by dictate is ending and is being replaced by an era of managing by inspiration. The ability to craft and articulate a message that is highly motivational has been included among the new leadership skills demanded of this era and has taken prevalence in recent years.

Our thesis is that the moments of crisis – such as making the public statement on the $450 billion cuts required by the Budget Control Act of 2011 – can be turned into an opportunity for the leader to construct an appealing and motivating force for change and transformation in his organization.

President Barack Obama's statement [1] has been chosen as an example for the analysis which attempts to identify the elements defining a successful leader languagewise. For all those interested, the statement can be accessed using the following link: http://www.whitehouse.gov/the-press-office/2012/01/05/remarks-president-defense-strategic-review.

In our approach to the analysis we started from the assumption that, according to the description provided by Goleman, Boyatzis and McKee (2004) [2], President Obama follows primarily the 'visionary leader' style, insofar as he 'moves people towards a shared vision, telling them where to go but not how to get there - thus motivating them to struggle forwards'[3]. According to this description, the leader openly shares information, hence giving knowledge power to the listeners. This style is recommended by the quoted authors as best when a new direction is needed.

The US leader's profile would be incomplete unless another skill is added to his oratory art, i.e., the 'commanding leader' style [4]: this is about the leader who soothes fears and gives clear directions by his or her powerful stance, commanding and expecting full compliance (agreement is not needed). He needs emotional self-control for success and can seem cold and distant (the latter is not applicable to Obama's style, though). This approach is best in any organization – be it the nation-scale one – in times of crisis when you need unquestioned rapid action and with problem employees who do not respond to other methods.

Having established the leader's style, let us proceed to the following point of the analysis, by looking into the so-called '5 secrets of the language of leadership' [5] to check if and how they have been used by Obama, highlighting them in the actual presidential statement.

2. THE '5 SECRETS OF THE LANGUAGE OF LEADERSHIP'

Secret 1: **Begin strongly.** Impress your audience with an opening zinger [6].

"Good morning, everybody. The United States of America is the greatest force for freedom and security that the world has ever known. And in no small measure, that's because we've built the best-trained, best-led, best-equipped military in history – and as Commander-in-Chief, I'm going to keep it that way".

Secret 2: **Focus on one theme.** A speech is like a symphony. It can have three movements, but it must have one dominant melody.

"Indeed, all of us on this stage – every single one of us – have a profound responsibility to every soldier, sailor, airman, Marine and Coast Guardsman who puts their life on the line for America. We owe them a strategy with well-defined goals; to only send them into harm's way when it's absolutely necessary; to give them the equipment and the support that they need to get the job done; and to care for them and their families when they come home. That is our solemn obligation…"

"… So, yes, our military will be leaner, but the world must know the United States is going to maintain our military superiority with armed forces that are agile, flexible and ready for the full range of contingencies and threats…"

"… Over the next 10 years, the growth in the defense budget will slow, but the fact of the matter is this: It will still grow, because we have global responsibilities that demand our leadership. In fact, the defense budget will still be larger than it was toward the end of the Bush administration. And I firmly believe, and I think the American people understand, that we can keep our military strong and our nation secure with a defense budget that continues to be larger than roughly the next 10 countries combined".

Secret 3: **Use simple language.** Toss out the beat-around-the-bush jargon of bureaucrats and pick up your pace with personal, colorful language, tailored in our case to the nation-scale audience.

"In short, we've succeeded in defending our nation, taking the fight to our enemies, reducing the number of Americans in harm's way, and we've restored America's global leadership. That makes us safer and it makes us stronger. And that's an achievement that every American – especially those Americans who are proud to wear the uniform of the United States Armed Forces – should take great pride in".

Secret 4: **Draw a picture in the listener's mind.** Transform dry abstractions like "private enterprise" into a powerful picture like *"the sturdy horse pulling along the cart of democracy",* as Churchill did.

"...our troops... have served as a force for universal rights and human dignity".

"Even as our troops continue to fight in Afghanistan, the tide of war is receding".

Secret 5: **End with an emotion.** Express feeling from the heart when you cap your speech.

"Our men and women in uniform give their very best to America every single day, and in return they deserve the very best from America. And I thank all of you for the commitment to the goal that we all share: keeping America strong and secure in the 21st century, and keeping our Armed Forces the very best in the world".

In conclusion, it can be stated that President Obama made best use of all the 5 secrets of the language of leadership in his statement.

The next step of our analysis is focused on the very language of leadership used in this example.

3. THE 'LANGUAGE OF LEADERSHIP'

According to Conger (1991), the so-called 'language of leadership' can be broken into two distinct skill categories which translate into processes [7], as follows:

a. **Framing** – This essentially illustrates **the leader's message**; it is the process of defining the purpose of the organization in a meaningful way.

b. **Rhetorical crafting – This is defined as the leader's ability to use symbolic language to give emotional power to his/her message.** *"While the message provides a sense of direction, rhetoric heightens its motivational appeal and determines whether it will be sufficiently memorable to influence the day-to-day decision-making of an organization"*[8].

The main bricks to build on in order to create a meaningful frame for the mission of any organization are *the values* and *beliefs* of the respective organization (in our case the American nation) – especially those that reinforce commitment/acceptance and provide guidance for the future actions (i.e., the implementation of the $450 billion cuts). Their wise choice by the leader to be used in his speech is an enabler of the leader's vision acceptance and accomplishment. *"By selecting and amplifying specific values and beliefs, the leader further frames interpretations of events, problems, or issues as they relate to the vision"*[9].

Effective leadership consists in several core skills, among which we can identify the ability to use the values which can provide the participants in a

certain collective action with a sense of purpose. This ability of choice proven by a skillful leader is best illustrated when invoking those particular values which impact the audience strongly and thereby justify the leader's decision by the support the organization/public opinion later provides.

Several techniques [10] can be used in order to frame the actions and the missions, as follows:

Value amplification is the process of identifying and elevating certain values as basic to the overall mission. In our particular case, the values referred to and amplified by Obama in order to reach his goals are: respect for the soldiers, the war veterans and their families; pursuit of universal rights; human dignity; patriotism.

Using quotes is a value amplification tool by making reference to famous words uttered by famous American leaders:

"President Eisenhower once said–that 'each proposal must be weighed in the light of a broader consideration: the need to maintain balance in and among national programs'…"

This quote is immediately elaborated on in Obama's words and the idea of balance is reiterated: *"After a decade of war, and as we rebuild the source of our strength – at home and abroad – it's time to restore that balance".*

Belief Amplification is about beliefs, i.e., ideas about which factors support or impede the actions taken to achieve those desired values. There are four basic belief categories that are important to organizational leaders in framing their missions and the activities related to them:

1. The Mission's Importance

The beliefs about the importance or seriousness of the mission are the primary focus for Obama's statement. They are repeatedly pointed out to increase the effect and create impact on the nation. His persuasive skills reach a climax when describing the current situation against the past mistakes:

"That's why I called for this comprehensive defense review – to clarify our strategic interests in a fast-changing world, and to guide our defense priorities and spending over the coming decade – because the size and the structure of our military and defense budgets have to be driven by a strategy, not the other way around. Moreover, we have to remember the lessons of history. We can't afford to repeat the mistakes that have been made in the past – after World War II, after Vietnam – when our military was left ill prepared for the future. As Commander-in-Chief, I will not let that happen again. Not on my watch".

Then he enumerates some of the major defense-related achievements made 'on his watch' (the same paragraph has been previously used as an example of colorful, expressive language):

"In short, we've succeeded in defending our nation, taking the fight to our enemies, reducing the number of Americans in harm's way, and we've restored America's global leadership. That makes us safer and it makes us stronger. And that's an achievement that every American – especially those Americans who are proud to wear the uniform of the United States Armed Forces – should take great pride in".

After having sensitized the audience in this way, he then frames his future vision as the only viable and most attractive pathway:

"We need a start, we need a smart, strategic set of priorities. The new guidance that the Defense Department is releasing today does just that. I want to thank Secretary Panetta and General Dempsey for their extraordinary leadership during this process. I want to thank the service secretaries and chiefs, the combatant commanders and so many defense leaders – military and civilian, active, Guard and reserve – for their contributions. Many of us met repeatedly – asking tough questions, challenging our own assumptions and making hard choices. And we've come together today around an approach that will keep our nation safe and our military the finest that the world have ever known".

2. The Need for, or Root Causes of the Mission

The second dimension of beliefs relates to the root of Obama's mission. To achieve strong intrinsic appeal, the President's basic purpose must address the previously mentioned, deeply rooted values of the American nation, i.e., respect for the soldiers and their families; pursuit of universal rights; human dignity; patriotism.

"Now we're turning the page on a decade of war. Three years ago, we had some 180,000 troops in Iraq and Afghanistan. Today, we've cut that number in half. And as the transition in Afghanistan continues, more of our troops will continue to come home. More broadly, around the globe we've strengthened alliances, forged new partnerships, and served as a force for universal rights and human dignity".

3. Stereotypes about Antagonists of the Mission are important for generating commitment and cohesion, insofar as they provide models of what the present state is not; thus stereotypes help define the future vision by contrast:

"At the same time, we have to renew our economic strength here at home, which is the foundation of our strength around the world. And that includes putting our fiscal house in order. To that end, the Budget Control Act passed by Congress last year – with the support of Republicans and Democrats alike – mandates reductions in federal spending, including defense spending. I've insisted that we do that responsibly. The security of our nation and the lives of our men and women in uniform depend on it".

"... Some will no doubt say that the spending reductions are too big; others will say that they're too small".

4. Efficacy of the Mission

The beliefs about the efficacy of the mission are critically important. In essence, they build confidence in the entire mission. A leader will draw analogies, for instance, to earlier proven successes to confirm the likelihood of the current mission succeeding.

"And over the past three years, that's what we've done. We've continued to make historic investments in our military — our troops and their capabilities, our military families and our veterans. And thanks to their extraordinary service, we've ended our war in Iraq. We've decimated al

Qaeda's leadership. We've delivered justice to Osama bin Laden, and we've put that terrorist network on the path to defeat. We've made important progress in Afghanistan, and we've begun to transition so Afghans can assume more responsibility for their own security. We joined allies and partners to protect the Libyan people as they ended the regime of Muammar Qaddafi''.

To conclude this part, we can stress out once again that framing is the leader's interpretation of his or her organization's purpose with accompanying values and beliefs; moreover, it is an opportunity for the leader to construct an appealing and motivating force for change and transformation in his/her organization.

As stated earlier [7], the "language of leadership" can be broken into two distinct skill categories which translate into processes. Considering that the style of verbal communication is a critical distinguishing factor in whether the message will be remembered and endorsed, it is of utmost importance that **the art of rhetoric** be an intrinsic part of the language of leadership, insofar as the process by which the statement is made (i.e., worded and phrased) is just as significant.

It is again Conger (1991) [11] who calls such skills 'rhetorical techniques of inspirational leaders', supporting his idea by the greater impact leaders' words have when used as symbols:

"Apart from an appeal to emotions and ideals, inspiring leaders use a number of rhetorical techniques such as metaphors and analogy or different language styles

or rhythmic devices to ensure that the symbolic content of their message has a profound impact''. [12]

Examples of such techniques are the use of metaphors, analogies, organizational stories, tailoring the language to the audience, alliteration, repetition, etc.

In the statement under analysis, metaphors and other figures of speech are used in order to provide vividness, clarification and to express certain emotions while interpreting reality. Notice for instance the following:

• 'the USA is the greatest force for freedom and security that the world has ever known' (hyperbole);

• 'the source of our strength – at home and abroad' (metaphor about the US military);

• 'the best-trained, best-led, best-equipped military in history' (triple epithet expressed by compound superlative adjectives and emphasized by the repetition of the intensifier 'best');

• 'profound responsibility', 'solemn obligation', 'historic investments', 'extraordinary service', 'fast-changing world' (epithets), etc.

The use of **metaphors** and of other **figures of speech** in a political statement is therefore ranked as very important in the dedicated literature [13]: it is highly rated as – judged against the effect it has on the audience – it consecutively causes puzzlement, emotion, insight and eventually resolution. It also adds vividness, persuasive strength and effectiveness to the communication process.

"The listener is not a passive receiver of information but is triggered into a state of active

thinking as they puzzle over the meaning of the story and attempt to make sense of it usually in light of their own situation. This process is so engaging that it fosters listener attention and interest". [14]

Sound-related elements of rhetoric are also noticed in President Obama's statement, e.g. repetition, rhythm, balance and alliteration. It is said a certain rhythm can often spellbind an audience: the ancient incantations are just one famous example. In his speeches, another American president, Roosevelt, often employed alliteration (i.e. the repetition of initial consonant sounds in two or more neighboring words or syllables). One example of **alliteration** taken from Obama's statement reads as follows: *"We need a start – we need a smart, strategic set* of priorities". It can be noticed that the repetition of sibilant sounds (st-, sm-, st-, s-) heightens the effect of the message by suggesting a whisper–hiss aural sensation and thereby creates an attention-holding rhythm.

Another instance of using alliteration is the phrase *'to put life on the line'* in which the repetition of liquid sounds in the [ai] diphthong environment suggests the likely glide into death of innocent soldiers if measures are not taken by nation-wide emotional involvement and acceptance of the solutions proposed for the defense-related issues.

Other effects created by **repetition and rhythm** in Obama's speech:

"It will be easy to take issue with a *particular* change in a *particular* program" (suggesting the President's

capacity to tailor the measures to the issues and expectations of the Americans and to bring about the desired outcomes).

"That *makes us safer* and it *makes us stronger*" (speaking about the indestructible unity between the President and the nation, reinforced by repetition of Verb+Personal Pro **us** and comparative form of abstract Adjective).

"… the *best*-trained, *best*-led, *best*-equipped military in history… '(inducing the idea of excellence of the US military).

"… *our* military – *our* troops, … *our* military families and *our* veterans…" (the repetition of the 1st person plural Possessive Adjective is meant to show again empathy and total identification between the President and the nation). The same applies for "Our men and women in uniform give their very best **to** America every single day, and in return they deserve the very best **from** America".

Among the figures of speech that make up the leader's language in the statement under analysis it is noteworthy to highlight the different (and many) **ways of addressing the military:** every soldier, sailor, airman, Marine and Coast Guardsman; armed forces that are agile, flexible and ready; our men and women in uniform; those Americans who are proud to wear the uniform of the United States Armed Forces.

Examples of enumeration:

"... asking tough questions, challenging our own assumptions and making hard choices" (in which the structure Ving+Direct Object is repeated);

"... we've strengthened alliances, forged new partnerships, and served as a force for universal rights and human dignity" (in which the structure Transitive Verb+Direct Object is repeated).

"... intelligence, surveillance and reconnaissance, counterterrorism, countering weapons of mass destruction and the ability to operate in environments where adversaries try to deny us access (i.e., the capabilities that we need for the future)."

Another effective technique to stress out empathy and identification of the President with the people who elected him is the shift from the Personal Pronoun **THEY** (used in the first paragraph) to **WE** (used throughout the rest of the statement). This is a direct recall of the opening words of the famous Preamble to the Constitution of the United States, which say: *'We the People of the United States,* in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defense, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.' In addition, it falls under the value amplification process previously referred to in this article.

The rhetorical techniques enforced by repetition used by Obama in his statement are best complemented by **the President's Pledge**, expressed repeatedly and in different words:

"... as Commander-in-Chief, I'm going to keep it that way".

"We owe them [the military] a strategy with well-defined goals; to only send them into harm's way when it's absolutely necessary; to give them the equipment and the support that they need to get the job done; and to care for them and their families when they come home. That is our solemn obligation".

"We have to remember the lessons of history. We can't afford to repeat the mistakes that have been made in the past – after World War II, after Vietnam – when our military was left ill prepared for the future. As Commander in Chief, I will not let that happen again. Not on my watch".

"We'll keep working to give our veterans the care, the benefits and job opportunities that they deserve and that they have earned".

"And I firmly believe, and I think the American people understand, that we can keep our military strong and our nation secure with a defense budget that continues to be larger than roughly the next 10 countries combined".

Which are the reasons underlying this technique Obama uses with such ease? First, the role of repetition is to ensure recall. When it comes to an oral address, speech is more difficult to comprehend even for native speakers, in absence of some visual support. Once spoken, the speaker's words seem to fly away; it is only the listener's ability to remember them that ensures impact. "If the speaker makes numerous points, the listener is not likely to recall them all. The listener must be able to understand the speaker's ideas. The problem is that the listener has little time to pause for reflection". [15]

Second, repetition focuses the listener on the key ideas meant to hit the target audience. Last, but not least, **paralanguage** [16] is an additional important factor to keep in mind in effective communication. Through appropriate paralanguage, one can communicate an image of self-confidence and power. In other words, Obama's powerful style of speech brings about the audience's perception of him as a more assuming, more goal-directed, and straightforward leader of the nation.

4. CONCLUSIONS

The present research has attempted to bring to surface the power of the spoken word and its role in the new approach to the language of leadership.

The general conclusion is that a modern leader can bring about understanding, acceptance, commitment and confidence in his national missions through his/ her choice of words, values, and beliefs. Another conclusion brings to the fore the importance of rhetorical techniques such as quotes, metaphors, rhythm, etc. in causing excitement and enthusiasm about the leader's message to the nation: recent research [17] supports these ideas. It has therefore become obvious that the language of leadership plays a vital role in the acceptance and accomplishment of the leader's vision and in the expression of his mission.

In addition, the leader's persuasiveness is given by the latter's craftsmanship to shape reality by means of words conveying values, beliefs and assumptions to ensure commitment and confidence in the mission.

Among the rhetorical techniques recommended in the dedicated literature, those based on metaphors, quotes, repetition and rhythm, and on framing have been exemplified in Barack Obama's statement. They were diagnosed as valuable enablers to conveying ideas in the most powerful ways.

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[16] Paralanguage refers to the non-verbal elements of communication used to modify meaning and convey emotion, such as your tone, pitch or manner of speaking. An example of paralanguage is the pitch of your voice (author's note).

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NO APPARENT FEAR OF DEATH.
A TENTATIVE INVESTIGATION INTO THE 'NAFOD' HYPOTHESIS

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'NAFOD' is a theoretical, psychological disorder seen as a genetic predisposition dominant in individuals undertaking professions categorized as being risky with calculation. The 'Nafodic' personality is reckless beyond the hard-wired risk taking profile of an adult male, is knowledgeable about death, is aware of its causes, takes risks not classified as calculated, is not a hero-type personality, is stubborn, and shares many traits of, but not nearly enough of, the disorders listed above.

Key words: *NAFOD, central intelligence, defense intelligence, military science, behavioral science, psychology, social psychology, defense resource management.*

1. INTRODUCTION

For some time, this author and colleagues at Capital Coaching and Research Group [1], a clinical coaching and theoretical psychology practice outside of Washington, DC have been tracking an acronym, 'NAFOD' from its verbal origin - a now retired One Star U.S Army General - to its current state which, as it appears is an acronym with no official military classification, designation, psychologically diagnosable criteria, or true root within the Psychological Sciences.

Available members of every branch of the United States Armed Forces and Coast Guard deny ever hearing of the term. This author has spoken with Public Affairs Officers (PAOs) at Navy Medical Center - San Diego, NAVAIR in Virginia, with Navy Personnel Command in Maryland and even The Bureau of Naval Medicine at The Pentagon. However, the acronym, while representative of what this author theorizes as a legitimate Psychological Disorder, appears nowhere in particular.

If spoken of only once by a singular military Flag Officer, the acronym itself though interesting, should play no role in the practice and research of theoretical psychology except; there is a small, definable, yet unverifiable evolution of usage.

Open Source and Closed Source information gathering (e.g. Google, Bing, PubMed, and LexisNexis) offer only a small number of citations of either the acronym 'NAFOD' itself or its proposed definition 'No Apparent Fear of Death'. Two citations from Google are simply the recognition of the acronym itself, one citation is a presumably misused 'urban' definition, one citation is an unverifiable quip about a former Naval Aviator who lost his Flight Wings due to a 'NAFOD'

stamp and the last, a smaller but verifiable quip from another former Naval Aviator, Chris Cree (Former Lt. Chris. Cree, personal communication, November 17, 2012).

The former Lt. Chris Cree was quoted during the author's research as saying "he [former Marine flight school roommate] was one of those entertaining types who tended to do stupid stuff. He'd be first in line (or maybe the only one in line) to jump off the roof into the swimming pool at a party, stuff like that. So it made perfect sense that the Marine Corps was sending him home due to 'NAFOD'. I'd never heard the term before he said it to me. But it obviously stuck with me once he did".

2. 'NAFOD' AS A THEORETICAL CONCEPT AND HYPOTHESIS

As the author of this brief hypothesis I intend to be clear that, to essentially create a new and diagnosable psychological disorder, hundreds of steps need to be taken and that as of publishing, the plan is not to pursue that objective. This author plans instead to further understand the concept behind 'NAFOD' and the theoretical diagnosable criteria that may aid governments, militaries, law enforcement agencies or other risk pre-disposed employers in identifying either negative or positive behavioral characteristics (this is relative to an organization's mission statement) in an individual prior to employment or contracting.

2.1. 'NAFOD' as a theoretical concept

This papers author has come to the conclusion that 'NAFOD' or, an individual who could be categorized as such ('Nafodic') must be made into a personality profile or be categorized as having a disorder other than what the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR) already suggests. To be 'Nafodic' a theoretical human case study must exhibit behavior short of being Suicidal or short of suffering from Sub-Clinical Suicidality [2], clinically unable to be diagnosed as suffering from Schizotypal or Anti-Social Personality Disorder, Borderline Personality Disorder, Narcissistic Personality Disorder or any other pre-classified stimulus seeking Axis II disorders [3]. Moreover; this person must be of at least above average intelligence and is clearly able to make logical and morally/ethically appropriate decisions - he or she just chooses not to. Also of note, while the theoretical human case study exhibits stimulus seeking behavior which, for the sake of full disclosure is in fact similar to other diagnoses within the DSM; the particular sub-type of stimuli seeking behavior alluded to in this paper precludes 'NAFOD' from in fact being classified alongside another more common disorders due to its unique diagnosis criterion or lack thereof.

The hypothesized 'NAFOD Disorder' candidate, or 'Nafodic' individual, is reckless beyond the hard-wired risk taking profile of an adult male, is knowledgeable about death, is aware of its causes, takes risks not classified as calculated, is not a hero-type personality, is stubborn, and shares many traits of, but not nearly enough of, the disorders listed above. A minor but important

acknowledgement should be pointed out: the theory also suggests this theoretical diagnosis is not learned behavior but is instead a genetic pre-disposition.

2.2. 'NAFOD' as a hypothesis

The hypothesis is: this individual is much like the late Bud Holland, USAF, who lost his life attempting to barrel-role a B-52 Bomber (Major Justin Silverman J.D. USAF, personal communication, November 17, 2012) which was physically and scientifically impossible to accomplish and, Captain Holland was aware of this limitation. It appears Captain Holland had nothing to prove as an aviator, no Id v Ego complexes, lived life short of a clinically manic state, understood the consequences of failing, and with all of this in mind, made his attempt at Fairchild AFB in Washington State and lost his life.

2.3. Theoretical Biological/ Personality Profile

The theoretical biological/ personality profile is as follows:
- Male;
- Has current or former relationship with military or other risk pre-disposed profession;
- Understands consequences of his actions yet chooses to take the risk;
- Has reckless ambivalence to death;
- No suicidal or sub-clinical suicidal ideation;
- Does not represent the "hero class", is not simply brave, is not a religious zealot, values life yet takes uncalculated risks;
- Is not clinically manic nor is he suffering from an 'other' or undiagnosed single manic episode;
- Exhibits recklessness without cause on an ongoing basis and likely has since childhood ($\leq$ 13 y/o);
- Has been divorced or has failed to yield any singular, long-term, stable relationship.

2.4. Theoretical Criterion for 'NAFOD' Diagnosis

- Episodes are not initiated or defined by environmental factors;
- NAFOD candidate must show no signs of mania, psychosis, compulsivity regularly;
- Episodes are uncalculated stimuli seeking;
- Must not have been previously diagnosed as Major Recurrent Depressive or Dysthymic;
- Must not have recurrent and/or intrusive negative recollections of 'NAFOD' episodes;
- Has lost permission to drive, fly, etc., do to reckless or inappropriate behavior (see Figure. 1).

The data in **Figure 1** was compiled using an interview format. Participants were contacted by the author from open source data and US Freedom of Information Act (FOIA) Requests to the Federal Aviation Administration [4] and Virginia Department of Motor Vehicles [5] District Court Alexandria, VA [6] as it pertains to current or former licensed pilots as per US Federal Aviation Administration (FAA) requirements and current or former licensed drivers.

Additional data was compiled using an interview format. However, participants from former United States Navy and United States Marine Corps Aviators were contacted via word of mouth notification.

Name	Profession or Former Profession?	Have You Ever Lost Permission to Fly?	Have You Ever Lost Permission to Drive?	Are You Now or Have You Ever Been Married?	Divorced?	Have You Ever Seen a Mental Health Professional?	Have You Ever Been Diagnosed?	Have You Purchased Sex Once Or More than Once In The Past?	As a Child, Do You Recall Being "the life of the party" Or Being The First To Experiment w/ Danger?
Jason O.	Fighter Pilot	Y	N	Y	Y	N	N	Y	Y
Roman S.	Law Enforcement	Y	N	Y	Y	N	N	Y	Y
James R.	Fighter Pilot	Y	N	Y	Y	N	N	Y	Y
Chris P.	Fighter Pilot	Y	N	Y	Y	N	N	Y	Y
Mark L.M.	Fighter Pilot	Y	N	Y	Y	N	N	Y	Y
Ryan S.	Military Helicopter	Y	N	Y	Y	N	N	Y	Y
Jason T.	Fighter Pilot	Y	N	Y	N	N	N	N	Y
Abdul R.A.	Fighter Pilot	N	Y	Y	N	N	N	N	Y
Mackenzie T.	Medical Doctor	N	Y	Y	Y	N	N	Y	Y
Donnell P.	OGA*	Y	Y	N	N	Y	N	Y	Y
Robert L.	Fighter Pilot	Y	N	Y	Y	N	N	Y	Y
Miles B.	Fighter Pilot	Y	N	Y	Y	Y	N	Y	Y
Jonathan H.	Teacher	Y	Y	Y	N	Y	N	Y	Y
Isaac U.	Lawyer	Y	N	Y	Y	Y	Y	Y	Y
Mason W.	Professional Athlete	Y	Y	N	N	N	Y	Y	Y
Marcel C.	Military Helicopter	Y	N	N	N	N	N	N	Y
Asa O.	Military Helicopter	N	Y	Y	Y	N	N	N	Y
Stephen F.	Military Helicopter	N	Y	Y	N	N	N	Y	Y
Franklin F.	Law Enforcement	N	N	N	N	Y	N	Y	Y
Scott J.	Ret. USN Deck Sup.	Y	Y	N	N	Y	Y	Y	Y
Shawn L.	Marine Corps Officer	Y	N	N	N	Y	Y	Y	Y
Brian C.	OGA*	Y	N	N	N	Y	Y	Y	Y
Floyd H.	Fighter Pilot	N	Y	N	N	N	N	Y	Y
Reid J.	Law Enforcement	Y	N	Y	N	N	N	Y	Y
Quinton A.	Lawyer	Y	Y	N	N	N	Y	Y	Y
Donald D.	Medical Doctor	Y	Y	N	N	N	N	Y	Y
Joshua P.	OGA*	N	Y	N	N	Y	N	Y	Y
Ryan F.	Construction	Y	N	Y	Y	N	N	Y	Y
James H.	Military Helicopter	N	Y	Y	Y	Y	N	N	Y
Clifford L.	Fighter Pilot	Y	N	Y	Y	N	N	N	Y
Randal D.	Fighter Pilot	Y	N	Y	Y	Y	N	Y	Y
Theodore D.	Fighter Pilot	N	Y	N	N	Y	N	Y	Y

Figure. 1 Interview data

This poll and the data within it are without any implied relationship to the US Navy, United States Marine Corps and the aforementioned branches of the military were notified that such a poll was taking place.

Moreover, mention must be made that this is not a scientific poll.

3. 'NAFOD' AND OTHER DIAGNOSES: A DISCUSSION

Because 'NAFOD' is only a hypothesis, there are still a great number of alternative diagnoses that share diagnostic criteria with the theoretical criteria accompanying No Apparent Fear of Death. While diagnoses with shared criteria are plentiful, only a handful can truly be explored as an argument against a new diagnosis and in line with a more historic and scientifically proven disorder. Among the handful are Cyclothemia, Schizoaffective Disorder, Anti-Social Personality Disorder and Sub-Clinical Suicidal Ideation.

The argument against a diagnosis of Cyclothemia is clear, according the Diagnostic and Statistical Manual of Mental Disorder, Cyclothemia presents in a patient with chronic, parabolic mood fluctuations over the course of at least two years [7]. In the context as is presented here, that is, in the context of a Soldier, Marine, Airman, etc., such behavior would be nearly impossible for any third party to ignore and, with appropriate checks and balances in place, the Cyclothymic patient would be removed from danger immediately and stop-gaps would be put in place.

Just as is found with Cyclothemia, Schizoaffective Disorder presents with symptoms of mild to severe psychosis and episodes of mania but for a period of at least two weeks.

With the understanding that both disorders [Cyclothemia and Schizoaffective Disorder] present

with common 'NAFOD' traits of recklessness and a general ambiguity and ambivalence to risk, Schizoaffective Disorder would also be an extremely difficult disorder to hide, if even for only the two week [minimum] period suggested in the diagnostic criterion unless the patient began showing symptoms while on personal leave which, again, would still suggest that a responsible third party would recognize a dangerous pattern of behavior and take appropriate action.

'NAFOD' it seems, is best explained not by characteristics it shares with other disorders but in fact, the characteristics it does not. There is a particular uniqueness to the diagnostic criterion as a group defined most obviously by the word "not" or "no". To be "Nafodic", or someone who presents with 'NAFOD' symptoms and all criterion for diagnosis does not represent the "hero class", is not simply brave, is not a religious zealot, must not have recurrent negative recollections of past uncalculated risk taking behavior, and must not be diagnosed Depressed and/or Dysthymic.

4. CONCLUSIONS

To suggest that 'NAFOD' is, with an unparalleled amount of surety a ground breaking, novel diagnosis worth exploring for clinical use is an overstatement of great proportions but, to suggest that there is enough empirical evidence to expound on the theory for practical usage is not.

While the hypothesis is in its earliest stages, the basis beyond the hypothesis itself, the character traits of the theoretical subject of diagnosis

and the participants in the Figure 1 poll above can be utilized almost immediately to serve any number of purposes throughout the Public Sector and more notably, Military and Intelligence infrastructures.

While the initial objective was to separate any number of unique, albeit theoretical standards or criterion for diagnosis of the 'Nafodic' individual to use as a screening mechanism, more to the point, as negative characteristics to screen out of potential employment scenarios, the author has been struck by the potential use of the 'Nafodic' candidate should the candidate's symptoms be controlled. Based entirely on the idea that said symptoms are in fact not learned behavior but are present at the time of gestation the question remains, can we in turn utilize the previously thought dangerous behaviors for good? Can we control the symptoms of an otherwise dangerous disorder for use elsewhere, say, the Clandestine Services or Special Operations?

As the idea develops, it should be clear that the author is most certainly not referencing the fictional "Manchurian Candidate" concept or alluding to such fiction as the "Bourne" series of books and movies by Robert Ludlum but instead is making the suggestion that just as we can control, or at least moderate other types of Axis I behavioral disorders and psychosomatic personas through intense therapy and medication management, why could we not do the same with 'NAFOD', but for mildly more commercial reason.

To control an individual's behavior without their consent would be groundbreaking but also morally and ethically absurd but, to control

one's behavior with the participants knowledge and participation, to have a patient/employee recognize (alongside the practitioner/employer) that these 'Nafodic' symptoms exist and can be controlled, used for the greater good, used to protect our borders, to fight the War on Terror, to be deployed as needed to successfully operate in combat zones or less kinetic environments, would be among the greatest achievements in the Behavioral Sciences to date.

Learned Behavior can be stopped, can be controlled, but also has a considerably looser grip on the mind/body control spectrum.

Should agencies such as US Central Intelligence Agency and its military option the Special Activities Division (CIA/SAD), Defense Intelligence Agency (DIA), US Special Operations Command (SOCOM), or the Tier One option Joint Special Operations Command (JSOC) have the ability to profile, recruit, train, and offer medically necessary behavior control to an operative with the knowledge and skills to operate effectively without visible fear or stress and without reservation, perhaps our human capital management efforts from within the Clandestine Services will look differently in the years to come.

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ENDNOTES

[1] Special Thanks To:
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[2]*The term 'OGA' denotes "Other Governmental Agency", implying Intelligence, Federal Law Enforcement, Etc.

THE AMBITIONS OF THE SLOVAK ARMED FORCES.
THEORY AND REALITY

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The contribution made by this article presents some scopes, approaches and results of the transformation of the Slovak Armed Forces within the frame of limited defense resources. On the other hand, it confronts the Slovak Armed Forces transformation with strategic documents of the Slovak Republic and of the Defense Department, namely the Safety Strategy, the Defense Strategy, the Strategic Evaluation of Defense and the Complete Evaluation of Defense. The differences are compared with Government policy statements and indicate difference between theory and reality.

Key words: *defense sources, strategy, transformation, safety environment, competences, evaluation, defense.*

1. INTRODUCTION

Since the Slovak Republic foundation, its basic political and strategic bounds regarding building the defense potential have been defined by the defense policy, including the development of the Armed Forces with the purpose of providing state defense, fulfilling allied and other international obligations. A degree of fulfilling these tasks within individual periods of time has been directly determined mainly by crucial political decisions concerning the way and the dynamics of Slovakia's integration process into the North Atlantic structures as well as by the level of providing resources for the state defense and development of the armed forces.

The defense policy of the Slovak Republic has been consistently implemented in terms of the Euro-Atlantic orientation of the Slovak Republic since 1999. The main aim of the defense policy of the Slovak Republic is to guarantee state and citizens' security. Until 2004, this aim was fulfilled by means of a limited defense potential of the Slovak Republic. Qualitatively speaking, the new period of implementing the defense policy has begun by the accession of the Slovak Republic into NATO. Ever since then, the main defense aim has been implemented under the terms of collective defense. On the one hand, the transition from individual to collective defense represented a substantial increase in the security of the inhabitants, as well as in the the Slovak Republic defensive posture. On the other

hand, it also meant a qualitative and quantitative increase in the tasks for the Armed Forces of the Slovak Republic, including an increase in their financial needs.

The above-mentioned ambitions of the Slovak Republic are also confirmed by the strategic documents of the Armed Forces presented below.

2. STRATEGIC DOCUMENTS OF THE SLOVAK REPUBLIC AND THEIR VIEW ON THE ARMED FORCES

"The Security Strategy of the Slovak Republic", declares that the main objective of the Slovak Republic's safety policy is to guarantee the safety of inhabitants and the state in a stable and predictable environment. The safety strategy considers a safety system consisting of foreign, economic, defense, internal safety, social, life-saving and ecological tools and their mutual relations to be a fundamental means of the SR safety policy. Foreign service as well as the SR Armed Forces are stated as traditional tools of safety policy [5].

"The Defense Strategy" views the Euro-Atlantic orientation to be the basic target of its defense policy. The NATO and EU membership is regarded as a crucial guarantee of its safety and defensiveness. It defines its basic mission as follows:
- in cooperation with allies to protect the state sovereignty, territorial integrity and inviolability of frontiers and to protect safety of the inhabitants and the state from outside threats;

- to fully fulfill obligations as a NATO member;
- to fulfill obligations as an EU member within the bounds of safety and defense policy.

In compliance with this mission, the defense policy will strengthen the defense system so that by 2015 it will have been able to fully participate in conflict prevention and settlement of crisis situations in the world within the operations of NATO and EU. Within the SR Armed Forces reform, it will create conditions under which the Armed Forces could be fully used in operations of high intensity for the protection of SR, including mobilization and its execution. The defense policy considers the following points to be strategic tasks of the SR Armed Forces:
- to protect sovereignty and territorial integrity of the state, inviolability of its frontiers from an armed attack, to contribute to collective defense of the NATO member states;
- to protect air inviolability and to fulfill tasks in the system of collective protection of the NATO common air space;
- to maintain the functionality of a stationary and mobile communication and information system;
- to defend and protect defense infrastructure while emphasizing objects of special importance and other important objects;
- to plan and execute mobilization.

The capabilities the Armed Forces must acquire are adjusted to fit these tasks – deployment to a wide spectrum of operations, speed of deployment

and mobility, using information nets, efficient intelligence, identifying, assessing and assigning tasks, destructiveness and accuracy of strikes, efficient engineers support, anti-aircraft defense and radiation, chemical and biological defense, readiness to make use of all possibilities of multinational logistics and civil-military cooperation. The listed capabilities will be a stimulus for gradual renovation and increase of fighting potential regarding land and air forces. The personnel of the Armed Forces will be supplemented, trained and equipped in compliance with the rules used in the NATO so that the Armed Forces could be included into all categories of operational readiness.

3. GOVERNMENT POLICY STATEMENT

In its policy statement for the years 1999 – 2002, the strategic documents noted above are a follow-up to government policy statement. The government undertook to reform the AF, to pursue their modernization, to build autonomous deployment units and to take measures so as to increase quality and intensity of military training**.** The government was also due to take measures by means of which priority in defense industry coordination would be given to the Ministry of Defense of the Slovak Republic.

The Government Statement of Policy for the years 2010 – 2014 [3] similarly states that based on the needs to ensure the safety of citizens and the state defense, taking into account the NATO and the EU strategic documents, including NATO's new Strategic Concept, the Government of the SR will perform a strategic evaluation of the SR defense in order to define political and strategic scope of long-term development of the SR defense and the Armed Forces potential, including provision of stable resource ambit. Within this process, the SR Government will re-evaluate basic safety policy and defense documents so that they are in line with present international relations and global safety environment as well as with the targets defined in most current EU and NATO strategic documents. In order to execute the process of strategic evaluation of the defense, the Government will create conditions for a wide dialogue with the representatives of expert community, as well as with the public in order to achieve consensus concerning the questions of safety policy and state defense, as well as priorities, aims and needs of the Armed Forces. The conclusions and recommendations of the strategic evaluation of the defense will be submitted for public debate no later then the end of 2012 and they will be implemented into basic strategic and conceptual documents and related legislation.

The Government of SR will ensure continuation of the SR Armed Forces transformation in accord with conclusions of the strategic evaluation of defense and it will also generate long-term, stable and appropriate resources. Development of human potential and the AF modernization are considered to be basic pillars of transformation.

The Government Statement of Policy for the years 2012 – 2016 states: [4] The Government as a guarantor of security for all citizens approaches the state defense as one of the basic and irreplaceable state functions. It will enforce a complex approach to complete the formation of an integrated safety system at the state level and it will also make the defense system more effective. At the same time, it will consistently lay emphasis on economy and transparency when drawing resources. In order to make activities of the defense department more efficient, the Government will perform rationalization of all its organizational structures. Within a process of procurement, it will make use of mutual projects of militarization with other safety sectors, as well as with foreign partners. The Government will use financial resources obtained this way preferentially on the development of the Armed Forces of the Slovak Republic. It will also re-evaluate the level of the Armed Forces of the Slovak Republic, their modernization and further development, so that that they would be able:

- to ensure defense of the territory and the inhabitants of the SR against military, as well as non-military threats;
- to ensure that the Slovak Republic will take part in international operations under NATO, EU and UN command.

Even under complex conditions of public finances consolidation, further deterioration of the level of the AF preparedness and fighting capacity is no longer possible. The development plan of the defense sector, including the Armed Forces of the SR with the perspective till 2024 was envisaged to be ready by the end of 2012. The goal of this plan is to enable the development of the Armed Forces' capabilities which are necessary for handling possible future threats and fulfilling allied and other international obligations of the SR. The Government will support multiannual stability of defense expenses following development of public finances to get over a long-term deficit in the Armed Forces.

All these are obligations the present, as well as the previous Governments bound themselves to follow and they are confirmed by strategic documents. The evaluation documents "Complex Assessment of Defense" and mainly "Strategic Assessment of Defense" dated 2012 point out the level of these obligations' implementation.

3.1. Safety and the Armed Forces in the SR Assessment Documents

The document **"Complex Assessment of Defense for the year 2012"** [2] states that, in comparison with 2009, a substantial decrease in the limit of expenditure for the Ministry of Defense of the Slovak Republic for 2011 required the implementation of a crisis regime within the defense. The ratio of operating and development expenditure was 85.1 % to 14.9 % in a modified budget. The modified budget for the Armed Forces of the Slovak Republic was approximately 2.8 % (€15.6 mil.) lower that the 2009modified budget. Moreover, this

limit was 27%, lower than the amount required by the Armed Forces. This fact negatively influenced the number of personnel within units, the training range, the equipment needed for operational capability, the stockpiles of ammunition, the material and spare parts necessary for carrying out required repairs. The decrease in expenditure for the sector of the Ministry of Defense for 2010 led to a decrease in the number of the priorities established by the Ministry of Defense in comparison with the previous year. Consequently, all the original priorities stated in **the Government Statement of Policy** for the years 2010 – 2015 have not been observed. Owing to the specified expenditure limits of the SR Armed Forces for 2010, the necessities which were ensured above all were the requirements of the AF servicemen, employees and the Ministry of Defense priorities, specifically participation of the SR AF in international crisis management, tasks connected with the protection and defense of the airspace within the Integrated NATO System of Air Defense (NATINADS) and the Air Search and Rescue Service (ASRS). The decreased limits of expenditure for the SR Ministry of Defense was translated in the restriction of financial resources intended to cover fulfillment of tasks within a wide range of other activities including training and the SR AF modernization. It also had a negative impact on the SR AF development priorities which ultimately influenced fulfillment of the SR obligations towards the NATO and the EU in a negative way. The

objectives regarding ammunition, equipment and material development were implemented only partially. In terms of factual assessment, out of 29 projects falling under the subprogram of the Ammunition, Equipment and Material Development (AEM) not a single one was implemented in the range it had been planned. 12 projects met the defined criteria of implementation, 7 projects were partly implemented, 1 was not implemented and 9 projects were not executed at all. The process of the SR AF armament was radically limited by means of allocated financial resources. The amount of €1 056 000 was approved for the defense research and development aimed at the SR defense support implemented within the subprogram named the Research and Development for Defense Support. This amount was 75% lower than in 2009 and it represented only 0.0012% of the approved budget of the SR AF in 2010. This amount of special-purpose support was deeply under the level anticipated by the Concept of Focusing and Supporting Research and Development in the Field of Defense for 2010 (€ 4.6 mil.).

"**Strategic Assessment of Defense**" [1] comments on current conditions within the SR AF even more critically.

The main objective of the SR AF transformation (i.e. to establish relatively small, well armed, well trained forces disposing of necessary military capabilities and prepared to carry out a wide spectrum of tasks following applicable laws, the SR Defense Strategy, decisions of state constitutional bodies and

international obligations) was not fully implemented mainly in the field of modernization and capabilities development.

Elements concerning defense management and procurement underwent a constant process of organizational changes. However, these changes were not systematic and they were almost never based on conceptual intentions. Consequently, appropriate level of defense structures rationalization and performance efficiency was not achieved. In relation to objective demands of the state defense and the Armed Forces, the process of transformation, rationalization and restructuring has not been finished yet. Taking part in operations of international crisis management is an important tool of the SR safety and foreign policy and it is also of extraordinary benefit to the SR international status and credibility. However, the units deployed to these operations were mostly non-organic, consisting of professional soldiers from several units. This holds true mainly for tasks connected with support, engineers and guarding because of unavailability of required spectrum and quality regarding the SR AF capabilities. These conditions cause that contribution concerning participation of the SR AF units within operations aimed at the development of the AF capabilities was exploitable in a minimal way. Notwithstanding the above and considering the AF requirements, current AF structures of command and control are overlarge, mainly in case of strategic and operational level. The process of the AF rationalization and increasing

its performance efficiency has not been finished. Current command and control system of the Armed Forces (including its structure and costs) is not in balance with the AF performance and tasks fulfillment and it is economically unsustainable. Despite the fact a document named The Defense Resort Development – 2020 Model had an ambition to solve these problems, because of the unpredictability of its planning assumptions it was never completed or approved by defense management. The document was considered unrealistic also from a financial point of view (it presupposed the budget of the SR Ministry of Defense to be at the level of 1.53% of GDP). In case of many states, impacts of the economic crisis on public resources have been also reflected on decreasing defense budgets. Almost all the states have responded to the crisis by searching inner resources and some of them have applied processes of defense strategic evaluation. And yet there is no direct proportion between GDP decrease of individual states and their expenses on defense. This is confirmed by the fact that in years 2009 – 2011, in the time of the biggest impacts of the economic crisis, almost half of the NATO states increased the defense expenditures share of GDP or they left it approximately at the same level (a decrease by 0.1% at most). In the case of the Slovak Republic it is quite the contrary.

These statements can be supplemented by statistical indicators from crucial areas of the AF development (Images 1 – 3, charts 1 - 3).
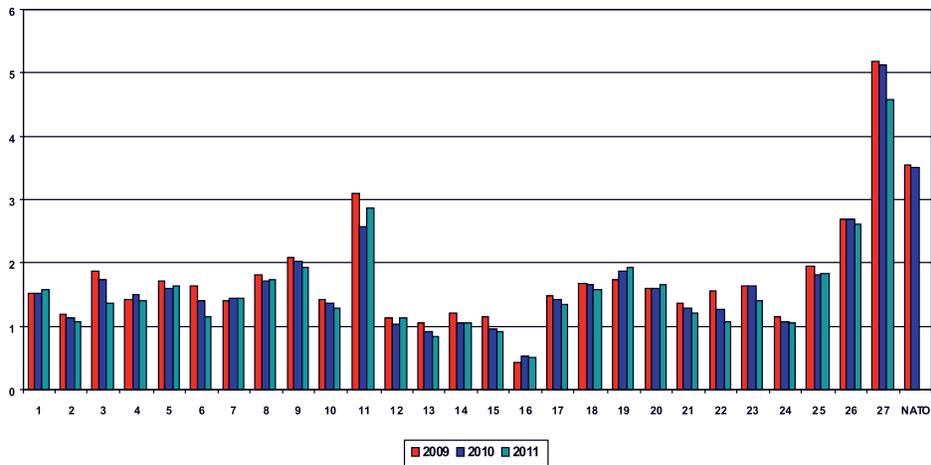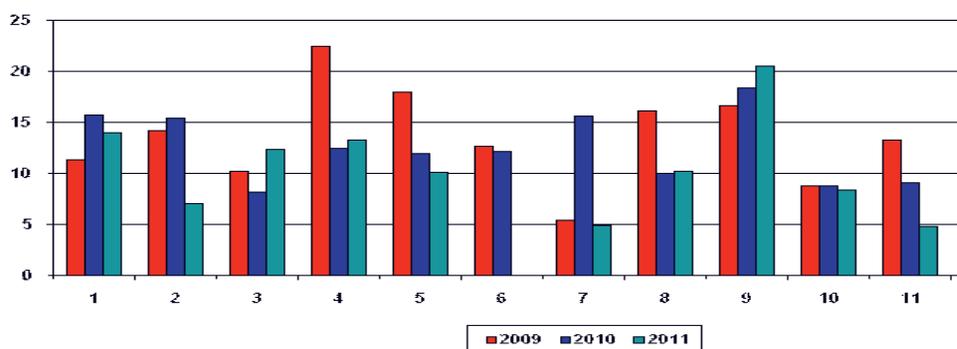
Figure 1. The proportion of defense expenditures of GDP in the NATO member states in years 2009 - 2011 (%)
1 – Albania; 2 – Belgium; 3 – Bulgaria; 4 – Canada; 5 – Croatia; 6 – the Czech Republic; 7 – Denmark; 8 – Estonia; 9 – France; 10 – Germany; 11 – Greece; 12 – Hungary;13 – Italy; 14 – Latvia; 15 – Lithuania; 16 – Luxembourg; 17 – the Netherlands; 18 – Norway; 19 – Poland, 20 – Portugal; 21 – Romania; **22 – Slovakia**; 23 – Slovenia; 24 – Spain; 25 – Turkey; 26 – Great Britain; 27 – the USA, 28 – the NATO (data for 2011 is not available).
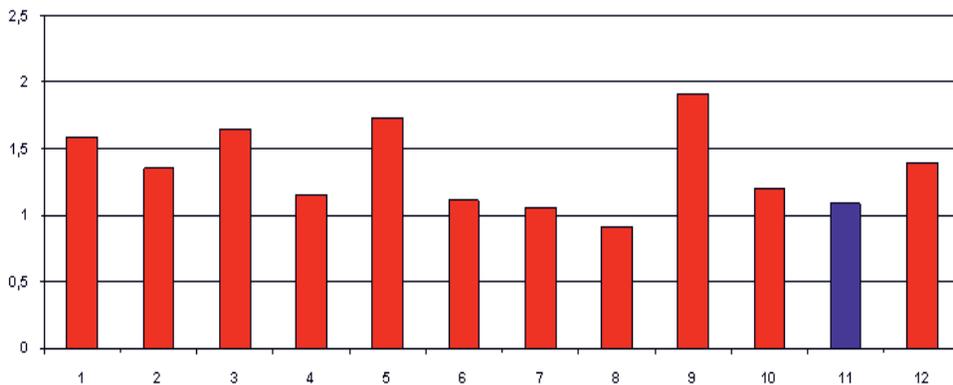
Figure 2. The proportion of defense expenditures of GDP in the new NATO member states in countries (in percentage) 2011 (%)
1 – Albania; 2 – Bulgaria; 3 - Croatia; 4 – The Czech Republic; 5 – Estonia; 6 – Hungary (data from 2011 are not available); 7 – Latvia; 8 – Lithuania; 9 – Poland; 10 – Romania; **11 – Slovakia**; 12 – Slovenia; 13 – NATO (data from 2011 are not available)

Figure 3. The proportion of defense expenditures intended for modernisation in the new NATO member states in years 2009 – 2010 – 2011 (%)

1 – Albania; 2 – Bulgaria; 3 - Croatia; 4 – The Czech Republic; 5 – Estonia; 6 – Hungary; 7 – Latvia; 8 – Lithuania; 9 – Poland; 10 – Romania; **11 – Slovakia**; 12 – Slovenia

Table no. 1 Total defense expenditures in USD mil. in the V4 countries

Country/Year	2000	2005	2006	2007	2008	2009	2010
The Czech Republic	1148	2211	2408	2527	3090	3129	2672
Hungary*	804	1596	1410	1776	1868	1476	1355
Poland	3087	5536	6130	7833	8521	7518	8836
The Slovak Republic	//	823	911	1139	1411	1350	1098

* the data do not include non-deployable elements of other forces

Table no.2 The proportion of expenditures on personnel out of total defense expenditures in the V4

Country/Year	2000–2004	2006	2007	2008	2009	2010
The Czech Republic	45.4	47.4	49.2	51.5	46.1	50.7
Hungary*	48.8	51.2	46.4	48.1	50.4	56.4
Poland	63.3	53.8	54.4	63.2	61.8	56.4
The Slovak Republic	//	49.1	51.5	51.7	55.8	64.9

Table no.3 The proportion of expenditures on modernisation out of defense expenditures in the V4 countries

Country/Year	2000–2004	2006	2007	2008	2009	2010
The Czech Republic	18.9	14.6	10.1	12.9	22.4	12.4
Hungary*	11.2	9.0	12.1	14.8	12.7	12.1
Poland	10.9	18.2	18.6	13.9	16.7	18.4
The Slovak Republic	//	12.7	16.2	14.6	13.2	9.1

The long-term non-conformity between the given tasks on the one hand and real resources allocated to their realization on the other hand is a crucial problem which has been substantially influencing the range and quality of the Defense Department's main activities. If the problem is not solved, it will deepen. A significant part of the Armed Forces armament and equipment is technologically, as well as physically obsolete (app. 70% of ground equipment is end-of-life, out of which tank equipment, infantry fighting vehicles - 1, some types of armoured personnel carriers, are 100% end-of life). That has a negative impact not only on the achievement of required capabilities, level of training and quality of fulfilling the tasks, but it also increases the difficulty of its maintenance. Systems and fighting sets of Air Forces, as well as essential air technology are approaching the level of their technical lifetime (besides MiG 29 aircraft). The lifetime of some ground, air and radio equipment will expire within two or five years. The alarming state of some main types of armament and technology requires their immediate replacement. As a result, there have been requirements for sources arising within the next five or ten years. The essential prerequisite for increase in the Armed Forces capabilities and their interoperability with allied armies is modification or remilitarization of the main types of ground, air and radar technology. The assurance of resources to fulfill

this requirement within the budget of the Ministry of Defense of the Slovak Republic is unreal due to very expensive projects which have to be implemented on the basis of government contracts and long-term timetable for repayment significantly exceeding the parliamentary term of one government.

The Slovak Armed Forces have only a limited spectrum of capabilities in limited quality. Therefore, a level of interoperability within the Armed Forces units in comparison with the NATO standards (within a 39 - 68 % range) is very low and it limits potential cooperation of the Armed Forces units with allied armies, particularly in high intensity operations. The level of deployment and sustainability of the ground forces is approximately 33% and 10% against the NATO requirements. In the context of the aforementioned data, the Slovak Armed Forces capabilities will be intended to ensure achievement of key priorities which include:

– participation of the Slovak Armed Forces in the international crisis management operations including capability to provide contributions for NRF and EU BG;

– fulfilling the tasks of the Slovak air space defense within the NATINADS;

– provision of a mechanized brigade for collective defense;

– capability to admit coalition forces in Slovakia within the framework of collective defense operation;

–maintenance of appropriate components in high readiness forces (a mechanized battalion group).

The proposals concerning the future of the Slovak Armed Forces has been based on the assessment of the security environment, level of the acceptable risk compensated by the Slovak Republic membership in NATO and political guidance in order not to change valid political and military ambition.

The development strategy of the Ministry of Defense will be based on the Armed Forces' strategic development enabling to fulfill key priorities due to the limited range of sources. The following risks and limitations will be accepted:

– reduced ability of the Slovak Armed Forces to react and reduction of available forces for the needs of assistance to the Slovak Republic citizens in the event of natural and industrial disasters due to the lack of personnel in some Slovak Armed Forces military units in peace time within the range of 40 – 60% of tabular calculations;

– military and technological limitations in implementation of international obligations (the range of the mechanized brigade prescribed capabilities for peace structure will be limited. Some logistic capabilities will be reduced as well. As a result, the level of achievement of objectives will be decreased).

The Slovak Armed Forces sustainable model – will be built and developed in order to cover the capacities in relation to preparation, creation, deployment, maintenance and recovery of capabilities to provide:

– continuous protection and defense of the Slovak air space within the NATO Integrated Air Defense System (NATINADS);

– provision of the Slovak Republic's contribution to international crisis management operations pursuant to the Slovak Republic Security Strategy and Defense Strategy;

– provision of specific and unique military capabilities to support public authorities in facing non-military crisis situations within the Slovak Republic territory;

– provision of mechanized brigade within collective defense operation;

– admission of coalition forces in the Slovak Republic within collective defense operations.

The Slovak Armed Forces will consist of the following future forces:

– forces for immediate combat use (high readiness forces) – air forces intended to achieve the objectives within the NATO Integrated Air Defense System (NATINADS) and Air Search and Rescue Service, ground forces in emergency regime of NRF;

– forces to secure capabilities

for rapid increase of combat potential (lower readiness forces) – forces needed for creation and provision of mechanized brigade for a temporary period, command and support structures required for achievement of the Armed Forces objectives (including specific and unique military capabilities to support public authorities in facing non-military crisis situations);

– forces based on soldiers in reserve with a special contract – forces (i.e. military specialists) required to fulfill the tasks within the support of public authorities in facing non-military crisis situations in the Slovak Republic and within the international crisis management;

– forces based on mobilization capabilities – forces required for the Slovak republic defense system to secure defense of objects of unique importance and other important objects in the Slovak Republic and to support admission of coalition forces within collective defense operation in the SR.

In terms of the Slovak Armed Forces' increased efficiency, a proposed model represents the reinforcement of the Slovak Armed Forces' executive elements (tactical units) at the expense of managing and supporting elements. This model will positively influence the following areas:

– overall capacities of the Slovak Armed Forces' efficient elements for assistance to citizens in the event of natural disasters within the Slovak Armed Forces will be enhanced (app. 20% increase in combat battalion capacities);

– capacities of unique capabilities of the Slovak Armed Forces intended for assistance to citizens in the event of natural disasters will be enhanced (creation of one engineer company);

– missing units in order to fulfill the obligation to provide a ground forces brigade will be added (artillery units, tactical reconnaissance and intelligence);

– missing units in order to fulfill other key obligations of the Slovak Armed Forces will be added (a deployable KIS NATO module).

The following tables show the estimated calculation of finances for modernization of essential types of armament, equipment and material beyond the range of the Ministry of Defense chapter as well as intention of reduction of capacities within the Defense Department.

Table no. 4: Finances required for technology modernization

Commodities	Armament, combat equipment	2014 - 2024 total in Eur mil.	Total/commodity in Eur mil.
Armoured vehicles	Wheeled armoured fighting vehicles, light tactical multifunctional vehicle in various modifications	2 270	2 270
Air Forces *	Training aircrafts	180	796
	Multifunctional helicopters	490	
	Transport aircrafts	126	
Military radar systems	3D radar with close range	18	224
	3D radar with short range	70	
	Surveillance 3D radar with middle range	24	
	3D radar with middle range	112	
Anti-aerial defense components	C-RAM, anti-missiles system	2	10
	SHORAD– MEAD – PVO with short and middle range system	8	
Total		**3 300**	**3 300**

Table no.5: Overall intention of reduction in number
of Defense Department personnel

Ministry of Defense and its parts

Category	Current state	Proposed state	Reduction
Soldiers	1 060	846	214
Employees	2 833	2 361	472
Total	3 893	3 207	686

Armed Forces

Category	Current state	Proposed state	Reduction
Soldiers	14 745	14 451	294
Employees	4 451	4 049	402
Total	19 196	18 500	696

Defense Department

Category	Current state	Proposed state	Reduction
Soldiers	15 805	15 297	508
Employees	7 284	6 410	874
Total	23 089	21 707	**1382***

A set of rationalisation measurements will be implemented in order to gain resources for development of the Slovak Armed Forces sustainable model. These measurements will be focused on reduction of the Slovak Armed Forces expenses and strengthening their efficiency.

4. CONCLUSIONS

The prosperity and growth of living standards have never been so dependent on the citizens and state security level in comparison with the current economically linked and rapidly changing world. This dependence will develop further due to the growth of uncertainty and unpredictability of the security environment (e.g. current turbulent and unpredictable development of situation in North Africa or Middle East).

With respect to a critical state in the Defense Department and Slovak Armed Forces, the level of country defense and achievement of international obligations requires the adoption of timely measurements in relation to further transformation of the Slovak Armed Forces.

When comparing strategic and assessment documents it is obvious that they significantly differ in the commitments they make, on one hand, and the security policy implementation, on the other hand. As a result of the defense strategy, the Armed Forces are obliged to contribute to collective defense.

However, according to the strategic defense assessment the capabilities of the Armed Forces in comparison with the NATO member states reach approximately 50%. The Defense Department budget for the year 2013 totals 50 mil. EUR, which is less than the 2012 budget. Moreover, the strategic defense assessment also includes the obligation to defend critical infrastructure objectives and objects of particular importance. However, the proposal to reduce forces asks for the cancellation of what is considered as the most efficient element PLRK $S-300PMU$, capable to defend the aforementioned objects against air terrorism.

The declared increase in capabilities has been reflected in practice: with the modernization of technology, armament and training within the NATO we have reached the bottom. Human development as well as the modernization of the Armed Forces are referred to as the pillars of transformation in the Government Statements of Policy. However, practice contradicts this. The Government, by the statements it made, pledged to strengthen the participation of the Armed Forces in solving crisis situations. However, the amended Regulation of the Ministry of Defense No. 1/2012 establishing the extent of a commander's power scope in the event of decision making on immediate deployment of soldiers and necessary logistic support actually decreases it (in comparison with the Regulation of the Ministry of Defense No. 38/2009). Furthermore,

the proposed calculation of finances to the amount of 3.3 billion EUR may be regarded as utopia.

From this point of view, the aforementioned documents may be regarded unreal and therefore they must be reviewed and revised as soon as possible. After that, a comprehensive material including a model of the way the Armed Forces and other parts of the Defense Department are to be reformed, as well as a proposal concerning the method and time schedule for the reform measures to be implemented can be drawn up and submitted for approval to the Slovak government.

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WAR TERMINATION IN SOMALIA
AND KENYA DEFENSE FORCES' (KDF) ROLE

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War causes and conduct have fascinated war planners, war executors and scholars for a long time because little attention has been given to how wars are ended. This oversight is apparent not only in historical accounts of warfare but, more importantly, in contemporary analyses and doctrinal formulations of deterrence and overall defense policies. Just as historians have focused on how wars begin and are fought, military analysts and planners have concentrated on influencing the initiation and conduct of warfare rather than on analyzing the process and requirements for terminating warfare on acceptable terms and at acceptable costs. Conflict termination is the formal end of fighting, not the end of conflict. Despite the volumes of research and literature on the subject, belligerents mismanage war termination. The major objective of wartime strategy is defeating enemy arms as quickly as possible with the least cost in friendly casualties. As long as hostilities endure, diplomacy is subordinated to military requirements. War termination planning, as it is currently accomplished, takes the form of civil affair planning on the details of how the vanquished will be managed following the capitulation of the enemy and cessation of hostilities. We argue that Kenya Defence Forces (KDF) prudently terminated its war with the terrorists group Al-Shabaab that merged with Al-Qaeda when they agreed to be integrated into the African Union Mission for Somalia (AMISOM) which is backed up by the United Nations.

Key words: *termination, war, incursion, rehatting, Kenya Defence Forces (KDF)*

1. INTRODUCTION

A core tenet of war is that, it is an extension of politics, with the main objective of sustainable peace based on a pre-determined political and not just military end state. Wars have and continue to kill and maim millions, both combatants and non-combatants [1]. Despite the numerous researches on the inevitability of war and how they start and can be prevented, wars are still being waged [2]. Though the United Nations has put immense resources into war prevention, the military aspects of winning wars

have always been emphasized by the countries engaged in wars [3].

War history alludes to the fact that the rise and fall of countries and civilizations have depended on their fortunes on the battlefield. Researches have been conducted on the military strategy in war; how to prepare, tactics, attack and win the war. War planners and executors always expect victory. War strategists rarely look at how war ends for the losing party and this confirms why there is scant literature on how and when to terminate a war [4]. In contrast to the field of war prevention and military strategy, war termination and how and when wars end, is a less explored field [5]. The advances in war technology have escalated the destructive nature of modern warfare. That makes it imperative for war as an enigma to be better understood in its entirety to hopefully limit its applications. A state should evaluate the various consequences of the alternatives and make the best decision to maximize its interests in the pursuit of national goals [6].

2. METHODOLOGY

Qualitative research methods were used in this study. Primary and secondary data were analyzed. The primary data was collected by interviewing soldiers and officers on their understanding of war termination. A total of 49 military officers, 29 in active service and 20 retired were interviewed and their views on war termination recorded and analyzed. The researchers studied literature dealing with war termination to gather secondary data on the subject. In this respect,

the information was compiled from books, journals, news papers, conference proceedings, government/corporate reports, theses and dissertations, Internet and magazines and critically analyzed. The findings and analyses are presented under the sub-headings: 'War Termination and the Political Context', 'War Termination and Reconstruction', 'Kenya Defence Forces' (KDF) Incursion into Somalia', 'The KDF's Rehatting on the African Mission in Somalia (AMISOM)' and 'Precedence of poorly and prudently terminated wars'.

3. WAR TERMINATION AND THE POLITICAL CONTEXT

War termination at the international and regional level is wrought with complexity and unintended consequences and outcomes by actors in the international system [7]. This level examines how the interaction and interdependencies between two or more states at war impact the success of war termination [8]. At the heart of this level are the "power relations" among "two or more warring states" [9] that can be shaped by factors such as alliances and coalitions, economics, globalization, geopolitics, international institutions, non-state actors, international law, conventional and transnational threats, as well as by societal perceptions, culture, and competing values [10]. For example, economic pressures can be useful as a basic political objective to reach a ceasefire with the aim of inducing war termination as was seen during the 1918 Paris negotiations [11].

"War is a continuation of politics by other means" is a dictum that underlines the fundamental political

nature of waging wars. Wars are viewed as instruments of policy to achieve political goals. Therefore, before waging wars, clear pre-defined political goals should be set up and translated into war objectives [12]. It is important that war termination must be carefully considered as part of the war objectives. Even if final victory over the defeated party is assumed to be the final outcome, this victory must be considered militarily attainable right from the onset of hostilities [13].

Not all wars have started with well defined objectives. This is especially true of pre-emptive and preventive wars [14]. Assuming political leaders initiate wars with well-defined objectives, the process of terminating a war at the end of the day is primarily a political decision, made by the political leadership based on political considerations, as wars are started to achieve political objectives [15]. Only in cases of outright conquest, which is rare in this century, is war termination a military act. It is a political decision, as translating military conditions on the battlefield into war termination requires political agreement within the political leadership and also between the opposing sides. The political leadership must carefully weigh the present results obtained against the pre-war political objectives before deciding whether to escalate or de-escalate the fighting, and modify the existing war objectives [16].

3.1. War termination and reconstruction

Termination of war is not only the cessation of hostilities; it should be treated from a long-term perspective to include the post-war reconstruction phase of peace-building. This broader approach will measure the ultimate success of war termination as opposed to the mere success of the ceasefire. Ending a war and addressing the background to the war will end the war and not just suspend hostilities [17]. For example, there was no sustainable peace in Europe at the end of World War I. The punitive economic measures enforced onto Germany as part of the Versailles Treaty in no way did they create a stable peace. On the contrary, they imposed hardships and stirred resentment among the German population which created a suitable environment for the rise of the autocratic leadership of Adolf Hitler, who waged war onto Europe again barely a generation later [18].

3.2. Military perspectives

The role of the democratic military establishment is to serve political goals. Therefore, it is important for political leadership to give due thought to the political objectives of a war and consequently its termination. While the decision to terminate a war is a political one, the military establishment is charged with the means of ending the war [19]. Military personnel possess a strong desire to ensure that assigned tasks are completed successfully and their confidence in their own solutions makes it harder for them to accept a war ending short of victory. From a tradition of past conflicts, the notion of victory has widely pervaded into the military as the only form of ending a war with honor [20].

This notion of victory and an unconditional surrender of the

adversary as the only type of peace with honor that can be achieved is incorrect. Honor is a recognition that pertains to the conduct and ending of wars. It is a virtue that should be acknowledged based on the justification of the cause and the means used to achieve the objectives [21]. One philosopher felt that one should go to war in order to have peace and not the other way around. If one rightly believes in the logic of this statement, then war termination must be viewed in the context of the greater peace that follows for both adversaries [22].

A fallacious obsession with victory often perverts the political process of war termination as the military prolongs the battle to deliver the adversary a decisive defeat. Outright defeat of an adversary is going to be a rare occurrence. This is because of the increasing costs of any conflict in terms of destruction and human lives [23]. A strategy of enemy annihilation will often blind us to other means of achieving the pre-war objectives [24]. Besides its natural desire to be victorious, the military, as part of its culture of obedience to a legitimate authority, tends to obey orders unflinchingly with a 'can do' attitude. The military is reluctant to make excuses when the operation fails. Consequently, acting on the assumption that an operation will not fail creates a natural bias [25].

3.3. Military role in war termination

While war termination is a political decision, the role of the military in the process of war termination is less clear. During the Franco-Prussian War of 1870, Moltke a military general urged the German Crown Prince, even after the fall of Paris, to allow the Prussian troops to fight and deliver the French a complete defeat so that they could dictate whatever peace terms they wished [26]. To relinquish the military of any role in war termination merely because war termination as a political decision is short-sighted, some argue that military strategy concerns itself with applying military means to achieve political ends, and these political ends go beyond the mere destruction of enemy forces [27]. The military can assist political decision-makers in war termination by relating military conditions to strategic objectives, for example in planning for the level of destruction of an adversary's forces if the objective was to neutralize the military threat [28].

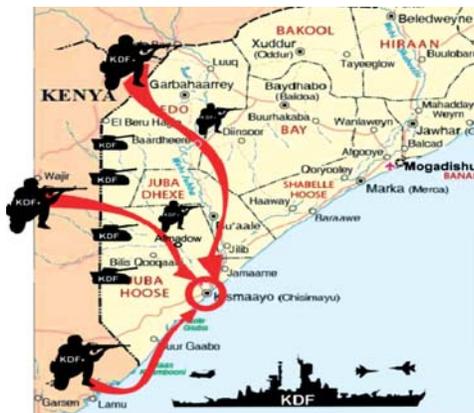## 4. KENYA DEFENCE FORCES' (KDF) INCURSION INTO SOMALIA

Somalia descended into anarchy in 1991 and has not had a government for more than 20 years. In mid October 2011, Kenya invoked Article 51 of the United Nations charter on 'the right to self defence' and began to pursue the Al-Shabaab terrorist group into Somalia [29]. Al-Shabaab incursions into Kenya territory especially in the North Eastern Counties and Coastal counties had been going on for some time and included the use of improvised explosive devices (IEDs), roadside bombs, landmines and raids by fighters using small arms and light weapons and rocket propelled grenades (RPGs) against Kenyans [30]. The operations were prompted not by the incursions into the Kenyan territory on land and sea by Al-Shabaab and local 'pirates' but primarily because

of the effect the British and French tourists' kidnapping from Kenyan resorts had on international tourism in Kenya [31].

4.1. Kenya Defence Forces' (KDF) advancement to Kismayu

Kenya Defence Forces' (KDF) operations began on three fronts: North from El-Wak towards Fafadun and Bardere; in the centre through Dhobley and on towards Bibi and Afmadhow; and in the South up the coast towards Kuday [32]. Since they crossed the border on October 14 2012, the Kenyans had pushed the militia from areas near the Kenyan border stretching up to Afmadhow representing 100,000 square kilometres or about one sixth the size of Somalia. All three prongs of the attack were due to converge (eventually) on the town of Kismayu on the coast as shown in **Figure 1** [33].

The *Star News Paper* reported on 31 May 2012 that Kenyan troops were advancing toward Kismayu in a final push to defeat the militants after they had captured the key town of Afmadhow, considered the gateway to Kismayu [34].

Figure 1. Kenya Defence Forces (KDF) movement in three Sectors to capture Kismayu.

4.2. Kenya Defence Forces' (KDF) rehatting on the African mission in Somalia (AMISOM)

On July 6 2012, Kenya Defence Forces, held a symbolic Rehatting ceremony in Nairobi [35]. The event marked the formal integration of KDF into the African Union Mission in Somalia (AMISOM) by the United Nation Resolution 2036 [36]. The Kenyan soldiers joined those from Burundi, Djibouti and Uganda to expand the AMISOM force [37]. Among the ceremony attendants there were: the Special Representative of the Secretary General to the United Nations, Ambassador Mahiga; Chief of the Defense Forces of the Republic of Kenya, General Karangi; AMISOM Force Commander, Lieutenant General Guti; Special Representative of the chairman of the African Union Commission for Somalia, Ambassador Diarra and other senior military officials from Africa [38].

The Minister of State for Defense Honourable Haji said that the event marks an important milestone in Kenya's contribution to regional peace and security concerns and to its fulfillment of the regional and international obligations. Special representative of the chairman of the African Union Commission for Somalia, Ambassador Diarra thanked Kenyans and the Government for joining AMISOM [39].

Figure 2. From left to right, Chief of the Defence Forces General Karangi and Kenya Defence Forces Personnel Rehatting into AMISOM by wearing the Green Beret

Figure 3. From left to right, His Excellency Ambassador Boubacar Diara, Special Representative of the Secretary General to the United Nations Ambassador Mahiga, Defence Minister Honourable Haji and Force Commander AMISOM Lieutenant General Guti in a sign of unity during the Rehatting Ceremony at the Defence Headquarters and KDF in Africa Union armoured vehicles.

5. PRECEDENCE OF POORLY TERMINATED WARS

5.1. The Gulf War

The war termination process characterized by problems, unsynchronized military and political objectives, economic conditions, and public opinion contributes to an unsuccessful war termination. In 1991, the U.S. and coalition forces used military force to meet the basic political objective to expel Iraq from Kuwait. The war terminated when the U.S. unilaterally announced a cease-fire stating that the U.S. and the coalition forces had liberated Kuwait and defeated the Iraqi army [40]. One of the domestic problems was that the U.S. neglected to have a war termination strategy prior to the cease-fire [41]. Lack of strategy resulted in the U.S. being unable to turn a military victory into a political success story by forcing Iraq to accept defeat in the Gulf War [42]. The Bush administration viewed the diplomatic side of war termination as a separate civilian function, and the military side of war termination as a purely military function [43].

When these functions are pursued separately, it is easy to result in unsynchronized objectives that do not work in concert toward successful war termination goals. At the individual level of analysis, for Saddam Hussein to have used military force with neighboring Kuwait to influence regional interests coupled with the hindsight of Operation Iraqi Freedom (OIF) years later, shows that nations under the control of autocratic leadership never accept defeat, regardless of the cost, and that perhaps only a regime change will set conditions for lasting peace. Worth reminding in this respect is that tyrannical leaders such as the late Saddam when left in power are able to upset regional balance years later within an international system [44].

The 1991 Gulf War illustrates that a decisive military victory alone does not necessarily establish a sustainable peace following the end of military operations. It also suggests that leaving the region without implementing institutional reform only allowed Saddam to purchase armament to

restart hostilities later [45]. While the U.S. achieved its stated military objectives, it failed to achieve more longer term political objectives to enhance regional stability using an appropriate application of diplomatic, information, military and economic instruments of power following the ceasefire that could have set better conditions for peace in that region. Instead, one of Clausewitz' fundamental problems with war termination holds true because Iraq's will to fight was still present and the outcome of the Gulf War was a 'transitory evil' as evidenced by Operation Iraqi Freedom [46].

5.2. Somalia

As the only super power, United States of America declares itself to be a country of ideals and strength. Whether it is called neocolonialism, narcissism or brotherly love, it feels obliged to take control of international situations in many instances, such as is the case with Somalia, and it trusts their military prowess [47].

Following the downfall of President Siad Barre in 1991, a civil war broke out in Somalia between the faction supporting Interim President Ali Mahdi Mohamed and that supporting General Mohamed Farah Aidid. The United Nations, in cooperation with the Organization of African Unity (OAU) and other organizations, sought to resolve the conflict. In 1991 the United Nations' Secretary-General dispatched an envoy supported by all faction leaders. The war had resulted in nearly 1 million refugees and almost 5 million people threatened by hunger and disease [48].

The Security Council in January 1992 imposed an arms embargo against Somalia. The Secretary-General organized talks between the parties, who agreed on a ceasefire, to be monitored by United Nations observers, and on the protection of humanitarian convoys by United Nations security personnel [49]. In April, the Council established the United Nations Operation in Somalia (UNOSOM I) as an operation aimed at providing relief. This mission was to be strictly humanitarian as a part of the function of the UN which is to "maintain international peace and security"[50]. UNOSOM I proved to be useless in the wake of Somalia's dead government. Without the backing of a strong government, international aid supplies were stolen and humanitarian workers were targets for robbers and the warlords they too often had been allied with [51].

On December 3 1992, Operation Restore Hope was in the makings. The Security Council, after agreeing that Somalia was in terrible trouble, voted in a resolution that it would "use all necessary means to establish as soon as possible a secure environment for humanitarian operations in Somalia" [52]. A few days afterward, the United Task Force (UNITAF) stepped up to the plate. UNITAF, which was led by the United States, started Operation Restore Hope. The United States, with approval from the United Nations, sent 27,000 troops to Somalia [53]. The goals of Operation Restore Hope were to "deliver relief supplies, help distribute food and medicine, and help protect relief supplies the UN is sending to fight famine. Initial polls showed a 70% support increase" [54]. The media often inaccurately portrayed Operation Restore Hope as a resolution to make up for Somalia's

lack of water and shortage of food. In truth, many of Somalia's problems were due to political greediness, not geographical hardships [55].

By March 1993 the United States had dramatically scaled down their number of forces in Somalia. They were ready to call it a day and let the United Nations take over. Thus UNOSOM II, which stressed building up the Somali nation, began. Law and order, roadways, and a government representing its people were the foundation for this mission [56].

UNOSOM II strove to lead Somalia onward to the path of Western civilization. That was one of the pitfalls that made the Somalis resist. Somalia is a nation based upon the politics of long-standing clans. To make matters more difficult for this mission Somalis did not trust Boutros Boutros-Ghali, who was the UN Secretary General at that time because he was perceived as an advocate for Siad Barre [57].

UNOSOM II failed to take control of Somalia because there were many warlords armed with small and light weapons (courtesy of the United States during the Cold War years, when the U.S. supported Barre). The U.S. soldiers left in Somalia were basically fighting for their lives instead of saving lives [58]. In Mogadishu, Somali civilians wanted U.S. forces out of their city and were not afraid to fight for what they wanted. After a horrendous deadly occurrence resulting in the deaths of 30 U.S. Marines and hundreds of Somalis, the United States finally evacuated its forces in March 1994. The United Nations followed a year later [59].

The operation cost the United States (through December 1994) an estimated $1.2 billion and the U.N. operation was estimated at an additional $1.5 billion. Thirty U.S. soldiers were killed in combat and 175 were wounded. There were an additional 13 noncombat deaths and one person remained missing. The United Nations lost more than 140 peacekeepers and thousands of Somali citizens died by violent means. Looking at these numbers while considering the current state of affairs in Somalia, it is difficult not to question the validity of the intervention and ask whether it was worth [60].

6. KENYA'S PRUDENT WAR TERMINATION AGAINST AL-SHABAAB

The main objective of wartime strategy is defeating enemy armies as quickly as possible with the least cost in friendly casualties [61]. As long as hostilities last, diplomacy is subordinated to military requirements. War termination planning, such as how it is accomplished, takes the form of civil affairs planning in which the details of how the vanquished will be managed follow capitulation of the enemy and cessation of hostilities [62].

The single mission of KDF in Somalia was to fight the Shabaab, a group that had brutalized locals and extended its extremism campaign into Kenya. We argue that Kenya's acceptance to join AMISOM affirms that the country was well prepared for war termination because before a war is started the exit strategy must be taken into account.

A key component of war termination is to determine how the liberated areas will hold free and fair elections and have democratically elected leaders to govern them. Though the Kenya government has no financial capability to do this in Somalia, it has partnered with the international community to achieve this noble obligation. The high cost of keeping troops in an open-ended war is one of the reasons behind Kenya's decision to integrate into AMISOM [63]. It was estimated that Kenya's government is spending at least Sh200 million per month on the war, a staggering amount especially in a year of record Sh236 billion budget deficit [64]. The Kenya Defence Forces (KDF) has vanquished most of the Al-Shabaab terrorist group. Moreover, because their proper war termination plan, Kenya with the help of international community are putting up infrastructure like hospitals, schools, roads and helping the locals set up a security apparatus and assisting them in the pacification of the captured towns. Hence, our argument that KDF war termination was prudently planned.

Figure 4. Kenya Defence Forces (KDF) aboard a boat as it approaches the port city of Kismayu in Southern Somalia September 28, 2012

7. CONCLUSIONS

Wars have a political agenda and to effectively bring a conflict to termination, the political nature of the conflict must be addressed. The military as a professional establishment is charged with the means to achieve these political objectives. Decisive military advantage alone however does not necessarily confer an end to the war. The decision to terminate the war is primarily a political decision due to the underlying nature of war as an instrument of policy [65]. The military however has important roles to play in the war termination process in addition to the direct military objective of destroying adversary forces. It can also help the war termination process by recognizing the very characteristics of the military profession which may bring shades of grey to its perspectives on war termination. At the end of the day, we must recognize that war termination is only a bridge between the war phase and the post-hostilities phase. War termination must therefore be viewed in the longer context of conflict resolution. In some cases, winning the war is also not necessarily followed by winning the peace [66]. It is important that the roles of the military are understood and its means effectively employed so that the political objectives of the war can be successfully met.

Conceptual thinking about end states and conflict termination needs to be a part of the planning process, and it is time to include post-hostility actions in the military mindset. However, exit strategies should not become the means to an end.

Planning must account for shifts in the political process and deal with belligerents who are willing to wait out the intervention. In general, the planning must be flexible enough to accommodate changes in the national will [67].

The burden will remain with the military commanders to translate vague political objectives into a military strategy with workable end states and hope that the planning is as close to the actual anticipated events as possible. The commanders are integral to the political process and must be able to anticipate changes, advise political leaders about military capabilities as well as limitations and adjust the termination conditions as needed. The idea that the military should only focus on winning the conflict with minimum harm to its forces and maximum damage to the enemy while letting the political leaders worry about the rest does not have much credibility. In operations other than war, it is imperative that the various instruments of power be fully integrated for a synergistic effect [68].

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UTILIZING BÉZIER SURFACE PATTERN RECOGNITION FOR INTEGRATING QUALITATIVE AND QUANTITATIVE ANALYSIS OF MILITARY TACTICS

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This paper describes how to develop and utilize a method based on Bézier surface pattern recognition, which could be used for the overall military tactical analysis of a company's attack. This paper also explains how this method could be applied to an integrated analysis of the most important tactical factors affecting the success and task fulfillment of an attack together with the effects of the leader's decision-making and his or her tactical solutions.

Key words: *Military tactics, decision-making, company, attack exercise*

1. BACKGROUND

The tactical basic research, "The Success Factors of Infantry Company's Attack" (SCA research), which was carried out in the Finnish Defence Forces (FDF) during the years 2004-2007 forms the empirical background of this paper. The SCA research focused on analyzing different individual effects of selected explanatory measured variables. The variables were selected from the areas of tactics, situational awareness, battle task load, human factors, background factors and response variables. During this research, 59 attacks by infantry companies were analyzed.

This paper presents a comprehensive evaluation method for tactical analysis. The development of the method started from constructing the data collection matrix. Later on in this paper, the method is called the CMEP method (Command and control, Manoeuvre, Effect, Performance Maintenance) and its data collection matrix is entitled the CMEP matrix. This matrix is presented in **Figure 1.**

The construction and order of the rows and the columns of the CMEP matrix are based on the observations collected in the SCA research and supported by literature research. For example, Liddell Hart [1] has emphasized such comparable

contents as "Freedom of action" and "Clear intention" and Bellamy [2] has emphasized such comparable contents as "Terrain and circumstances", "Use of performance", "Battle readiness", "Concentrating on the essential", "Execution capability", "Flexibility", "Battle pull", "Battle support" and "Releasing new reserve".

Figure 1. The CMEP matrix

2. QUALITATIVE ANALYSIS

In the Finnish Defence Forces' Field Manual 2008 [3], the central tactical principles are described with the words, "consciously, actively, simply, concentrated and continuously". The sequence of the tactical principles, which is the sequence of the rows in the CMEP matrix, is determined based on the causalities found from the literature and the qualitative analysis of the source data collected from the SCA research. According to the Field Manual [3], tactical principles should always be integrated with the time dependent result. Based on these facts, the sequence of the rows in the CMEP matrix, should be "knowledge of adversary and own, activeness, simplicity, concentration of effect, reserve and exertion of it".

According to the Field Manual [3], the tactical elements are command and control, manoeuvre, effect and performance maintenance. The tactical principles become apparent in the interaction with the tactical elements of the battle. According to the Field Manual, the purpose of the manoeuvre near the adversary is to move one's own troops safely to the position from which it is possible to affect the adversary effectively with fire. Further, command and control can be seen as a factor which aims to integrate the other tactical elements of the battle field. When considering the chronological order of the tactical elements, the sequence is command and control, manoeuvre, effect and performance maintenance. The tactical elements (columns of the CMEP matrix) of the CMEP matrix are the same as the tactical elements in the battlefield according to the Field manual. (Infantry Company's Battle Guideline, 2008) The tactical elements presented in the columns of the CMEP matrix can be evaluated by utilizing the adverbs presented in the rows of the CMEP matrix (consciously, actively, simply, concentratedly and continuously). For example, command and control could simultaneously be conscious, active, simple, concentrated and/or continuous). This viewpoint has lead to the 5*4 - CMEP matrix and enables the qualitative tactical evaluation of an attack.

From the tactical viewpoint, the central aspect which connects the rows and columns of the CMEP matrix is time. As illustrated in Figure 2, the time dependent structure of the CMEP matrix makes it possible

to study in the desired time window both what actions have been taken and in what way these actions were carried out.

Within the CMEP matrix, a part of a tactical phenomenon could be expressed as "conscious command and control" in the time window "tw1" or it could be entitled "active manoeuvre" in the time window "tw2" if it is relevant to limit the size of the time window to illustrate just a small part of the tactical phenomenon. From the viewpoint of the battle result, the study of tactical phenomena could be extended in the time window "tw3", which covers several checkers of the CMEP matrix (several tactical actions have taken place and are carried out in different ways).

Because both the tactical elements and tactical principles are time dependent and there is causality which establishes the sequence of them, there is also a time axis passing along the diagonal of the CMEP matrix.

The CMEP matrix construction makes it possible to describe the tactical grounds so that e.g. good command and control could be simultaneously based on situational awareness (consciousness) and activeness, or, on the other hand, effect could be simultaneously concentrated and simple. In addition to the description of these types of separate tactical reason-consequence relations, the CMEP matrix construction makes it possible to study comprehensively different integrated tactical phenomena within the 5*4 field (see Figure 2).
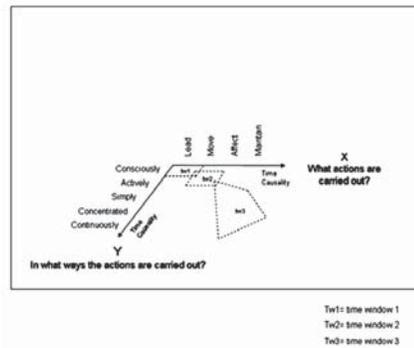
Figure 2. Utilization of the matrix construction for forming the tactical time windows

In this research the checkers, which are formed at the crossings of the rows and columns of the CMEP matrix, are called CTVs (Central Tactical Variable) and the aspects they can be divided into are called tactical items. The contents of the tactical variables and items are established by the qualitative analysis of the source data collected from the SCA research. The qualitative analysis is carried out by applying the principles presented by Miles & Huberman [4].

3. QUANTITATIVE ANALYSIS

The next logical step after the qualitative analysis, which resulted in the construction of the CMEP matrix, is the quantifying process of the collected data to be entered into the CMEP matrix as numerical values of each CTV. When quantifying the qualitative results, the numerical values of each CTV value were calculated by classifying the number of positive/ neutral/ negative perceptions. The source data comes from the SCA research [5].

The presentation can be developed in a more illustrative manner by constructing a surface model from these numerical values. This is performed by changing the numerical values of the matrix into the height values of the surface model. As an essential part of this quantitative analysis, formulated Bézier surfaces were used as resulting surfaces, which indicate the goodness of the tactical solutions and performance of an attack. In addition to the formulation of the surface, a specialized surface ratio curve is calculated to be able to evaluate the attacks by using quantified grading.

Based on the qualitative viewpoint, we already know how the columns of the CMEP matrix describe "what is done" (lead, move, affect, maintain) and how the rows of the CMEP matrix describe "in what ways these actions are carried out" (consciously, actively, simply, concentratedly, continuously) when a company carries out an attack. When we integrate the third dimension with the matrix (z-axis), it is possible to evaluate from the viewpoint of tactics the success of each action and the success of an attack. This principle is illustrated in **Figure 3**.

If we regard the numerical value of each central tactical variable as its assessment related to the success of the corresponding action described with this variable, the surface model constructed based on the numerical values of each CTV can be regarded as an overall assessment of the analyzed attack. The height values evaluate "how well" knowledge of the adversary and one's own force, activity, simplicity, concentration of effect and reserve and exertion of it

have been carried out in relation with command and control, manoeuvre, effect and performance maintenance.

The height values of the surface model change depending on time, which makes it possible to study the tactical phenomena at different moments during the progress of an attack or after the end of an attack.
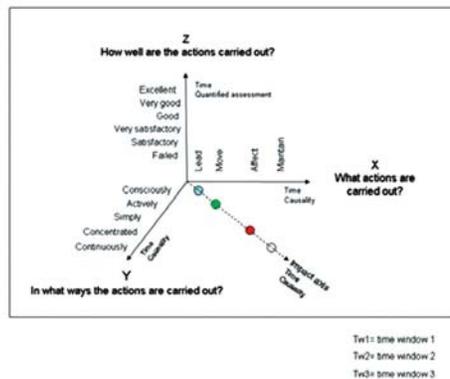
Figure 3. Integrating the z-axis with the CMEP matrix

The quantitative evaluations of task fulfillment and casualty data were integrated into the presentation by positioning the surface at the z-axis according to the given numerical values of task fulfillment and casualty data. In the same way it would be possible e.g. to change the positioning of the surface depending on the difficulty level of the task. This quantifying process is presented in outline in **Figure 4**.

Figure 4. Quantifying process

As shown in Figure 4, the basic height values of the surface are calculated by summing the scaled numerical values describing the task fulfilment and casualties. These values can be regarded as basic assessment criteria of success in the battle and therefore their scaled values are added to each central tactical variable to move the surface to the higher or lower level, which indicates how well the task is fulfilled and what the casualty ratio was after the battle. The additional quantified and scaled values of each central tactical variable are summed with these basic values.

An example of the Bézier surface, which is calculated based on the measured data in the SCA research [5], for successful attacks is presented in **Figure 5**.
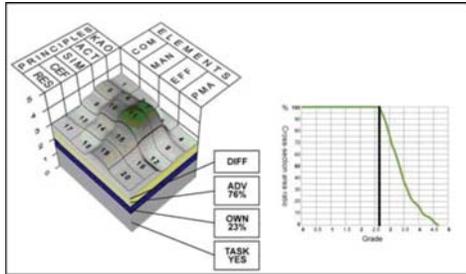
Figure 5. Calculated Bézier surface and the grading curve

4. CALCULATING THE SURFACE AREA RATIO CURVE

From the produced surface model of the CMEP method, it is possible to cut different slices along xy-, yz- or zx-planes to evaluate different tactical aspects or to conduct a time dependent analysis of them. The calculated grading curve (surface

area ratio curve) of the CMEP method makes it possible to carry out an exhaustive and overall evaluation of the attack exercise. An example is presented in **Figure 6**.
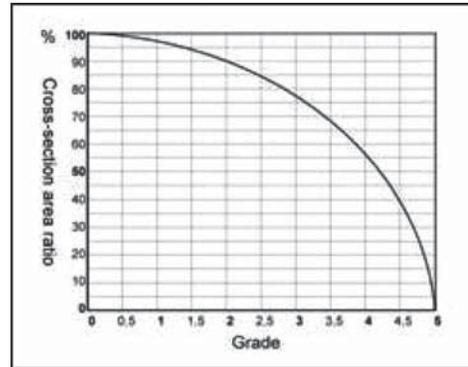
Figure 6. The surface area ratio curve

From this curve, it is reasonable to read how large a relative portion of the CTVs have reached the required grading level. On the other hand, it is possible to set a grading value which divides the battles into successful or unsuccessful ones. This curve also shows how wide the basis for success has been or if only a few CTVs affecting success have reached the required level. This grading curve is an application of the Abbott-Firestone curve, which is applied to surface analysis [6].

5. BÉZIER SURFACE MODELING

Bézier surface presentations are utilized to support both decision-making and to integrate the results of several design or reasoning stages, e.g. in optimum shape design, according to Vucina et al. [7]. Also Sohel et al. [8] have evaluated the possibilities to utilize Bézier curves in different

types of practical applications to improve the local information gained from the surface model. They have presented enhanced Bézier curve models. Extensive research has also been conducted to find means to describe the shape information of Bézier surfaces [8] for interpreting different modeled phenomena. These aspects are of great interest when there is a need to integrate qualitative and quantitative measurement results to support tactical analysis.

When evaluating the reliability aspects of the surface modeling, two main points were checked: How the selected Bézier surface calculation differed from other possible modeling techniques in relation to pattern recognition and what the difference is in grading.

The viewpoint of interest focuses to the higher levels of the surface, which start above the layers describing one's own and the adversary's casualties together with task fulfillment. Four different surface modeling techniques were compared: Bézier, Mozaic, Pyramid and Block surfaces. Basically, the Mozaic model describes exactly the measured values of each item in all twenty CTVs. Compared to this, the Block model summarizes the values of different items within each of the twenty CTVs and it shows correctly the summarized values of each CTV. The Pyramid model is otherwise the same, but only the peaks are illustrated with the sharp vertex of twenty cones.

The idea of the CMEP method is to combine time aspect into both CMEP matrix axes, which means that the heights of the neighboring bars should change smoothly according to the tactical phenomena. Unlike the other modeling techniques, the Bézier surface is able to illustrate this feature due to its mathematical properties. The comparison results of different grading curves and the surfaces of each modeling techniques are presented in **Figure 7**.
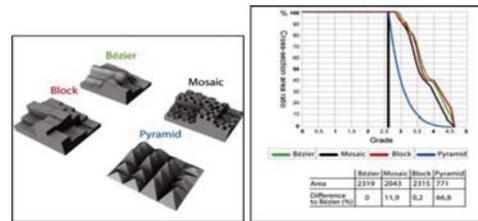
Figure 7. Comparison of different surface modeling techniques

6. INTERPRETATION OF BÉZIER SURFACE PATTERNS

As a part of computing advances in military OR (Operations Research), especially in tactical decision-making, the surface interpretation is based on recognizing some geometrical shapes from the surface pattern. This recognizing process is supported by a picture series describing the most relevant surface shapes which are assumed to present some tactical phenomena and their success.

The comparison of the calculated Bézier surface is performed with theoretical surfaces. Based on these theoretical surfaces, a set of definition maps were produced to support the interpretation process of military tactics. The comparison is divided into the following three parts:
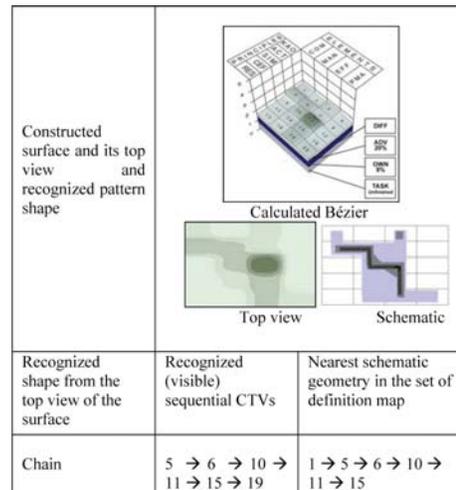
• Geometric similarity of the definition maps and the calculated surface pattern;
• Tactical dependency between researched viewpoints;

• Synthesis of the surface patterns.

From the top view of the calculated surface, it can be proved that surface patterns at different height levels of the surface indicate and highlight by different weightings the aspects which have an effect on the result of the battle. It is as important to recognize these surface patterns at different height levels as it is to recognize the surface pattern at the highest (=most visible) surface level. This shows that several aspects simultaneously have an effect on the result of the battle. It also shows that depending on the battle situation, the impact factor of these aspects varies. As documented in Table 1, in this case example, only one chain is named and analyzed. In this case, according to tactical interpretation, in order to enable initiative in battle, the leaders have ensured the freedom of action by maintaining the possibility to affect in creative ways and by avoiding force binding. In addition to this, the leaders have been open to looking for new possibilities and to taking initiative. Initiative in manoeuvres, effects and other actions has shown in proactive actions to varying situations and the unexpected actions of the adversary. The leaders have had a strong understanding of utilizing the unit's and its subunits' execution capability and they have understood the necessary functions to carry out the planned, prepared and trained actions before the adversary has had time to force them to do so. Both the leaders and the subunits have had the courage and the justification to find and use the effects of supporting branches in a simple and creative way to fulfill the battle task.

7. DISCUSSION AND CONCLUSIONS

The aim of the CMEP method is to integrate several different variables and affecting factors into one overall tactical analysis according to the leaders' decisions, solutions, and orders and according to the unit's actions and according to the events in the battle space.

Constructed surface and its top view and recognized pattern shape	Calculated Bézier	
	Top view	Schematic
Recognized shape from the top view of the surface	Recognized (visible) sequential CTVs	Nearest schematic geometry in the set of definition map
Chain	5 → 6 → 10 → 11 → 15 → 19	1 → 5 → 6 → 10 → 11 → 15

By integrating a qualitative and quantitative analysis of an attack within the Bézier surface model, it is possible to extract and identify certain key points of the battle:

• Was the battle task fulfilled and the battle victorious?

• At what cost was the outcome of the battle achieved?

• Timing compared to the correctness of created solutions and selected actions.

• Were the decisions and actions actively justified?

• What were the key variables and culmination points of the attack?

Because the surfaces are produced from measured data into the form of Bézier surfaces, it is possible to add

mathematical comparison and pattern recognition in the CMEP method.

The primary challenge was in finding an appropriate way to handle several qualitative parameters describing tactical aspects. The sensitivity analysis of the CMEP method consists of interaction between three main analyzing stages, which are 1) the accuracy of the measured data, 2) the mathematical sensitivity of the CMEP method and 3) the sensitivity of the CMEP method's definition maps to support relevant interpretations dealing with the analyzed tactical phenomenon. The sensitivity analysis of the CMEP method shows that it is possible to affect the resolution of the surface model by tuning the scaling of different layers of the surface model. However, a sufficient amount of source data is more critical to ensure that the height differences of the surface model are clear enough to illustrate different tactical aspects.

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AMMUNITION PURCHASE DECISIONS IN THE FACE OF LONG LEAD TIMES AND USAGE UNCERTAINTY

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Ammunition purchase decisions are confounded by two significant factors: long lead times for suppliers to produce and deliver ammunition; and significant usage uncertainty. This puts a premium on careful planning to make sure that there are no shortages and, at the same time, that inventories are not excessively high. This paper presents a model for determining purchase requirements which trade-off these competing objectives.

Key words: *ammunition purchase, decision-making models, uncertainty, planning*

1. INTRODUCTION

Consider a defence planner who must determine how much of a particular nature of ammunition to purchase over the immediate short term. There are two critical factors which affect this decision. The first is that suppliers typically have long lead times. For example, the lead time for some Canadian Forces (CF) natures ("nature" means a specific type of ammunition) produced domestically is about two years. The second is that there is significant usage uncertainty. That is, there is significant year-to-year variation in usage. These two factors put a premium on careful planning to make sure that there are no shortages and, at the same time, that inventories are not excessively high. This paper presents a model for determining order sizes which trade-off these competing objectives.

Materials Requirements/Resource Planning (MRP) and its successor, Enterprise Resource Management (ERP), are well developed technologies (particularly in the private sector) for matching manufacturing requirements and manufacturing schedules with final product demand requirements. However, these systems are only as good as the models underneath that inform them. For good models, we need to turn to the operational research literature on inventory management. The seminal reference is Petersen and Silver [1].

Most texts in management science and operations management devote whole chapters to techniques for efficient purchasing decisions. Examples are Anderson et al [2], Chase et al [3], and Nahmias [4]. That I am aware, there are few models which capture the essentials of the

ammunition inventory problem I will describe below. Consequently, my purpose is to develop a simple model of ammunition purchase and inventory in the case where there is significant ammunition usage uncertainty and long lead times for purchase.

2. THE ORGANIZATIONAL PROBLEM

Most defence organizations purchase two kinds of rounds. One is used only in operations (stockpiles); the other is used in training. In this paper we focus on the purchase of training rounds since the problem of determining stockpiles is subject to a different set of performance characteristics. With stockpiles, the costs of running out of ammunition are significantly higher. In addition, training round inventories tend to be a much larger investment than stockpiles.

What is critical to this analysis is an understanding of the way ammunition supply and use are organized. For the CF, those who use the ammunition – the trainers – are a different part of the organization than those who are responsible for the purchase of ammunition. The ammunition requirement for training purposes is forecast at best a year in advance. Very often training schedules are not finalized until the very last moment. Moreover, the forecast of the ammunition requirement for individual courses is usually quite different than what is actually used for a variety of reasons. Very often, the actual number of soldiers taking a course is different than what was forecast, and, over the course, soldiers can fail the course before finishing it, thus reducing the ammunition required over the remainder of the course. All this to say, the CF has a difficult time estimating the ammunition for a single course and, what is more, there is substantial evidence that there is a systematic error in this estimate. For example, the forecast of the annual Army training requirement measured in dollars is usually substantially above what is actually used. In some years, the error is of the order of 30%. Suffice it to say, that a forecast of the requirement based on training plans is not reliable. Beyond that, training plans are forecast, at best, a year in advance which is a shorter time-frame than the lead-time for purchase. All this to say, in the absence of information to the contrary, the best predictor of a nature's requirement is past usage *aggregated over all training courses*. As it turns out, these usages have been fairly constant for most natures. The only time this would change would be where there is a material change to the force structure. For instance, if the Government of Canada approved an investment in a new infantry battalion, the training requirement for infantry natures would change substantially.

2.1. An Example

Suppose that aggregate usage of a particular nature over the past six years is as shown in the following table:

Table no.1.
Aggregate usage over 6 years

Year	Usage
y_{-1}	9,923
y_{-2}	10,424
y_{-3}	9,979
y_{-4}	10,804
y_{-5}	8,965
y_{-6}	11,085

In this table we use y−1 to refer to last year, y−2 for the year previous to that, and so on. Clearly these usages are variable and the planner must take this into account when determining how much to order. Suppose that the planner is looking forward in time and it is late in year y−1. His current inventory is 3,650 units, 10,000 units are due to be delivered at the start of year y1, and 11,000 units are due to be delivered at the start of year y_2. The planner must decide how much to order now for delivery at the start of year y_3. Moreover he would like to do this in such a way that there is a very low probability of a shortage in year y_3.

The first step is to characterize usage over years y_1, y_2, and y_3. With so little historical data, it is difficult to say what sort of probability distribution the usages are drawn from. However, on theoretical grounds, one could argue that the normal distribution is appropriate. The annual usage of a particular nature is the sum of a number of uncertain demands including individual training serials, collective training exercises, and other uses. Hence the Central Limit Theorem suggests that the annual usage, a sum of random in-year usages, ought to follow a normal distribution. Consequently we begin with the assumption that annual usage is drawn from a normal distribution with mean μ and standard deviation σ. In addition we assume that:

1. the distribution of year-to-year usages is stationary (each year's usage is drawn from the same normal distribution); and

2. the sequence of annual usages are independent random variables.

At a later point in the paper, we will discuss the implications if these assumptions are relaxed.

To get estimates for the parameters of the normal distribution, we could use standard maximum likelihood estimators (MLEs). In the general case, suppose that the history of usages over the past m years is

$$H = \{u - 1, u - 2, \dots, u - m\}. \quad (1)$$

Then the MLE for the mean is the sample average

$$\bar{u} = \frac{\sum u_{-i}}{m} \quad (2)$$

and for the standard deviation, it is *the sample standard deviation*:

$$s = \sqrt{\frac{\sum (u_{-i} - \bar{u})^2}{m - 1}}. \quad (3)$$

For the dataset above,

$$\bar{u} = 10,197 \quad (4)$$

$$s = 755. \quad (5)$$

Returning to our example, let $I_0 = 3,650$ be the current inventory, let $x_1 = 10,000$ be the amount to be delivered at the start of year y_1, let $x_2 = 11,000$ be the amount to be delivered at the start of year y_2, and let x_3 be the amount which is to be ordered for delivery at the start of year y_3. It is x_3 that the planner is trying to determine. Let U_i be the uncertain usage in year y_i for $i = 1, 2,$ and 3. For year y3, we would like the inventory at the start of the year (including the order amount x3) to be sufficient so that there are no shortages. That is, we would like

$$\Pr(U_1 + U_2 + U_3 \leq I_0 + x_1 + x_2 + x_3) \quad (6)$$

to be quite high. Note that the left-hand side of the inequality is the aggregate use over the years y_1, y_2, and y_3; the right-hand side is what is available to use over this same period. Since U_i is a normal random variable for all i, $U_1 + U_2 + U_3$ is also normally distributed. The mean of this sum is 3μ and the standard deviation is $\sqrt{3}\sigma$. Using the MLEs derived above, we estimate that $U_1 + U_2 + U_3$ follows a normal distribution with mean

$$3\bar{u} = 30,590 \quad (7)$$

and standard deviation

$$\sqrt{3}s = 1,307. \quad (8)$$

Hence if $I_0 + x_1 + x_2 + x_3$ is set at 1.645 standard deviations above the mean, 30,590, there is only a 5% chance of running out of ammunition. More generally,

$$I_0 + x_1 + x_2 + x_3 = 3u + 1.645\sqrt{3}s \quad (9)$$

implying that

$$x_3 = 3u + 1.645\sqrt{3}s - I_0 - x_1 - x_2. \quad (10)$$

Substituting the numbers from our example, we have

$$x_3 = 30,590 + 1.645(1,307) - 3,650 - 10,000 - 11,000 = 8,090 \text{ rounds.} \quad (11)$$

Consequently, the planner should order approximately 8,100 rounds for delivery at the start of year y_3. At this order level there is about a 5% chance of running out in year y_3. Obviously a number of refinements are possible. Here are just a few:

1. The planner may be uncomfortable giving the same weigh to each usage in the data history. An obvious adjustment would be put more weight on the most recent observations. This is easily done using weighted sample estimators.

2. The planner may feel that the stationarity assumption on average usage is unwarranted. It is straightforward to adjust the model for drift upward or downward in the average usage.

3. The planner may feel that the usages in forward periods might be more (or less) variable than the usage history suggests. This is easily handled by allowing the planner to adjust the estimate of standard deviation.

4. The decision timings are likely to be slightly different than those we have modeled here. For instance it might be that the planner is trying to make a decision, say, half way through year $y-1$ for what to order for delivery at the start of year $y3$. The analysis for this case follows the same principles. We will have more to say about this below.

The planner may wish to alter the risk of stock-out depending on the nature he is considering. For instance, for the data above, suppose the planner wanted the probability of running out to be less than 1% rather than 5%. Then he would allow for 3 standard deviations above the mean:

$$x3 = 3u + 3\sqrt{3}s - I0 - x1 - x2$$
$$= 30,590 + 3(1,307) - 3,650 - 10,000 - 11,000$$
$$= 9,862 \text{ rounds} \quad (12)$$

With 3 standard deviations there is a less than a 1% chance of running

out. The model is easily adjusted for this requirement. Note that moving to a 1% stockout risk increases the purchase quantity substantially. Our view is that 5% ought to be reasonable for most natures.

6. Other distributional assumptions are possible. Here we employed the normal distribution for good reasons. But a planner may prefer a distribution which ascribes higher variation such as the uniform distribution. Again, it is straightforward to make this kind of adjustment.

3. ASSESSING VOLUME DISCOUNTS

Very often, ammunition suppliers are prepared to offer price discounts if defence organizations are prepared to take delivery of a higher volume. Returning to our CF example, suppose a supplier is currently charging a price of p per unit for those units delivered in at the beginning of year y_3 but if the CF is prepared to purchase its y_3 and y_4 requirements at the beginning of year y_3, the all-units price is $p(1-\delta)$ where $\delta > 0$. The question is whether it is economic to make the higher volume purchase.

Taking the approach outlined above, suppose an analyst determines that the y_3 and y_4 requirements are x_3 and x_4 respectively. Then it will be cheaper to purchase all of this requirement at the beginning of year y_3 if

$$\frac{p(1-\delta)(x_3+x_4)}{(1+k)^2} < \frac{px_3}{(1+k)^2} + \frac{px_4}{(1+k)^3} \tag{13}$$

where k is an opportunity cost of capital. The left-hand side is the present value of the payment for the volume purchase; the right-hand side is the present value of two purchases, one at the start of year y_3 and the second at the start of year y_4. This inequality simplifies to the condition

$$\delta > \frac{k}{1+k}\left(\frac{x_4}{x_3+x_4}\right). \tag{14}$$

That is, the discount must exceed an adjusted purchase requirement fraction.

Here is an example. Suppose we take k to be 12% based on an assessment of the current government borrowing rate adjusted for risk and inventory costs. In addition, suppose that

$$\frac{x_4}{x_3+x_4} = .5. \tag{15}$$

Then we must have that

$$\delta > \frac{.12}{1+.12}(0.5) = .054. \tag{16}$$

That is, the price discount must be at least 5.4% for the volume purchase to be economic.

4. THE VALUE OF INFORMATION

The decision about how much to buy for year y_3 depends critically on the quality of the information the planner has. For instance it would be preferable to make a decision some time early in year y_1 rather than $y-1$ since the planner is likely to have better information about $u-1$ and I_0.

Having $u-1$ rather than an estimate means that his parameter estimates for the usage distribution will be more accurate. For the same reason, waiting to the end of the year to observe I_0 is preferable to estimating it at some point in year $y-1$. All things being equal, both of these factors allow the planner to order a smaller amount for a given level of stock-out risk. Hence, it is best to delay the purchase decision if such a delay allows the planner access to better data.

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MEANS

OF CHEMICAL RECONNAISSANCE AND CONTROL

IN THE FIGHT AGAINST CBRN TERRORISM

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The chemical, biological, radiological and nuclear terrorism (CBRN terrorism) is a special form of terrorism known for its extraordinary efficiency as super-terrorism or ultra-terrorism. Detection and identification of the presence of hazardous chemical toxic substances is very difficult and can be achieved only by using advanced detection and monitoring instruments and devices that are currently only in the equipment of units of the Fire and Rescue Service of the Czech Republic and some units of the chemical troops of the Czech Army. Instigators of chemical terrorism count on the surprise factor, as well as on the difficulty and great delay in detecting the presence of hazardous chemical toxic substances. Therefore, for early warning of the population and minimization of consequences of a terrorist attack with the use of hazardous chemicals, the ability of early detection and subsequent identification is very important.

Key words: *Chemical, Biological, Radiological and Nuclear Terrorism, CBRN agents, CBRN terrorism, CBRN Counter-Terrorism, chemical reconnaissance and survey equipment.*

1. INTRODUCTION

Analytical control is an interdisciplinary field penetrating not only chemical sciences but also a great majority of human activity. Apart from its general contribution and the use of analytical, primarily physical-chemical methods in the defense research of technical character, these problems are specifically worked out in the military research in order to provide chemical protection of the army and civil population.

Chemical reconnaissance is the most important component of chemical protection aimed at reducing the effect of chemical weapons; its goal is the early detection of chemical warfare agents, their species and the extent of atmospheric and ground pollution. The important objective of chemical reconnaissance is to determine the end of contamination

or, as the case may be, to determine when the warfare agent concentration dropped to an admissible level with the first syndromes of exposure becoming obvious only after several hours. However, this is an extraordinarily demanding task for reconnaissance.

Apart from the problems of chemical reconnaissance, detection methods and analytical procedures are also necessary for numerous tasks of chemical survey consisting primarily in the determination of the degree of contamination of surfaces and samples taken for analyses. However, it is necessary to monitor not only the contamination with chemical warfare agents but also with other militarily important substances, primarily with toxic compounds.

The detection methods that are used in the system of technical equipment for chemical reconnaissance and survey primarily involve the response time, selectivity and sensitivity. They are continuously completed with other requirements that depend on the changing military and political situation in the world, as well as on changing opinions about the use of chemical weapons in conflicts of different character and intensity.

Another factor that has to be taken into account is that new and more toxic warfare agents are being developed and stockpiled while the older and less efficient are gradually eliminated. The development of binary chemical weapons with the filling of non-toxic or only slightly toxic precursors of the nerve paralytic inhibitors of cholinesterase (at the present time the most important group

of chemical warfare agents) made the availability of these mass destruction weapons to be no longer a major problem because these substances are routinely produced and processed in the chemical industry. This situation cannot be changed by monitoring the observance of the Chemical Weapons Convention even if it is organized on a large international scale.

The use of chemical warfare agents in terrorist attacks against the civil population underlines the above stated facts and the importance of detection and monitoring of toxic and militarily important agents. Furthermore, the completion and modernization of the technical equipment for chemical reconnaissance and survey is significantly influenced by the current rapid development of the technology of new materials important in this sphere, such as the electronic and optical materials. Last but not least, the results of basic research in the sphere of chemical sciences become increasingly important. The chemical reconnaissance and survey equipment can be divided into several categories depending on the purpose of its use or on the level of the technical design.

2. SIMPLE EQUIPMENT

Simple equipment for chemical reconnaissance and survey forms the first category. This is a relatively frequently used and heterogeneous group of equipment for the detection of warfare agents. Agents in liquid state are detected by using detection papers, colors or pencils; the detection is usually based on the solubility of selected pigments in warfare agents.

The combat concentrations of vapors are detected by using detection papers based on a sensitive chromogenic chemical reaction. These detection papers must be in most cases completed with necessary solvents or solutions of agents.

Simple equipment for the detection of low concentrations, which are therefore less dangerous or even admissible, cannot be based on a classical chemical principle but on a biochemical principle. This is, of course, a more demanding and therefore more expensive solution, which is justifiable in case of warfare agents with the greatest risk of use. For this reason, the current simple detection equipment using a biochemical principle is based on various types of cholinesterase; the paralytic nerve substances are their highly efficient inhibitors.

Apart from the equipment used only for atmospheric control with an enzyme in solution or only coated on a carrier, the most advanced equipment uses enzymes immobilized on a carrier, which makes it possible to analyze water, food, surfaces, etc. Low mass, simple manipulation, power supply independence, and low initial costs are the reasons why this category of equipment for chemical warfare detection is considered to be successful in the future. This equipment can easily be incorporated into the equipment of an individual person; thus it should play a vital role for surviving in extreme combat conditions, during separation from a combat unit or in other extreme situations, which are difficult to predict. An interesting

trend in warfare agents' detection is the possibility of using liquid crystals, thin layers of cholesterol derivatives and analogues, which might become in the future the equivalent of detection papers based on physical and chemical principles. In the field of simple equipment based on biochemical principles, one can expect unequivocal contribution from the rapidly developing field of immunochemistry.

At present, diagnostic methods using immunochemical principles are rather widely used; some of them may be denoted as simple by their arrangement. Especially the development of preparation methods for the preparation of monoclonal substances is promising, because it would make it possible in the near future to prepare substances against low-molecular toxins, i.e., against the majority of chemical warfare agents. By this development, the necessary conditions will be created for the design of highly sensitive and selective simple equipment for the detection of warfare agents. On the other hand, in case of threat of the use of extremely toxic high-molecular toxins of natural origin or of their semi-synthetic derivatives in the category of chemical warfare agents, the immunochemical detection method is actually the only feasible solution.

3. CHEMICAL DETECTION DEVICES

The second category is formed by chemical detection devices. For this relatively simple equipment, the use of tube detectors and tube detection

devices is quite characteristic. The chemical detection devices differ by their external appearance, the technique of air sucking, range of products and the number of tube detectors or, as the case may be, by other equipment. However, their possibilities are limited by the parameters of the detection device tubes with respect to the warfare agent detection.

These chemical detection devices are widely used in all the armies in the world. The reason of their popularity is that their operation is simple, they are inexpensive and there is a broad range available of tube detectors. They make it possible to detect selectively and with great sensitivity the majority of the known warfare agents. Last but not least, the tube detectors have a long shelf-life because the necessary reagents for the chromogenic reaction are dosed in advance and stabilized by sealing into glass.

Apart from the tube detectors that use chemical reagents giving rise to characteristically colored products, the very sensitive biochemical cholinesterase reaction is traditionally used. By immobilizing the cholinesterase enzyme on the carrier in the detection device, the reaction makes it possible to detect the paralytic nerve warfare agents in the vapor-air mixture and also in water.

The development in this sphere of detection of warfare agents and other militarily important substances heads primarily towards the tube detectors that make it possible to suck the controlled atmosphere for a long period of time, furthermore towards tubes for a simultaneous detection of several agents and towards linear tubes for the semi-quantitative determination according to the length of the colored layer. The development in this sphere primarily heads towards the extension of the range of determined agents.

4. AUTOMATIC DETECTORS

The greatest emphasis is laid on the third category formed by automatic detectors. Automatic detectors should ensure continuous monitoring and constitute the basis of the protection and warning system of the army troops and manpower against the effects of chemical weapons or, as the case may be, other toxic contaminants. This group is by the principle and design of equipment quite heterogeneous; in most cases, the expensive and complicated equipment often uses some of the known instrumental method of physical chemistry in a very ingenious manner.

The automatic detectors based on a sensitive chemical or more often biochemical reaction differ primarily in the way the positive reaction is evaluated, which is either done photometrically or electrochemically. Apart from these automatic detectors, instruments that are based on the flame lionization principle, ionization principle, or on the ion mobility, IMS (Ion Mobility Spectroscopy) are also used.

The significant advantage of detectors using chemicals and biochemicals is their selectivity and sensitivity. The disadvantage is their dependence on these preparations and a lower response time given by the necessary reaction time. However, the automatic detector is a source of primary information about the incidence of warfare agents in the atmosphere; the high detection speed based on the detector response time is therefore primarily required. This early information would make it possible to organize the early warning of the manpower.

The efficient and rational process of commanding on the side of higher staffs (including the warning of subordinated troops and the estimation of casualties) is ensured by connecting the automatic detector to the net of automatic data acquisition. Despite the restricted possibilities in selectivity and quantitative determination of automatic detection systems, it was just this high response speed that contributed to the widespread use of automatic detectors using the IMS principle in the advanced armies. The IMS method could be further sophisticated with the goal of removing certain drawbacks such as for example the lower sensitivity and selectivity, the water vapor interference, the ability to detect only compounds forming molecular ions and clusters with the same electric charge, or the principal inability to distinguish small molecules.

However, this is not a problem that can be easily solved and the result would be gradual merging with mass spectrometry (MS), requiring to include a preliminary separation process incorporated before the detector. Such combination is already used in the mobile analytics, namely in the combination with gas chromatography, which is GC/MS. However, we pay for gaining the high selectivity by high initial costs, considerable demands on the level of operation, and with the exception of several volatile compounds, also by loosing the response speed of the whole detection system.

Furthermore, the problems persist of the quantitative determination and the overall insufficient sensitivity. A promising sphere of further possible solutions is the development of sensors and biosensors. The ion selective electrodes and classical potentiometric biosensor were discovered many years ago. Nevertheless, the first results of practical use appeared only recently in the detection and monitoring of specific substances in the atmosphere.

The amperometric sensors use a membrane permeable by gases and separating the electrolyte with a measuring, reference and auxiliary electrode; these sensors are now the most developed detectors. The outer potentiostatic system ensures the constant voltage between the measuring and reference electrode. By the redox reaction of the analyte with the electrolyte, a current arises that is proportional to the partial pressure of the component in the vapor-air

mixture. The used membrane, chosen electrolyte and the applied voltage in fact determine the selectivity and sensitivity of the detector.

Compact systems were already described for the direct voltammetric analysis of compounds in the atmosphere without the use of liquid electrolyte. In this case, the sensor consists of a conducting polymer coated on a non-conducting carrier. The electrode system is built into the polymer; the substance is adsorbed directly from the atmosphere. The electrode system may be overlapped with an ion-exchange membrane or, as the case may be, completed with catalysts for the detection of organic substances that can be oxidized only with difficulty.

The resistor sensors on the basis of conducting polymers seem to be promising; they are investigated within the projects called rather euphemistically an „electronic nose". The basic device consists of a bunch of resistor sensors differing in sensitivity, with chemometric evaluation and comparison with standards. The classical amperometric biosensors with a built-in enzyme undoubtedly meet the requirements of the fast detectors of nerve gases and strong cholinesterase inhibitors; they are also sufficiently sensitive and selective.

An unsolved problem is the regeneration or replacement of the inhibited or inactive enzyme and therefore the automatic or continuous operation. There is a hope in this direction that this problem will be solved by using multi-channel detectors and piezoelectric imunnochemical biosensors. The advances in the miniaturization of parts guarantee the necessary potential growth of sensitiYity; the character of the antigen-haptene bond (in contrast with the rigid engine-inhibitor complex) a chance to successful solution.

4. REMOTE DETECTORS

There is no fast detector sufficiently fast for unprotected manpower situated in a targeted area hit by chemical weapons. For this reason, a lot of work and money was spent on the construction of a detector that would receive the advance information on the chemical attack, thus making it possible to manage efficiently the necessary protective measures. This requirement is met with remote detectors based on the application of spectroscopic methods. These methods are based on the interaction of radiation with the vapor-air mixture or aerosols.

Depending on their relation to the radiation sources, we distinguish the active and passive remote detection systems. The active systems that are now denoted as lidars (light radars) use the coherent radiation of lasers. The passive detectors use as a source of radiation the radiation emitted from the energetic background; they represent therefore the highest attained level. The principle of remote control of air pollution in the case of lidars or passive detectors is in most cases based on the infrared and Raman spectroscopy or differential absorption spectroscopy. The remote

detection has been used as military equipment rather exceptionally.

In view of their complexity, these systems are suitable rather for stationary monitoring than as mobile equipment. Their high initial prices so far do not allow for their purchase in major series even in the armies of economically strong countries. The efficiency of remote control on the ground is also rather disputable; in a broken topography, it will be very difficult to utilize the theoretical range of several kilometers, moreover in a zone of combat activity with the atmosphere full of dust and smoke. On the other hand, the remote control is the ideal and only possible solution for air reconnaissance of chemical contamination in the areas of interest.

5. MOBILE LABORATORIES

Mobile laboratories belong to the fourth category. Mobile laboratories represent the basic equipment for carrying out chemical controls, they specify and complete the results obtained from chemical reconnaissance. The overall design and thus the development of mobile laboratories is quite different. By its size, a mobile laboratory represents small or almost pocket equipment, or the equipment sometimes portable over small distances, up to well equipped laboratories placed on the chassis of a cross-country truck or placed in a series of containers to be transported by railways wagons, airplanes or on ships. This volume

also restricts the applied methods to conventional analytical methods in the simplest case. In a more complex approach, the physical-chemical instrumentation is used with resistance increased by its construction, making it possible to identify organic compounds under the conditions of a rough terrain.

It should be stated that this category of equipment was neglected in favor of the detection systems, primarily the automatic ones. This holds for the detection and primarily for the identification of chemical warfare agents. Moreover, this category of equipment is limited by the need of professionally trained operators carrying out structural organic analyses, i.e., by specialists that are little numerous even in the sphere of civil research and development. It is also necessary to take into account the important feet that in the conditions of the world, which in most cases resigned on the use of chemical and biological (bacteriological) weapons of mass destruction, nuclear weapons could be used as retaliation to the possible use of weapons of that category. From this point of view, the importance of the reliable identification of individual chemical weapons growths above all present limits.

6. CONCLUSIONS

It can be stated that the problems of detection and analytical survey of

chemical warfare agents and other militarily important compounds are solved systematically, at all levels of chemical reconnaissance and survey. In the sphere *of simple equipment,* several development trends can be observed. First of all, it is the research of detection systems based on biochemical reactions that utilize the stabilized or, as the case may be, immobilized systems, primarily *cholinesterase* of different ethiology for the determination of nerve warfare agents. If it is possible to prepare monoclonal substances corresponding to militarily important compounds or their conjugates, the use of immunochemical procedures will be of considerable importance.

A classical development trend is the study of possibilities that provide chromogenic systems for the detection of warfare agents. These systems consist for example of thin layers of the cholesterol derivatives and liquid crystals. The reason why this category is considered to be successful in the future is the small volume and mass, undemanding use for training, inexpensiveness and a long shelve-life. It is easy to incorporate the equipment of this category into the armament of an individual. For these reasons, it should play a vital role for surviving in extreme combat conditions, during separation from a combat unit or in other extreme situations, which are difficult to predict.

The interest in *chemical detection devices* using tube detectors is continuing. This device is one of the most widely used equipment for the detection and monitoring of warfare agents that was introduced into the army equipment. The development trend is toward the extension of the detector range toward other current chemical warfare agents, toward tube detectors for long term sucking of the controlled atmosphere, small tubes for the detection of several substances and linear tubes for semi-quantitative determination. An opinion persists that the basis of the system for the detection and monitoring of warfare agents is a fast *automatic detector* connected to a net of data acquisition and evaluation. The equipment basal on the separation of clusters arising by the ionisation of the vapour-air mixture, i.e., the IMS method, is also considered to be promising.

The methods and procedures for the development of sensors and primarily biosensors intended for the direct control of the atmosphere are now intensively studied. Apart from the classical electrochemical (usually amperometric) biosensors based on the immobilized enzyme, biosensors that are based on the immunochemical principle with the piezoelectric detection and the possibility of the antigen immobilization on the surface of a piezoelectric crystal prevail. Considerable interest concentrates on the multi-detection systems that are the basis of an "electronic nose".

In the sphere *of remote control,* the development trend is primarily toward systems using the infrared and differential absorption spectroscopy. In this sphere, equipment already appeared which could be also used in the army and not only in the stationary monitoring systems. In the field of *mobile laboratories,* a distinct

shift is obvious from the often complicated and time consuming procedures of classical analysis to physical-chemical instrumentation, preferably to the separation methods and methods generally used in the organic structural analysis. The rather small portable laboratory sets are not losing on importance for specific tasks of chemical survey.

Terrorism, especially its international form, together with organized crime and proliferation of weapons of mass destruction is one of the most serious threats to the entire human civilization. A substantial part of the world has been hit or threatened by terrorism, political and religious, actions of regional and transnational terrorist and extremist organizations and groups. Regardless of the efforts of security forces of all democratic nations to eliminate international terrorism, dozens of countries meet with its activities every year. Terrorism is not a new phenomenon. However, the methods of terrorists have changed for decades, and consequences of contemporary terrorism are equally terrifying. States and their organizations must face the phenomenon, which through the latest technology and some new forms of activities has become a serious threat to lives, health and property of people.

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MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR. SOME BASIC ASPECTS

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Experience has shown that it is necessary to focus more on organizational behaviour. This requires managers to get familiar with several social and psychological scientific disciplines which can help them answer the questions related to the impact of the organization and organizational philosophy on the behaviour of managers and employees. In addition, organizational behaviour includes knowing individual differences between people in the organization and their impact on fulfilling organization's objectives. It also explains the relationships between people in connection to organizational culture, functioning of work teams, communication, etc. Analysis and interpretation of organizational behaviour should become part of managers' training so that they are able to explain and predict behaviour of people in the organization they manage.

Key words: *organizational behaviour, management, communication, organizational culture*

1. INTRODUCTION

Describing the working environment in which people spend most of their active life is not easy. Every individual who starts to work for a particular organization wants to know what he or she can expect, what kind of tasks he or she will be assigned, what work relationships exist in the organization, etc. Phenomena and relationships existing in the organization can be understood only if we are aware of the fact that it is comprised of people having different character traits. That is why it is necessary to be acquainted with the basic aspects of organizational behaviour, which are essential for managerial work.

"Working organizations are the sources of identity and the forums where people express their emotions. These organizations are apparently rational, serving mostly economic purpose. At least, this is what people think. Enterprises, hospitals, schools, shops as well as other subjects in which people fulfill pre-determined aims are the places of triumph and disaster, estrangement or satisfaction, where people acquire their most intense experiences." Therefore, managers and personnel managers and staff managers should focus on getting familiar, analyzing and understanding people's conduct in companies and organizations,. Comprehending the

behaviour of people in the working environment requires that managers apply scientific disciplines such as sociology and psychology. We would like to remind that sociology deals also with the social conduct - behaviour towards other people, whereas psychology focuses on individual's or group's personality and behaviour. It is necessary to add that the study of organizational behaviour requires also knowledge of other scientific disciplines such as social psychology, anthropology, pedagogy, staff management and management theory which are all concerned also with people at work. Organizational behaviour is a synthetic field of study which tries to explain the problem of human behaviour in organizations from a broader point of view in comparison to partial disciplines [2].

Considering today's managerial practice we can discover that in many organizations managers do not have sufficient experience in this field of study and they do not realize the reasons for behaviour of the people who are employed in organizations they manage. In addition, they are not able to predict certain behaviour of employees and, to make matters worse, they cannot explain their own behaviour and attitudes towards other people in the organization.

2. PEOPLE'S BEHAVIOUR IN ORGANIZATIONS IS NOT ACCIDENTAL

Generally, we can agree with the above statement. Human behavior in an organizational environment is not accidental; on the contrary, it has a certain result. What is more, we must realize that there are differences between people. As a result, they may not behave in a similar or same way in particular situations. In the real world of human conduct, there is a "bounded rationality", which means that there are certain cognitive limitations in a human's view of the world. Every kind of conduct has its reason which, however, depends on values, experience, as well as on the intentions of each individual. Emotional and intuitive thinking is also an important part of human behavior.

Managers have to make decisions every day, which determines their behavior as well. We can assume that they have clear specified objectives and interests, as well as properly defined alternatives to choose from. Moreover, all future phenomena can have coherent distribution of probabilities and the chosen alternative is likely to maximize an expected result. It is not easy for managers to fulfill any of these conditions in their everyday life because their bounded rationality and personal situation depend on the amount and quality of information, time, the superior's opinion, as well as the pressure of other events etc. As we can see, the psychological and sociological explanation of managers' behaviour is proper and justified.

Approaches of the research into the organizational behaviour may be understood more easily if we answer the question *What is the organization and its components?* Nobody doubts that each organization has people, that these people work and that they

use different technologies and a great deal of information. All these four basic components are interconnected and they form the organization. If there is not mutual harmony between them, the organization experiences disproportions, conflicts and inefficiency. Coordination and cooperation between people, groups and organizational units is then very complicated. The essence of the organization is the fact that it has at least three basic systems:

- production system (products or services),
- value stream system,
- data flow system.

Besides these systems, organizations have also the control system that also entails control processes.

Hierarchy is a typical feature of an organization and that is why it must be structured. As a result, the organization is characterized by various work groups and teams, organization units as well as by the relations between them. Organizations create a lot of alliances, networks, relationships between individuals or autonomous groups; thus we can talk about allied relations and units.

If we want to specify the aspects of organizational behaviour managers should focus on, we must follow empirical researches which: *"cumulate theoretical knowledge regarding the existence of people in organizations, behaviour of individuals and groups, their motivation, working attitudes, socialization, cooperation and conflicts, stress, organizational policy, ethics, use of power as well as the essence of an organizational culture".*[3]

Deeper analysis of these aspects will result in the following questions concerned with the managerial work: what the main differences between people at work are, how personality affects performance, how employees are motivated, how to create an effective working group, what is the sense of different organizational structures, how we can make changes successfully, how company culture affects the organization, what are the personality traits of successful leaders and so on.

Answers to these questions can be found in one of the basic attributes of any organization's running – that is the strategic vision.

Strategic vision is defined by experts as a statement which formulates the image of an organization or a working team in the future. There are more reasons why we should deal with the strategic vision in relation to organizational behaviour since it:

- does not direct our thinking towards problems but towards objectives,
- unites working teams (if employees do not have common objectives, they follow different ones),
- has a profound impact on the existence and direction of the company – if every organization had a good strategic vision, many organizations would not have gone bankrupt,
- helps coordinate activities. [4]

Managers in highly developed companies agree that the main factors of the strategic vision are objectives,

strategy, values and behaviour. These factors are interconnected. Objectives answer the basic question why the organization exists and what its mission is.

Strategy – if the objectives are to be met, there must be a strategy for procedures. This regards identification of characteristics thanks to which the organization is distinctive among competitors.

Behaviour – the above-mentioned factors must coincide with practical principles which will be followed (this includes managers' behaviour towards employees, communication within the company's hierarchy, behaviour towards customers and so on.

Values – must consist of principles and attitudes, as well as norms which are shared by employees of the organization within the organizational culture.

We have mentioned only the most essential attributes which influence the behaviour of people in organizations. Creative working atmosphere and positive interpersonal relationships which would help the organization realize the strategic vision and survive turbulent environment can be developed only if there is permanent communication and explanation of a real situation in the organization. Why is it necessary to pay attention to communication within organizational behaviour? The answer is quite simple. Communication includes receiving and giving information as well as mutual influence of the people who communicate.

The main functions of communication in managerial work are "the information function (giving information, facts and data to individuals or groups), the motivation function (motivates people to meet the organization's objectives and

includes also persuasion), the control function (controls activities of an individual or groups), the emotional function (helps to explain people's feelings and opinions)". [5]

Communication within organizational behaviour greatly contributes to elimination of unethical behaviour in the organization. If communication with people is not ethical and if it is not based on human dignity and ethical values, the management of people in the organization fails. Communication of managers with their subordinates is also the feedback which affects development of a positive working atmosphere.

Only those managers who give their subordinates a chance to meet with them and solve the problems, give them questions or proposals regarding improvement of their work get closer to them. Consequently, the employees are willing to do things beyond their job duties, if it is needed. Significance of communication for managerial work is evident also when there are organizational changes going on in the organization. It is necessary to say that organizational changes are related to organizational behaviour since its theory deals with the fact that the man is a bearer of changes. In this connection it is necessary to realize that "the human nature is characterized by deep-rooted resistance to any departure from certain standards or a working stereotype. In general, people are reluctant to accept changes and therefore it is necessary to change their attitude because not every change is bad. The change must be perceived as a step towards something better which will make our work easier". [6]

3. BASIC MANAGEMENT PHILOSOPHY AND ITS IMPACT ON ORGANIZATIONAL BEHAVIOUR

Managers' attitude towards the people they manage and lead can be considered as a basic aspect of judging the organizational behaviour. The only thing every manager should be able to do is to manage people effectively. Literature dealing with management and organizational effectiveness presents a positive picture of a human character and supports attitudes which motivate people to work willingly and do their best performance. Practical experience and reality in today's difficult economic and financial situation show that managers are not capable of emphatic behaviour towards their subordinates. It seems that a lot of mangers are still trying to lead the people by means of rules, systems, procedures and office work and avoid communicating with them. It is necessary that managers understand employees' feelings, needs and expectations. These people are managed and led and therefore they need to work in humane conditions. This, however, requires a highly developed *culture in the organization*, particularly a *culture of its management.*

Organizational culture includes: "*basic values, opinions and expectations existing in the company, behavioural patterns which result from these shared symbols and which interconnect expectations, values and behaviour of the organization's members*". [5]

Managerial thinking related to behaviour towards people in the organization can be prevented from declining by focusing managers' attention on a few basic principles which form *the basic management philosophy.* These principles are as follows:

- successful management of people based on honesty, trust, sincerity, mutual respect, cooperation, support,
- perception of employees as the basic investment unit,
- ensuring that managers have clearly defined rules they could apply in accomplishment of their tasks,
- management basis related to vision, charisma and abilities acquired through the team's commitment and cooperation,
- implementation of basic but important practices such as responsibility, knowing how to take care of people, knowing how to earn their respect, how to determine high standards and follow them, knowing how to manage people and how to excel at individual managerial qualities, etc.

4. CONCLUSIONS

People working in different organizations perceive these organizations in a different way. It can be certainly said that they react in accordance with how they are treated. Managers must realize that if they give little to their employees, little will get back to them. On the other hand, if they respect people and they are important to them, most of the employees will react as responsible and creative individuals who want to work for the organization. In

addition, we must not forget that employees need to be praised for their achievements. Managers often do not react to good performance done by their subordinates because they take it for granted. On the other hand, they can readily criticize whenever employees' performance falls behind their expectations. Employees need to know whether they work properly and receive appreciation for their effort. Individual approach towards employees is not of less importance. These, but also many other aspects, which belong to management philosophy necessary for staff management may be too *idealistic* and even *unreal* in today's reality, where companies prefer a dominant approach. Managers did not give up their right to lead. The question is how to lead people and how to use one's authority. Management of organizations is mostly based on "organizational power" derived from a position in the hierarchy and from using formal authority. Moreover, management may be based on "personal power" based on capabilities and professional knowledge, identification with subordinates, deserved respect and support from people who perform their work tasks.

Managers must be able to perceive and understand the behavioural processes in the organization they manage. What is more, they should be capable of setting an appropriate management system, derived especially from a purpose a particular organization serves. This system influences the organizational architecture system. Managers' work does not depend only on themselves but also on the people, very often not only subordinates, with whom they must build relationships. In addition, managers must learn how to influence people and get their support for the things they need. All in all, managers deal with human activities which impact existence of the organization in many aspects. As a result, they need to know the factors such as people's thinking, action and motivation.

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SOURCES OF ORGANIZATIONAL CONFLICT IN EDUCATIONAL INSTITUTIONS. THEORETICAL INSIGHTS AND A CASE STUDY

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Conflict in university is a phenomenon drawing increasing attention on behalf of managers and staff. This article is the result of a study aimed at analyzing the sources of organizational conflict based on the attitudes and opinions of staff and managers working in the Islamic Azad University of Sanandaj branch in Iran. In the article, the descriptive -exploratory method was applied. The population was 521 official and non-official members of the Sanandaj University. 220 individuals were chosen as the sample. Reliability was approved through Cronbach alpha (0.87). Statistical methods were applied using the SPSS software. Results revealed that, between managers and staff, there were conflicts regarding incompatible goals, ambiguity and role conflict, ambiguous rules, inconsistent evaluation and reward systems, job stresses, and deficiency in the information system of the university.

Key words: *conflict; organization; managers; staff; university.*

1. INTRODUCTION

Conflict is a sort of social status in which two or more people either face with disagreement concerning fundamental issues or show emotional hostility towards each other [1]. Conflict is an interactive process characterized by disagreement and incompatibility and occurring among social creatures, and an interpersonal dynamic process which is shaped in accordance with the internal and external conditions of the parties, affecting individual and group achievement positively or negatively [2]. Conflict refers to the fabric of our daily life. Historically speaking, men have always been aware of this phenomenon but, unfortunately, due to lack of proper management, it can change into hostility. Therefore, today, the human resource within organizations possesses an unpleasant background about conflict and considers it a negative phenomenon. This problem occurs when two or more people confront

with disagreement because they have different needs, aims, and values. So, it requires having thorough knowledge of conflict management to manipulate it. Some believe knowing how to manage conflict is as important as the ability to read, write and speak [3]. Nowadays, many managers are somehow crippled when facing this fact and prefer to escape from it. Not having sufficient information could be the reason of this fear. Presence of different persons having a variety of personal features, requirements, and perceptions would contribute to conflicts in organizations like universities [4]. Since university is the kind of social system in which individual and group activities play a fundamental role, it seems it ought to have tension and conflict more than any other social system. In a complicated organization, like a university, which has varying interests and benefits, mental conflict would be inevitable. Conflict in university can be the result of factors like limited sources, people with different interests, and the large structure of the university [5]. Recently, to optimally tackle problems resulted from conflict, and also help managers and staff, methods concerning solving conflicts have sparkled in organizational studies and discussions. Thus, being aware of sources and reasons of conflict, and of how to manage conflict in universities would be of significant importance to managers and staff. Conflict is a problem attracting much attention on behalf of managers and staff so becoming familiar with reasons and sources of conflicts in universities and their future courses would culminate

in the development of organizational sciences and also in a dynamic scholarly society. Organizational conflict can appear due to various reasons influencing the amount of satisfaction among managers and staff. Undoubtedly, managers should assist the organization in materializing its purposes. This requires an appropriate management and staff's satisfaction [6].

Several studies show that attitudes, beliefs, perception, and expectations of managers within the area of education, and their relations with staff, could either blunt or facilitate executing tasks by employees. It is noteworthy to state that staff and professors with inactive thoughts are unable to help or encourage learners in the course of learning. So, the more relaxing and soothing the environment for educational forces in universities and educational centers is, the greater the tendency towards training, followed by increased efficiency in universities including educational progress of learners. Many of the dissatisfactions, such as poor functioning, non-effective activities, degradation in the level of operations, and conflicts between managers and staff, all come from the deficient understanding of factors causing conflict. Given the importance of understanding the sources and causes of conflict in an organization, the aim of this study was to analyze the sources of organizational conflict within the Islamic Azad University, Sanandaj, among administrators and staff. Moreover, this was followed by the examination of the dimensions underlying the concept of "conflict".

2. DEFINING CONFLICT

The ways in which social conflict has been theoretically conceptualized and operationally defined in psychological research have overlapped considerably, although important distinctions do exist. Mary Parker Follett, an early scholar of organization behavior and pioneer in the study of conflict, defined conflict simply as "difference" [7]. Pioneering social psychologist Kurt Lewin defined conflict more broadly as "a situation in which oppositely directed forces of about equal strength play upon a person simultaneously" [8]. Morton Deutsch [9], a leading conflict scholar and student of Lewin characterized conflict as existing whenever incompatible activities (opposing goals, claims, beliefs, values, wishes, actions, feelings, etc.) occur. The psychologists and conflict scholars Dean Pruitt and Sung Hee Kim (2004) logically extended these prior definitions by describing conflict as arising from perceived divergence of interest [10]. Our definition of social conflict builds on the work of Follett, Lewin, Deutsch, and others but also acknowledges contemporary calls to view conflict not as a single event or situation occurring at a specific moment in time, but rather as a process unfolding in relationships over time [11]. Accordingly, we define conflict as a relational process influenced by the presence of incompatible activities. These process typically occurs in a relational context that has a history and a normative trajectory. In other words, conflicts, or incompatible activities, often only perturb the flow of ongoing psychosocial processes.

3. REVIEW OF RELATED LITERATURE

In this part the researchers are trying to review and study the work of other researchers on the topic approached by this article.

Juan D. (2008) [12] in a study entitled "Systematic resolution of conflict situations in collaborative facility design" presents the following conclusions concerning the findings of the research undertaken: incorporation of principles for prevention of conflict perpetuation and escalation improved effectiveness; implementation of computer-based learning increased usefulness; and integration of conflict detection and resolution resulted in increased effectiveness of the facility design process.

Filiz Kantek (2009) [13] in the study "Conflict in schools: Student nurses' conflict management styles" determined that the students preferred to use styles that produced positive results in conflict resolution and that the frequency of experiencing conflict and the feeling of success in conflict had an effect on the choice of conflict management style. Therefore, we believe it will be helpful to analyze the relationship between the causes of conflict between the student and the instructor in the practice field and the uses of conflict management styles.

Jesse S. (2009) [14] in "A comparative test of work-family conflict models and critical examination of work-family linkages" indicates that "direct effects drive work-family conflict models

while indirect effects provide little incremental explanation with regard to satisfaction outcomes".

Kuo-Hsiung (2010) [15] in the study "Conflict-coordination learning in marketing channel relationships: The distributor view" highlights that positive conflict attitudes are positively related to conflict coordination learning (CCL), and that avoidance of conflict behaviors is negatively related to CCL. Furthermore, the results indicate that joint marketing strategy quality mediates the relationship between CCL and joint profit performance. Specifically, under high positive conflict attitudes, CCL strongly appears related to joint marketing strategy quality.

Ike C. Ehie (2010) [16] in "The impact of conflict on manufacturing decisions and company performance" underlines that "(…) conflict can facilitate or hamper company performance in an operational decision-making setting. Our results indicate that when conflict arises in a manufacturing decision, cognitive conflict would lead to a higher level of company performance particularly when the decision scenario is based on a market responsive situation (innovative products). Consistent with previous studies, affective conflict tends to have adverse effects on performance regardless of the decision scenario".

Jia-Chi Huang (2010) [17] in the study entitled "Unbundling task conflict and relationship conflict: The moderating role of team goal orientation and conflict management" points out results showing that "team goal orientation and a conflict management approach moderated the relationship between task conflict and relationship conflict. The positive relationship between task conflict and relationship conflict was weaker under conditions of higher team learning orientation and lower team performance orientation. The positive association between task conflict and relationship conflict was also weaker among teams that engaged in cooperative conflict management and did not engage in the avoiding conflict management approach".

Robert Goldblatt's study (2011) [18] "Unlocking conflict through creative expression" the quantitative results had high inter-rater reliability and gave clear support for Cooper's Conflict Ladder as an instrument to further measure conflict for art therapists. The qualitative findings were consistent with the quantitative findings, clearly supporting the practical application of the instrument and furthering exploration and investigation of art therapy as a tool for assessment of conflict and avenue for therapeutic reduction of conflict.

Charlotte M. Karam's scientific investigation (2011) [19], "Good organizational soldiers: conflict-related stress predicts citizenship behavior" aims her study at examining employee behavior in times of conflict, namely the relationship between employee conflict-related stress and engagement in organizational citizenship behavior and the role of cohesiveness as a potential cross-level moderator of this relationship. As opposed to previous research in the field, the

results indicated that employees engage more in organizational conflict behavior (OCB) when they experience greater amounts of stress and that this is more likely to occur in cohesive groups rather than in non-cohesive groups. In terms of the social implications, the conclusions pinpoint that *"extraordinary times call for extraordinary efforts and that employees often meet this challenge through their engagement in behaviors that will contribute positively to the social-psychological environment of the workplace"*.

Sonja Rispens's study (2012) [19] "The Influence of Conflict Issue Importance on the Co-occurrence of Task and Relationship Conflict in Teams" confirms *"the buffering effect of conflict issue importance. When teams fight about important task issues, no association between task conflict and relationship conflict was found. This effect could be partially attributed to the decrease in negative emotions present in teams during important task conflicts"*.

Richard A. Posthuma (2012) [21] in the study *"Conflict management and emotions"* indicates that a broad range of positive and negative emotions, such as anger, enthusiasm, excitement, guilt, and remorse, are significantly related in complex and varied ways to various aspects of conflict management. The studies highlight not only the importance of understanding specific emotions in conflict situations, but also the need to understand how and when the regulation of emotions can facilitate effective conflict management.

Carlos Montes (2012) [22] in *"Affective choice of conflict management styles"* reveals that affective groups statistically differ in their self-reported conflict management styles. Positive moods and feelings have been found to be related to the preference for more cooperative strategies.

Moritz Römer's study (2012) [23] entitled *"A Helping Hand ? The Moderating Role of Leaders' Conflict Management Behavior on the Conflict–Stress Relationship of Employees"* confirmed their expectations *"that the perception that leaders engaged in third-party forcing behavior and avoiding behavior amplified the effects of conflict on conflict-related stress. Furthermore, they found that leaders' third-party problem-solving behavior had a buffering effect on the association between relationship conflict and conflict-related stress"*.

Paul Teague *et al.*(2012) [24] in *"Line managers and the management of workplace conflict: evidence from Ireland"* showed that confident, independent and well-supported line and supervisory involvement in conflict management is a direct function mainly of the adoption of commitment-oriented HRM and indirectly of the influences that prompt firms to invest in this model. Organizations without commitment-oriented HRM policies are likely to possess inadequate support structures to assist line managers in carrying out conflict-management activities.

O. P. Akinnubi et al. (2012) [25] in *"Principal's Personal Characteristics and Conflict Management in*

Kwara State Secondary Schools, Nigeria" indicated that a significant relationship existed between principal's personal characteristics and conflict management in the Kwara State secondary schools. Hence, it was recommended, among others, that the principal should understand the cause of conflict in the school system and use appropriate strategies to ameliorate the situation based on personal characteristics. Saeed Moghaddas Pour et al. (2012) [26], in *"An empirical study to measure the relationship between management style and conflict management"* confirmed that there is only a meaningful relationship between relationship-oriented leadership with solution-based conflict management. In other words, the survey indicates that when there is a conflict, management can handle the problem using their relationship and find appropriate solutions to resolve any possible conflict.

L.M. Wamocha (2012) [27] in "Intervention Measures in Conflict Management in Boarding Secondary Schools in Western Province, Kenya" showed that the concept of "conflict management" refers to an act and also a process of resolving disputes between two or more parties with the view of coming to a resolution. The significance of the study findings were: to provide greater insight to the administrators of secondary schools on the intervention measures in conflict management in boarding secondary schools. Furthermore, the findings of the study may help education policy makers, managers of schools, head teachers and teachers in providing guidelines on proper use of punishment in conflict management.

The conclusion derived from the review provided above is that none of the research studies cited is related to the issue of "sources of organizational conflict". However, all studies mention the existence of differences and suggest means to solve these.

4. RESERCH STUDY DETAILS

Based on the theoretical input, this study aims at making the following point concerning the topic of "sources of organizational conflict": to execute a project in an appropriate manner is to gather the topical information from the right place (hence what we called in our research model "variables of job status"). Therefore, a model of research detailing two types of variables derived from the concepts of "organizational conflict sources" is proposed, as presented in **Figure 1**.
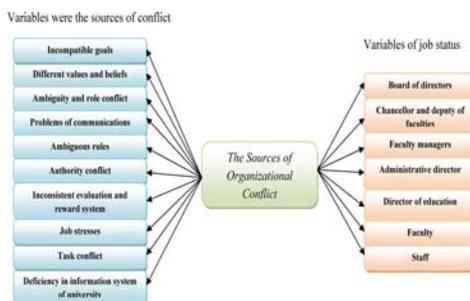
Figure 1. The proposed research model

4.1. Research hypotheses
The research hypothesis underlying our study were formulated as follows:
1. Between members of the university, in the incompatible goals, there are significant differences.

2. Between members of the university, in the different values and beliefs, there are significant differences.
3. Between members of the university, in the ambiguity and role conflict, there are significant differences.
4. Between members of the university, in the Problems of communications, there are significant differences.
5. Between members of the university, in the Ambiguous rules, there are significant differences.
6. Between members of the university, in the Inconsistent evaluation and reward system, there are significant differences.
7. Between members of the University, in the Authority conflict, there are significant differences.
8. Between members of the University, on the job stress, there are significant differences.
9. Between members of the university, in the Task conflict, there are significant differences.
10. Between members of the University, in the Deficiency in information system, there are significant differences.

4.2. Materials and methods

This research used a descriptive-exploratory method. The study population consisted of 521 staff of Islamic Azad university of Sanandaj branch in 2012. According to Morgan table, 218 persons formed the sample. 218 questionnaires were distributed and all were returned. The variables were the sources of conflict including incompatible goals, different values and beliefs, ambiguity and role conflict, problems of communication, ambiguous rules, authority conflict, inconsistent evaluation and reward system, job stresses, task conflict, and deficiency in information system of university. The variables of job status included board of directors, chancellor and deputy of faculties, faculty managers, administrative director, and director of education, faculty and staff. To collect data, the authors of this article compiled a questionnaire based on other researchers' questionnaires and variable definition: Mcshane's conflict sources [28], Everly's [29] and Hellriegel's [30] stress, role ambiguity and contrast, Dubrin's [31] job conflict. Because the main questionnaire was a combination of the other ones, 15 professors majoring in management were asked to comment. After implementing the necessary changes, final edition of questionnaire was prepared. Then, in a preliminary study by a test-retest method, the questionnaire was distributed among the staff of the Islamic Azad University of Sanandaj branch. The resulted correlation coefficient was %88. Cronbach alpha determined the inter-reliability of questions (0.87). Statistical methods of this research involved one-way variance analysis, and Tukey post hoc test. The SPSS software tools were applied to analyze the data.

4.3. Results

In analyzing sources of organizational conflict, in order to make it clear in which aspect conflict exists between managers and staff, one-way variance analysis was utilized. Table 1 contains the results of this analysis.

Table 1. One-way variance analysis to recognize sources of conflict in university

Analysis of sources of organizational conflict for university member (managers, faculty, staffs)	F	sig	Confirm or reject of comparisons
First: Between members of the university, in the incompatible goals, there are significant differences.	3.465	0/001	Confirm
Second: Between members of the university, in the different values and beliefs, there are significant differences.	0.343	0.862	Reject
Third: Between members of the university, in the ambiguity and role conflict, there are significant differences.	2.859	0.022	Confirm
Fourth: Between members of the university, in the Problems of communications, there are significant differences.	0.745	0.875	Reject
Fifth: Between members of the university, in the Ambiguous rules, there are significant differences.	4.624	0/000	Confirm
Sixth: Between members of the University, in the Authority conflict, there are significant differences.	0.370	0/874	Reject
Seventh: Between members of the university, in the Inconsistent evaluation and reward system, there are significant differences.	3.346	0.006	Confirm
Eighth: Between members of the University, on the job stress, there are significant differences.	3.732	0.016	Confirm
Ninth: Between members of the university, in the Task conflict, there are significant differences.	1.714	0.134	Reject
Tenth: Between members of the University, in the Deficiency in information system, there are significant differences.	2.475	0.038	confirm

Table 2. Tukey HSD, to analyze the sources of organizational conflict

Dimensions of conflict	A:post	B: post	Mean difference	sig	Std. Error
incompatible goals	Board of directors	Faculty	2.85714*	0.028	0.91734
		staffs	3.24167*	0.007	0.89336
	Chancellor and deputy of faculties	Staffs	2.52738*	0.039	0.83036
Ambiguity and role conflict	Board of directors	Staffs	1.07500*	0.025	0.87640
	Chancellor and deputy of faculties	Staffs	2.31310*	0.043	0.81460
Ambiguous rules	Board of directors	faculty managers	5.64286*	0.009	1.59414
		Faculty	5.44643*	0.003	1.40339
		Staffs	4.97500*	0.006	1.36669
Inconsistent evaluation and reward system	Board of directors	Faculty	3.33929*	0.004	1.25508
		staffs	3.54167*	0.043	1.22226
	Chancellor and deputy of faculties	Staffs	2.97024*	0.037	1.13607
job stress	Board of directors	Faculty	3.70238*	0.036	1.44687
		staffs	4.42500*	0.031	1.40904
Deficiency in information system	Board of directors	faculty managers	4.71429*	0.004	1.91098
		Faculty	4.51786*	0.022	1.68231

Results of the Tukey post hoc test imply that regarding incompatible goals, the board of directors of this university had a meaningful difference with both staff and faculty members. The amount of this difference was 0.007 and 0.028 respectively. The Chancellor and deputy of faculties had a meaningful difference with the level of 0.039. About ambiguity and role conflict, the difference level of 0.023 was found between the board of directors

and staff, and the level of 0.045 between the chancellor and deputy of faculties and staff. Concerning the dimension of ambiguous rules, the board of directors had the meaningful difference of 0.009, 0.003, and, 0.006 with faculty managers, faculty members, and staff, respectively. For inconsistent evaluation and reward system, the differences of the board of directors with faculty members and staff were 0.004 and 0.043, and the chancellor and deputy of faculty with staff was 0.037. For Job stress, the board of directors had differences of 0.036 and 0.031 with faculty members and staff respectively. The level of differences of board of directors with faculty manager and faculty members, regarding deficiency in information system of university, was 0.034 and 0.022, respectively.

4.4. Discussion

There was a meaningful difference between members of Sanandaj University concerning incompatible goals. It seems much of disagreement between managers and staff over university goals yields from either insufficient knowledge of both camps from given goals or lack of transparency of university goals.

Concerning the subject of different values and beliefs, no meaningful difference appeared among university members. Based on the results obtained, the Sanandaj University decreased differences in beliefs and values by periodically changing members' organizational positions. Moreover, the members of Sanandaj University had a meaningful difference about ambiguity and role

conflict. Implemented studies clarified that managers did not specify responsibilities and job expectations of staff.

Related to the problem of communication, no meaningful difference appeared among university members. According to the study done, it appears that Sanandaj's Azad University could use non-official communications, like participating in meetings, stadiums, etc, among its members. Furthermore, we distinguished university staffs pay high attention to facial communications, that is, one of the most effective methods of communication. These measure eliminated differences of university members in communications.

Discussing about ambiguous rules, we found a meaningful difference among members of the university. In this regard, performed studies manifested sheer differences in university's rules. Also, policy-makers did not make clear rules and approaches, resulting in deficiency in swift and instantaneous decisions and thorough knowledge of entire rules. Neither staffs nor managers allocate enough time to understand rules properly. Authority conflict faced no proof of presence among members of university.

With attention to the results of researchers done in this respect, it seems Sanandaj University was able to harmonize tasks of staff with the domain of their authority. Every person performs its tasks hinged on the domain of authority.

There is a meaningful difference between university staffs regarding inconsistent evaluation and reward systems. Due to the system shortage in terms of coherence and equality-oriented and also based on scientific studies, especially concerning the psychological dimensions of giving rewards to employees, managers cannot materialize the real influence of rewards or punishments. On the other hand, staffs know that by accepting decisions of managers that are in contrast with their beliefs, they can get rewards. If staffs disagree with managers, and they are proven right to do so, they will be punished. This problem in the reward and punishment system causes a heavy atmosphere orienting employees towards not expressing their opinions but just accepting what managers say. Therefore, as a whole, organizations will face degradation in productivity if there is merely blind acceptance.

Job stress, as another source of organizational conflict, encountered a meaningful difference among the members of the Sanandaj's university. It seems the lack of concern for the mental and physical limits of the staffs and the positions job descriptions of faculty and employees, cumulated with the exceeding expectations of managers led to harsh stress of staffs. This stress somehow evolves and the overall feeling is that whatever staffs do seems lame to the board of directors.

Furthermore, job security is a matter of drastic fear and stress among the members of the university for, anytime, they may face firing. Managers, in turn, use this working atmosphere as a yoke to manipulate employees.

The members of the Islamic Azad university of Sanandaj branch had no meaningful difference regarding task conflicts. It means university specified borders of tasks

in a way that no abnormal and clear conflict appeared. Deficiency in the information system of university faced no meaningful difference among members of university. A coherent and applied system based on computer and information technology would be vital so that members are capable of giving their opinions, suggestions, and critics to superior officials. This process could promote productivity and speed in long term. Such an advanced system needs allocating budget to purchase required hardware and software, and also, hiring updated experts. Unfortunately, managers did not consider this as a serious subject.

5. CONCLUSIONS

The results of this research indicate that there are concerning sources of organizational conflict among managers and staffs in the Sanandaj's Islamic Azad University, like incompatible goals, ambiguity and role conflict, ambiguous rules, inconsistent evaluation and reward system, job stresses, and deficiency in information system of university, led to conflict in members of university.

Concerning the incompatible goals, it is recommended that managers decrease conflict at varied levels by concentrating over main goals. More commitment to comprehensive goals by faculty members and staffs will culminate to diminished focus on personal purposes and reduction of inter-personal conflicts. To solve ambiguity of roles, managers can help members via specifying their exact duties and expectations.

Talking about ambiguous rules, there should be complete specification of rules and procedures by policy makers of the university. Analyzing university rules, the authors recognized obvious differences in them, including: level of employment, payment and working hours, decisions about managing human resources, and so on. Hereby, it must be noticed that rule-makers should pay more attention to the process of codifying laws.

Regarding the inconsistent evaluation and reward system, rational criteria are required for paying wages; that is, every person is rewarded in accordance with his or her outputs. The university can implement a system of presenting material and non-material rewards, and assessing the outcome of this system prevents favors in rewarding.

To solve the job stress problem, a re-planning of task allocation is needed. Giving more responsibilities to staffs, delivering distinguished tasks to members, and freedom in performing tasks, are subjects that should be considered in the re-planning process. If people do not accept heavy duties, specialized tasks would be compatible to their needs, and if there are people enjoying no changes in daily duties, distrust and conflict will be visible in organization.

To remove deficiency in the information system of university, applying not only recognized facilities of acknowledged systems, but also state-of-the-art tools in the realm of information technology, such as, electronic education, teleconferences, databases of Excel and Access, and

etc, would assist the implementation of a better information system. The current status of the information system in university clarifies potential opportunities still not extracted. With respect to the needs related to information technology and systems, a comprehensive program is advisable to be compiled, in part to help backup operations like server and network security, and in part to confront with crisis and unexpected events, e.g. internet attacks.

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IMPLEMENTING A RISK MANAGEMENT STANDARD

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After risk management "conquered" more and more project managers' minds and showed its benefits for business and programs, the need to have a global risk management standard has become a crucial issue in the world of risk management. But having a global risk management standard has been a big challenge, starting from the decision of developing the standard (March-June 2005), to the moment of publishing it, November 2009. So, developing the ISO 31000:2009 standard has been more or less like a bumpy ride. Apparently, the people involved in developing the global risk management standard understood from the very beginning that no challenges are too big, nor any tasks too small and that the task of having a new, comprehensive global risk management standard should be completed with excellence: defining the principles and the framework guiding the risk management process applicable for all type of organizations and for a wide range of activities. Coming up with a global standard should always be based on the real organizations' needs and should fulfill real risk management requirements. The article is trying to present the pros and cons of risk management standard implementation, challenging the implementation process itself and the added value of implementing the standard due to the lack of implementation enablers, like risk culture, a real problem especially in an international environment.

Key words: *standard, implementation, risk culture, ISO, enablers.*

1. THE NEED FOR A RISK MANAGEMENT STANDARD

There was no shortage of the number of standards and guidelines in the area of risk management in the last decade. The large body of standards has grown in an uncoordinated manner, leading to significant inconsistencies and resulting in a lack of a coherent approach and terminology recognized by the Industry. Risk management has been considered first as a system engineering process and after a while a program management process. But the risk management process defined in the ISO/IEC standards (like ISO/IEC 15 288, System Life Cycle Processes, ISO/IEC 12 207 Software Life Cycle Processes, ISO/IEC 24 748 Life Cycle Process Concepts and Definitions) is not enough to be applicable to both engineering and management.

The ISO 9001:2008 contains for the first time requirements indirectly associated with risk management, concerning the management reviews, human resources, infrastructure, and review of requirements related to

the product, control of design and development. "Risk management is even more strongly suggested by the ISO 9004, which emphasizes the need for risk management for the development and sustainability of the business in organization. The ISO/IEC Guide 73:2002 provided government and non-governmental organizations with a set of basic definitions and terminology relating to risk management". [1] However, there was a strong need for an ISO standard that ensures a consistent approach to risk management. "The adoption of consistent processes within a comprehensive framework helps ensure that risk is managed effectively, efficiently and coherently across an organization". [2]

2. WHAT IS A STANDARD?

There are many definitions of a 'standard'. Generally speaking, a standard means a set of rules, principles which should be followed in different areas in order to provide coherency, a systematic approach and a kind of predictability in terms of processes, product content, structure and quality.

The International Organization for Standardization (ISO) defines a standard like "a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, processes and services are fit for their purpose".

More specific, the ISO/IEC Guide 2:2004 (Standardization and related activities - General vocabulary) defines a standard as "a document established by consensus and approved by a recognized body that provides for common and repeated use, rules,

guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context" [3].

The Project Management Institute (PMI) defines a standard as "guidelines for achieving specific project, program and portfolio management results". In essence, a standard is an agreed way of doing something. It could be about making a product, managing a process, delivering a service or supplying materials. Standards can cover a huge range of activities undertaken by organizations. They can be very specific, such as to a particular type of product, or general such as management practices. Standards generally represent minimum levels of acceptability and are in general voluntary. Even if a standard is not compulsory, many organizations comply with it in order to demonstrate their commitment with the best practices in a specific business area. However, where a standard is touching people health and safety or the environment, it may be compulsory. The government can also make some standards mandatory in relations with specific laws/regulations.

3. RISK MANAGEMENT STANDARD IMPLEMENTATION. PROS AND CONS

It is hard to imagine our world without standards. The products might not work properly, in the way they are expected to work, they will probably have low quality, without being interoperable, compatible with other equipment and sometimes non-standardized products will be even

dangerous for the users. Because of the standards the products/services are seen by the Customers as safe, healthy, secure and high quality. ISO standards ensure that products and services are safe, reliable and of good quality. For business, they are strategic tools that reduce costs by minimizing waste and errors and increasing productivity.

Some of the most well-known ISO standards are management system standards. They provide a model to follow by an organization when setting up and operating a management system. Like all ISO standards, they are the result of international experts' consensus and best practices. These standards can be applied to any organization, large or small, whatever its sector of activity.

The risk management standard recommends that organizations should have a framework that integrates the risk management process into the organization's overall governance, strategy and planning, management, reporting processes, policies, values and culture. "Although the practice of risk management has been developed over time and within many sectors to meet diverse needs, the adoption of consistent processes within a comprehensive framework helps ensure that risk is managed effectively, efficiently and coherently across an organization"[2].

For any standard, including a risk management standard, there are pros and cons concerning the benefits of implementing it for the organization, business and customer. Some of the pros and cons concerning the implementation, without entering into details because they are most of the time self-explanatory are highlighted below.

Pros:
• It improves organizations' performances and reduces their risk exposure;
• It supports the implementation of risk management in a formal, process oriented way;
• It ensures that the products and systems are safe, reliable and perform as intended (fit-for-purpose);
• It improves business and management practices;
• It saves business time and money, making business more efficient;
• It provides a great set of tools for examining risks;
• It represents a benchmark for performance evaluation;
• It supports the management decision making process.

Cons:
• It involves additional costs (training, implementation, tools);
• It provides no clear answers to particular organization/business aspects;
• It has no clear corresponding guidelines for supporting the implementation;
• It needs to be revised frequently in response to rapidly changing business circumstances;
• It does not offer the same level of qualifications for international trade as some ISO standards because no certification process exists;
• It does not guarantee the risk management effectiveness;
• There is no pressure in legislation for organizations to comply with the standard;
• The cycle for producing/updating the standard is a long one.

The conclusion is quite obvious in favor of implementing a risk

management standard because the standard "provides the principles and guidelines for managing any form of risk in a systematic, transparent and credible manner and within any scope and context" [2]. At the same time the implementation of a risk management standard should not be seen as a way for solving all the problems related to an organization/program risk management process. The standard could be definitively considered as a strong foundation supporting the risk management process but each organization should implement/involved the appropriate risk management enablers which are not all the time within the borders of the standard (**Figure 1**). One of the risk management process enabler is the risk culture and the organization's best management practices producing real results in achieving the business objectives. Standards represent approved or common practice which may or may not be reasonable and so compliance with these standards and codes of practice is a starting point, not a goal.

Figure 1. Risk management standard implementation enablers

4. RISK MANAGEMENT BEST PRACTICES

There are quite a lot of private companies which have been accumulated merged and preserved a strong risk culture coming mainly from their leaderships, different stakeholders and business experience. If in this kind of companies the board of directors and top level management can understand, define and actively manage the organization's risk appetite and attitude, the implementation of the best risk management practices is becoming more a technical risk management process implementation issue then a governance issue.

In these companies the risk management process has been developed and refined based on the lessons learned and best practices shared among the practitioners of risk management through the risk management Community of Practice.

Managing risks within this strong and mature environment could be done in a very effective way where the people feel that they have a say and the process is not imposed by someone or based on specific risk management standard requirements. The key for getting the buy-in of the risk management process is to succeed to make the risk management actors understand that the choices came from them and not from an authority imposing

rules to be followed. Implementing a risk management standard in these companies should be an easy job with the aim of increasing the risk management maturity level from level 4 (Integrated) to level 5 (Optimized).

5. RISK MANAGEMENT STANDARDS

The first Australian and New Zealand Risk Management Standard, AS/NZS 4360, was released in 1995 and updated in 1999 and 2004 respectively. This standard was increasingly adopted and translated by other countries. AS/NZS 4360:1999. The "Risk Management" standard provided a generic guide for the establishment and implementation of the risk management process involving establishing the context and the identification, analysis, evaluation, treatment, communication and on-going monitoring of risks. The standard specified the elements of the risk management process without enforcing uniformity of the risk management systems. It was generic and independent of any specific industry or economic sector.

Two other risk management standards appeared in quick succession: in 2001 Japan launched a risk management system called JSI Q 2001:2001, which offered two advantages, formal definition of risk management system and the introduction of continuous improvement. In 2002 the UK Institute of Risk Management (IRM) introduced its standard, "A Risk Management Standard".

In 2004 the AS/NZS 4360:2004, "Risk Management" mainstreamed the concept of risk in the 20th century, endorsed a risk management approach covering whole organization, including government, standardized to a certain point the risk nomenclature and it seems to have created a Risk Manager profession and emphasized the importance of 'context'. It also gave the impression that if the standard is followed all will be well and created a focus on assessment rather than driving the attention to risk mitigation. It failed to convince about the multidimensional nature of the risk and the range of concepts and tools required considering it. The Australia and Standards New Zealand supported the development of an international standard which resulted in the publication of ISO 31000:2009 which has been ratified by both countries as AS/NZS ISO 31000:2009 standard with minor changes to the Introduction to address the application of the standard in Australia and New Zeeland.

Canada has also adopted the ISO 31000 Risk Management standard in 2010. "CAN/CSA ISO 31000 Risk Management – Principles and Guidelines" provides a framework and process for managing risk in any public, private, or community organization. Canadian Standards Association (CSA) confirmed that "the Canadian adoption of the ISO 31000 Risk Management standard will enable Canadian organizations to compare their practices with an internationally recognized benchmark, providing them with sound principles for effective risk management". CSA Standards also developed a new edition of its existing risk management standard to supplement the international standard. CSA Q850-10 "Risk Management – Implementation of CAN/CSA ISO

31000" provides further guidance to implementing the international standard taking into account the need of Canadian stakeholders.

A short description of ISO risk management specific standards is provided only for having the whole picture related to their implementation process. It should be noticed that there are two levels of standard scope: project and organization. The risk management standards described below can be adapted for use at organization level and project level.

5.1. ISO 31000:2009, "Risk Management – Principles and guidelines"

The standard serves as a 'peak' standard to harmonize other standards dealing with specific areas of risk management. The standard is built around three fundamental pillars: risk management principles, risk management framework and risk management process. The main variations from the AS/NZS 4360:2004 as outlined in the Introduction of the AS/NZS ISO 31000:2009 are:

• "Risks are defined in terms of effect of uncertainties on objectives";

• The principles to be followed to achieve effective risk management have now been made explicit;

• There is much greater emphasis and guidance on how risk management should be implemented and integrated into organizations through the creation and continuous improvement of a framework;

• An informative Annex describes the attributes of enhanced risk management and recognizes that "while all organizations manage risk in some way and to some extent this may not always be optimal". [2]

The process described for managing risk is identical to that in AS/NZS 4360:2004. The standard is not intended to impose uniformity of risk management across organizations and is not intended for certification, regulatory or contractual use.

5.2 ISO/IEC Guide 73:2009, "Risk management – Vocabulary"

This document, which replaced the earlier 2002 version, provides an extensive set of defined risk management concepts for application in every standard about risk management. Guide 73 is therefore a 'normative' companion document to ISO 31000:2009. As written in the Introduction the "Guide provides basic vocabulary to develop common understanding on risk management concepts and terms among organizations and functions, and across different applications and types" [4].

5.3 ISO/IEC 31010:2009, "Risk management – Risk assessment techniques"

The standard is providing guidance on the selection and application of systematic techniques for risk assessment supporting the implementation of the ISO 31000:2009 standard.

5.4 PMI – Practice Standard for Project Risk Management

Project Management Institute (PMI) risk management standard "describes processes, activities, inputs and outputs for the project specific risk management area. It provides information on what the significant process, tool, or technique is, what

it does, why it is significant, when it should be performed or executed and, if necessary for further clarification, who should perform the process" [5].

6. RISK MANAGEMENT STANDARD IMPLEMENTATION

Implementing a risk management standard is a real challenge for many reasons, first of all because it could be something quite new for an organization. The risk management standard needs also to be tailored to the organization's needs, getting the buy-in from the top management and the support of all the people involved in the risk management process. For some people following a standard seems to be a kind of set of constrains which actually are limiting their freedom in applying the principles and methods they are used with. And in an international environment the situation is even more complicated because of the various risk culture level of knowledge and practices. A risk management standard should support and not suppress the entrepreneurial spirit of an organization.

From quite clear standard provisions to a comprehensive risk management process to be followed with achievable outcomes there is a long way. Fundamentally important for the implementation of a risk management standard is a clear understanding of what the standard means, what it requires and what its implementation involves. The decision for implementing a specific standard is based on the different aspects related to an organization and its business: the business goal/objectives, the business environment, the management system, regulatory requirements, the size of the organization, the program/business complexity, the level of risks and the organization's risk appetite and tolerance and the list could continue. Some practical considerations should also be taken into account by an organization in order to successfully implement a risk management standard. These include, but are not limited to, the following: organization risk culture, risk maturity level, management commitment and support, people strong motivation and implication and of course the background and experience of the risk manager. The standard implementation should be treated as a project itself.

The implementation of a risk management standard can produce benefits to an organization but it can be a failed process if not all the needed enablers are present. In more practical terms, the key aspect for a successful implementation of a standard is the "buy-in from the others". Building a carefully "marketing message" for each standard implementation step and trying to make everyone in the organization see the added value for him/her during the daily work is of great importance for the success of standard implementation. If the Stakeholders do not see any added value for their personal work, they will not buy the process and the standard implementation will be in danger. Arguments in favor of standard implementation to be presented to a top manager are very different from the arguments presented to an end user. However, the implementation of a risk management standard could be made even by taking any parts of

it and using them at whatever level the organization or project are able to accept. It is better to use at least part of the standard than none at all.

Due to the high cost involved in implementing a standard, many organizations generally hesitate to implement them. Although appointing a consultant may be worthwhile investment for an organization, this is not always necessary. However, many organizations find it difficult to implement the standard without having a consultant. The consultants have the experience, expertise that the organization may not possess and they can offer the latest and objective point of view, bringing the latest and unbiased ideas from their wide experience. The Programme Management Office (PMO) can also be a solution for supporting the risk management standard implementation. Finally, the chosen approach depends on the level of competency available in the organization.

7. RISK MANAGEMENT STANDARD IMPLEMENTATION STEPS

To implement a risk management standard a number of steps should be taken. This will provide clear responsibilities in standard implementation, will allow implementation progress measurement, transparency and will increase people participation and confidence in following the standard.

The steps that should be followed in implementing the risk management standard are described below and the entire process is presented in **Figure 2**:

• Gain executive management level support/buy-in for implementing the standard, including resources;

• Setting up an implementation committee in which the top management should appoint a member of organization's management as management representative. Persons having good knowledge of the organization's processes and good communication-writing skills should be included as members of the committee (the position could be played by the Quality/Knowledge Manager);

• Create an Implementation Plan describing the process, the expertise needed and the roles;

• Provide Training and Technical Support;

• Organize awareness activities for communicating to the people the aim of implementing the risk management standard, the advantages it offers, how it will work, their roles and responsibilities;

• Make sure that the standard based process is in line with the organization processes;

• Develop risk management documents (policy, plan, process, working instructions);

• Get management approval for all the implementation documents;

• Publish and advertise them; get people feedback;

• Implement the risk management process (a trial period can be used);

• Internal audit;

• Management reviews.

Through leadership skills the top management is able to create an environment in the organization where people are fully involved, and in which a risk management system can operate effectively. The top management should demonstrate

its commitment and determination to implement the risk management standard. It is important to note that

the training and awareness is very important in implementing the risk management standard.

Figure 2. Risk management standard implementation process

8. RISK MANAGEMENT METHODOLOGIES, HANDBOOKS, GUIDELINES

Risk standard implementation involves sometimes the existence of handbooks, guideline or methodologies as a support in better understanding the standard provisions but also as a roadmap describing the steps and the direction to be followed for a comprehensive and effective risk management standard implementation.

A methodology is considered to be a collection of proved steps to be followed for achieving a result in different business/project areas. A methodology is normally a well designated and documented procedure providing practical processes for getting the risk management standard implementation done.

For some organizations it is considered to be much easier and best value to follow a specific risk management methodology, like

PRINCE 2, than to spend resources for implementing a standard. The methodology provides specific steps and project key points where the risk management is necessary.

The roles and tasks of different entities involved in the risk management process are well defined. The specific risk management documents (Risk Log, reports) and their corresponding project management documents are specified and provided as templates. A risk management methodology can be adopted from a standard, like ISO 31000:2009, but a standard will never ever be a methodology.

Handbooks are generally intended to provide more information that assists in the application of a particular standard. The guideline related with risk management standards can provide explanation and guidance on the application of the standard, including detailed advice on each step of the risk management process. One of this,

"A Structured Approach to Enterprise Risk Management (ERM) and the Requirements of ISO 31000", has been published by IRM, AIRMIC and Alarm, which provides up to date guidance on the implementation of Enterprise Risk Management in the context of the new ISO 31000:2009 standard.

9. INTERNAL AUDIT

As per the requirement of ISO 9001:2008 QMS Standard, the organization needs to conduct internal audits at planned intervals. The audit purpose is to ensure that the risk management system conforms to the planned objectives and to the requirements of the risk management standard and to those established by the organization. Even after the system stabilizes and starts functioning, internal audits should be planned and performed as a regular strategy. The non-conformances pointed out in the internal audit should be resolved by ensuring corrective actions and conformance.

10. CONCLUSIONS

The implementation of the risk management standard is a complex task. The added value gained through the implementation of the risk management standard is directly impacted by the executive management and the contributors to the risk management system in terms of risk culture, process and experience. The risk standard is not implemented by robots but people and human psychology plays a major influence. Finally the risk attitude is the key because it drives the risk behavior and risk culture.

ISO 31000:2009 it is not a complete answer to dealing with risk in organizations but it is a big step forward. However, the development of ISO 31004, Risk Management-Guidance for the implementation of ISO 31000 should not be postponed, even years from this point in time. The purpose of ISO 31004 to address the ISO 31000 Achilles Heel and make it work in a practical way should get the risk experts' support across the globe. The risk management standard will gain power when it will be a pressure in legislation for organizations to establish effective risk management and corporate social responsibility control.

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DESIGNING AND MEASURING CAPABILITY.
A NEW PERSPECTIVE

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The concept of capability has long been a topic for debate among planners. The main benefit brought by it is that of ensuring the connection between objectives and necessary financial resources. Thus, capability is a median element within the process of integrated planning. In this context, there are sceptics who consider that capability cannot be measured. However, this article aims at presenting a pattern and a formula for measuring and interpreting the level of capability.

Key words: *capability, integrated planning, objectives, financial resources, resources allocation.*

1. INTRODUCTION

Capability is a neologism and is often confused by people with ability, flexibility, adaptability, etc. Withholding the flexibility of the notion, it should be mentioned that capability is a feature that essentially belongs to people and, despite its flexibility, is measurable. Thus, Romanian military systems are not exempted from this "confusion", the notion being relatively new for the Romanian military vocabulary. Hence, it is understood differently and perceived as a "useless neologism" with reference to capability. In reality there are essential differences between the two concepts, which do not only separate them but present the features of each and the connections between them. Defining them is of utmost importance since capability is an essential element of integrated planning since it is the one that links objectives to necessary financial resources.

1.1 Defining capabilities

The concept of *capability* (1) is generally, defined by the dimensions of knowledge and acquired skills. Thus, it includes the capacity to generate, design and elaborate, which in turn requires a stage of thinking and developing a project, depending on goals and objectives, as well as of possibilities and availability. In this respect, capability means both the ability to design, prospect, plan and execute, but also the availability of means, methodologies, expertise and procedures necessary to put into practice a plan, an idea or a concept.

The noun capability is derived from the adjective capable (2). The noun is defined by the same dictionary as the feature of being capable. Although both notions come from French "capable" and, "capabilité", respectively, they actually merge two

words – capacity and ability – which could be interpreted as skill, ability to use the skills you possess. Often, about someone who has not properly fulfilled a task, although he/she had all means necessary, it is said that the person had the capacity (the means), but lacked capability.

A country's military capability is an integrated system consisting of defensive ability (3), which represents all forces, means and resources for ensuring the defense of the country, coupled with the existence of a coherent system of skills, knowledge, competencies and roles, trained and developed over time. It should be emphasized, that at the level of this integrated system, a large amount of knowledge, experience, lessons learned and values that are part of the organizational culture of the respective institution, of the national culture and even of the universal one are cumulated and accumulated.

Thus, depending on the perspective, capability means:
- USA view: ability to achieve a specific objective during war (win a war or battle, destroy targets [1];
- NATO view: ability to perform a particular action or to obtain a specific effect (NATO) [2];
- ability to provide an operational effect required by specific standards in a nominated environment within a specified period of time and to sustain that effect for a specified period of time; is provided by a system or a system of systems (EU);
- ability to execute a specified course of action or to obtain a fixed operational effect – start-up / recovery capacity (ROU).

With a view to all this, for a better use of the concept of capability, especially in the planning phase, we propose the following definition: *CAPABILITY represents the assurance coefficient of fulfilling assigned tasks*.

The value of capability (CP) will be calculated using the following equation:

$$CPT = CCT \cdot CABT \qquad (1)$$

where:

$$CCT_T = \frac{CT_T}{CT_F} \cdot 100 \qquad (2)$$

CCT_T = capacity coefficient, [%]
CT_T = level of capacity, at T moment [acc. to capacity measurement unit];
CT_F = level of capacity, necessary [acc. to capacity measurement unit].

$$CAB_T = \frac{AB_T}{AB_F} \cdot 100 \qquad (3)$$

CAB_T = *ability coefficient*, [%]
AB_T = level of ability, at T moment [acc. to ability measurement unit];
AB_F = level of ability, necessary [acc. to ability measurement unit].

1.2 Capability components

Capacity and capability are in relations of mutual conditioning. Graphically, this could be represented as follows:

Figure 1. Capability components and parameters

Capability consists in an extension of capacity and results in an effect. In other words, the existing capacities can be linked to some skills which can in turn transform them into actions from which effects appear. In this case, capacity (CP) united with ability (AB) creates the effect EF.

$$CP \cup AB => EF \qquad (4)$$

Thus, the capability components (capacity CP, ability AB) represent level 1 capability parameters. Furthermore, the capability component is made up of level 2 capability parameters, respectively:

• *Capacity*: organization/structure; human resources; material resources; cooperation/interoperability.

• *Ability*: training/education, experience, level of regulation, institutional culture etc.

Depending on the objectives/tasks in responsibility, capabilities are based, developed, approved and then implemented over a period of time at a specified level. This situation is as follows:
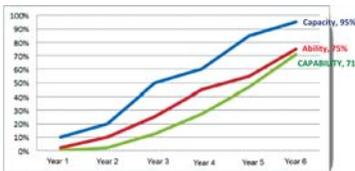
Figure 2. *The dynamics of attaining a capability*

It can be observed that, generally, capability is lower than capacity because it is more flexible, more dynamic and more difficult to accomplish. Capability means thorough training, skills, creative ability, knowledge as well as various moral qualities. They belong to people and the limit of human capacity can never be truly known. Therefore,

the trend of optimizing systems and processes is to bring capability closer to capacity and even to identify them.

Only when the capacity and capability of an entity overlap, one can say that we are dealing with unitary coefficient completeness, that the respective system has reached its maximum performance. In practice, this is very difficult, if not impossible to accomplish.

In the planning period, a capability can be found in one of the 4 stages, namely: initiation, growth, constant maintaining/stagnation, and demolition.
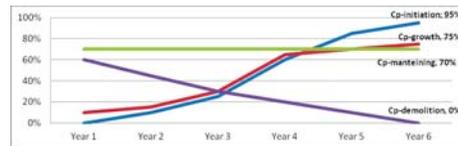

Figure 3. Capability stages

Figure interpretation
(colour significance):
Blue = *the initial capability in the planning period;* **Red** = *existing capability at the beginning of the planning period, with an increase within the reference period;* **Green** = *existing capability at the beginning of the planning period, with a stagnation within the reference period;* **Purple** = *existing capability at the beginning of the planning period, at the end of the reference period will be zero (dissolved).*

1.3 Capability levels

The Capability Maturity Model [henceforth CMM] [3] is an interdisciplinary approach to engineering systems developed by Software Engineering Institute at Carnegie-Mellon University to describe the five stages of

development and levels of capability and maturity of the processes within an organization [4]. CMM describes the way of improvement from immature ad hoc processes to mature, disciplined and optimized ones. This capability and maturity model is applied to the development of new products, including software development. The levels of capability and maturity of the processes of product development are:

1. Initial level (ad-hoc, immature)

At baseline, the organization does not provide a stable environment for development. Thus, development processes are unstable and unpredictable because they are constantly modified as (development) work progresses or varies from one project to another. Processes are not documented, but they are driven in an ad-hoc manner by users and events.

2. Repeatable level

At a repeatable level, the policies for the management of development projects and the procedures for implementing such policies are established. Some processes developed in previous projects are repeatable, possibly with consistent results.

3. Defined level

At the defined level, the standardized processes for new products development are defined; these processes are integrated into a coherent whole. A well-defined process can be characterized as including readiness/availability criteria, inputs, standards and procedures for carrying out the process, check-up mechanisms (e.g. team analysis), outputs and criteria for terminating the development process.

4. Managed level

At a managed level, the organization establishes metrics for products and processes and measures results. Projects carry out verifications of products and their processes by reducing variation in their performance in order to fit within acceptable limits. The process capability is established from this level.

5. Optimized level

At the optimized level, the entire organization is focused on the continuous improvement of process through incremental and innovative technological changes/ improvements. The organization has the means to identify "weak points" and to proactively strengthen the process in order to prevent flaws. Data regarding the efficiency of the development process are used to perform cost/benefit analysis of developing new technologies and the proposed changes in the development processes of the organization.

2. RESOURCES

Resources represent one of the central elements of integrated planning since the whole mechanism was designed in order to improve their allocation, irrespective of the type of resource.

As presented above, all resources, besides financial ones, are related to capability. As stated earlier, integrated planning, based on the requirements to achieve the objectives, establishes in the first stage the required financial resources (necessary budget). Upon receipt of budgetary ceilings, during the second stage, (fit in between budgetary constraints) the optimal variants of allocation of approved financial resources are analysed with the purpose of attaining a higher

degree of the planned objectives. During the process of fitting between budgetary constraints, the other types of resources are analysed.

2.1 Types of resources

The available resources during the integrated planning activity are:

a. human resources;
b. material resources;
c. technological resources;
d. information;
e. financial resources;
f. time.

a. Human resources

It is the most important resource because it enhances and retains the entire activity of the institution. The resource planning should be very precisely assessed because the impact on the activity is of utmost importance (at all levels of interaction: none, medium, exceptional etc.).

Furthermore, financial resources are also very important to be ensured for staff members (it represents over 70% from the institutional budget), as well as the entire career management process, plus ensuring the logistics and equipment necessary for performing their activity. These resources can be: military, civil, collaborators, etc.

b. Material resources

This category comprises the materials necessary for performing the activity and the ones associated with the functioning and ensuring equipment maintenance.

The major requirements for ensuring such type of resource are: ensuring a "just in time" process; addressing specific supply problems, like ensuring centralized / storage / transport contracts at the site.

c. Technological resources

This category comprises technologies, equipment and the infrastructure for them.

The main features of this type of resource are: procurement program, product life cycle, complex procurement (requires participation in research and development programmes), etc.

d. Information

This category comprises: open sources of information, regulated sources of information and classified sources of information.

Besides the strategic usefulness of this type of resource, the access to them should also be considered, as well as the related counterintelligence insurance since it requires considerable financial resources.

e. Financial resources

Integrated planning by categories of expenditure/costs is used in relation with financial resources (4): manpower costs; operation, maintenance and support costs; procurement costs; research and development costs; infrastructure costs.

All activities related to integrated planning are correlated with deadlines for drafting the state and social security budget established by Law no. 500/2002 regarding public finances.

Due to the fact that directors of major program have well defined responsibilities in the integrated planning process, as well as institutional responsibilities under national law, it is not necessary for them to act as main credit release authority, since they are supported in this respect by the Department of Finance and Accounting.

f. Time

This type of resource, depending on the type of objective it "accompanies", can be as follows: working time; spare time; period of time; deadline; free time.

In terms of period, the time resource can be classified as follows: immediate; short-run; annual; medium-run (1-4 years); long-run (1-10 years); very long-run (over 10 years).

2.2 Resource allocation

The basic elements to take into account when allocating resources are the following:

1. *Rules of priority and restrictions* – they are established within the planning period and are completed during the budgetary period. Depending on the development of the security environment they can be revised.

2. *Establishing resources* – establishing the necessary resources for each category.

3. *Establishing the resources level of efficiency* – this item is very useful for the time resource (e.g. an efficiency of 80-85% in teams composed of more than one person is reasonable). Thus, for a good planning, an increase of 15-20% in the number of hours estimated for an activity is necessary.

4. *Multi-annual planning* – when designing resource allocation, the estimation of impact on insurance during the following years is also made.

3.CONCLUSIONS

Given the interpretation of capabilities and 'the coefficient of fulfilling assigned tasks' as well as a definition of their structure and capability parameters, the proposed formulas can provide an initial and a final value (optimal / the steps involved), which can be used as a management tool. The proposed format used on the basis of (future) data established within strategic planning, best achieved through integrated planning - capabilities planning, provides a picture regarding the starting point (where we are) and the steps involved for reaching assigned tasks (where we want to go. Furthermore, the capability format as well as its applicability offers an easy way of bringing IT&C solutions into the management process (ERP IT system - Enterprise Resource Planning). Finally, capability provides a support for substantiating the allocation of all resources (human, informational, material and financial).

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ENDNOTES

(1) Capability is a notion which usually designates the notion of competency, as well as the one of opportunity, ability, and competence.

(2) Capabil, -ă, capabili, -e adj. Who is capable, who has the possibility to accomplish smth., gifted, valuable, worthy and who is capable of doing smth. [fr. capable, lat. capabilis], http://www.military-dictionary.org/capability (15.10.2012).

(3) Capacity - ability to achieve something in a field of activity, skill, work capacity, ownership of penetrating into the essence of things; competence, http://www.military-dictionary.org/capacity. (15.10.2012). Capacity is generally given by quantity, by a quantitative dimension of power, means and resources.

(4) These types of expenses should be linked with related categories form the national legislation (Law no. 500/2002).

ROMANIAN NATIONAL DEFENSE PLANNING. ARGUMENTS IN FAVOR OF A MORE REALISTIC APPROACH

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The whole Europe is undergoing a very difficult economic period. That has led in most cases to a decrease in defense spending. Romania is confronted with a similar situation and that makes it impossible for it to reduce the gap with the strong states, despite the facts provided by the speeches of politicians. Therefore, it is imperative to have a serious strategic analysis, balancing the political objectives with the real possibilities of a still precarious economy. A partial solution to resolving this situation can be the 'smart defense' concept, implemented wherever and as much possible.

Key words: *strategic defense review, smart defense, military expenditure, effectiveness, efficiency*

1. INTRODUCTION

In this article, we will try to raise a warning about the apparent contradiction between the militaries' and politicians' wish to have an army equipped to the level of the most powerful allies and the socio-economic status of Romania, which does not allow strong support for the defense sector.

Once we present the statistical indicators through which we compare our country with other allied states, we will see to what extent the defense system is "under-funded", according to the prominent figures in political life that are close to the defense system.

We then try to demonstrate the need and usefulness of a strategic analysis, and finally we try to find solutions for increasing the effectiveness and efficiency of the national defense system, using the obvious opportunities provided by the EU and NATO membership.

2. NATIONAL DEFENSE SYSTEM'S "UNDER – FUNDING"

We talk below about the numbers related to the national defense system. "Figures - noted a friend the other day - have at this time the gift of deep sorrow." On the other hand, they show us where we are. We dare not to define "under-funding", but the obvious trend of decrease in the percentage of the budget for defense, coupled with the stagnant amount of money allocated to the same budget, and with the inflation and the technological modernization make

us feel that resources are far from abundant for the desired operational usage. In other words, we are interested in comparing the initial situation in Romania with the situation of the allied states which serve as a model for us. Only then will we compare our estimated efforts with our own, more or less formalized, aspirations. A first comparison with other countries is the one presented in **Figure 1**, which displays the percentage of GDP [1] allocated to defense.
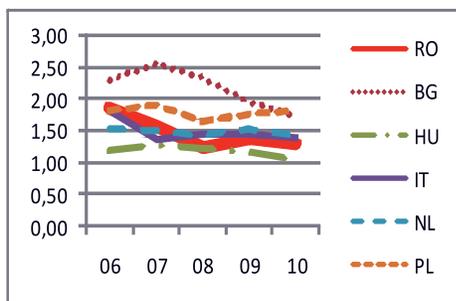
Figure 1. Defense Expenditure (Percent of GDP)

As the figure shows, there is a general decreasing tendency of the indicator at this time of economic crisis. That can also be interpreted in terms of reduced dangers of armed aggression of any kind, or of states' perception regarding this kind of threat. However, the decline is steeper for Romania and Bulgaria, the poorest EU countries, and this feature leads to the idea that existing gaps will increase rather than decrease.

When talking about defense spending and relating it to the number of inhabitants [2], we need to consider the effort the states are willing to make in order to achieve objectives for the defense field. **Figure 2** shows the evolution of this index over the same period.
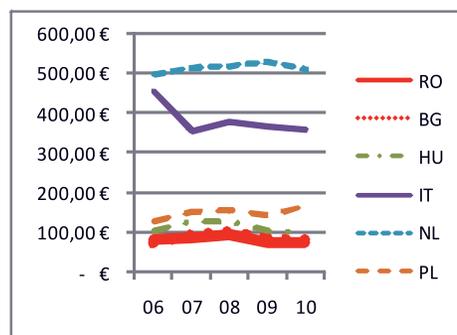

Figure. 2. Defense Expenditure per Capita

As it results from the figure above, Romania has the lowest defense expenditures per capita and that raises concern. However, one can also notice the considerable difference between the old and new group members of the European Union. Romania and Bulgaria have taken the same path, except that we have not exceeded during the period studied, the level of 100 Euros per capita. This indicator shows that there is a reduced likelihood to reduce disparities with the Allies.

In fact, reducing these gaps, as desired for all sectors of activity, is possible only by favoring a particular major socio-economic domain or through an accelerated economic growth, at a faster pace than those states with which we compare ourselves. The two indicators previously discussed show that the first solution cannot be predicted, while the European trend shows that the concern of the European political leadership regarding a future major military confrontation is decreasing. As for the second solution, it cannot be put into practice given the large debts to international financial institutions and the investments made in recent

years that have been far too little for sustainable development.

The third indicator that we study is that of defense investments vs. the number of military personnel [3]. **Figure 3** shows the situation of this indicator compared to the same period of time.
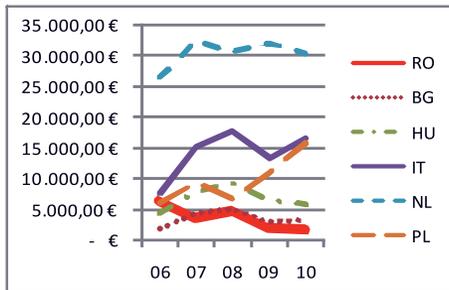
Figure.3. Defense Investment per Soldier

From our perspective, this is the clearest indicator showing inability to achieve our own targets in existing conditions. The distance that separates us from the Netherlands would not be so worrisome, since this is a country with strong traditions. The problem is that Romania's evolution shows that we objectionably neglect exactly what we say that we want to do, namely to have an army compatible in all respects with the Allied Armies. A first consequence could be shading Romanian military reputation that they have earned in theaters worldwide. Among the countries studied, only Romania has such a strong downward curve and the continued use of such cost structures will, very soon, lead towards the inability to fight alongside the Allies.

The presented situation thus contradicts most speeches of the Romanian personalities in charge of the national defense system; regardless of the positions they take, whether they are military or civilian. Under the strict constraints of the economic crisis, the authorities have sacrificed the most cost structure without abandoning the less achievable goals, unnecessary or redundant. Moreover, it forces the new evidence, proposing major investments that presumably solve real problems but actually create other problems, perhaps even more serious.

Simple arithmetic supports these statements. Romania spent in 2010, $ 119 million for the procurement of military equipment. By comparison, in the last month of 2012, "the US Defense Department said it has finalized a contract for the purchase of a fifth batch of radar-evading F-35 Fighter Aircraft from Lockheed Martin Corp., a deal worth $3.8 billion for 32 of the advanced planes" (Reuters, 14 Dec 2012*)* [4].

Therefore, such an aircraft would cost about $ 119 million, which is about 90m Euros, slightly below Romania's total annual expenditure for the purchase of equipment in 2010.

However, it is an obvious fact that too many choose to build chimeras, wasting resources to make their exaggerated vision credible. In addition, in 2010, Romania's total defense spending totaled 1.575 billion Euros, and it is also worth mentioning that the purchase of 16 aircraft of the type mentioned before costs an amount substantially equal.

Let us now go back to the "underfunding'" of the defense. Yes, we can talk about this phenomenon if we relate it to our own development programs. Moreover, we can talk about some underfunding if we

compare the financial efforts with those of Allied countries. On the other hand, we believe that the latter problem can be solved by rethinking the vision of the future army of Romania, based on the British model dated a few years ago. A brief description of a similar model will be presented in this paper, as well.

Finally, we feel bound to say that all data used are public, and countries chosen for comparison were established on different criteria: Bulgaria and Hungary as neighboring countries, with a population of less than half the population of Romania and countries of the former Soviet block, Poland a country from the same block which decided to become a regional military power, Italy a Western European country discreetly interested in defense and the Netherlands as a significant military power, despite its size.

3. STRATEGIC DEFENSE REVIEW

We have mentioned above two ways, which are unlikely to solve problems unless major changes occur: increasing the percentage of GDP allocated for defense, and an accelerated growth of the GDP, respectively. There is also the solution of making structural changes, which is a more complex and painful one, but can lead to long-term beneficial effects. Unfortunately, a path like this can lead to other difficulties and problems. Such an approach requires a flawless foundation, through a Strategic Defense Review.

We believe that, too often, lack of resources makes us plan uselessly with no tangible results as we set targets that do not have a utility basis. Calculation of the multi-role aircraft number based on the number of existing pilots is quite accurate and can be taken into account by the decision makers, but it would be much more useful and responsible if the starting point is the need for defense, based on the useful tasks that should be fulfilled.

The close limits of planning are quite well-known, in the sense that it can not replace the main process to which it is dedicated. On the other hand, a good quality planning process can contribute to the effectiveness and efficiency of efforts. Quality planning must be well grounded, rigorously enforced and sufficiently flexible to allow the necessary corrections during the periodic evaluation of the results. The Strategic Defense Review is the most used method for this initial condition serving the utility planning: grounding. It is the assessment of possible inputs and outputs of the system itself, so the plan is achievable and realistic. Today's economic and social context, marked by the severe economic crisis influencing international and national levels, mandates the strict inclusion of reasonableness into our plans, on short and medium term.

The strategic analysis model that we present was adapted years ago, when there was an attempt to achieve an analysis, using a model provided by the U.S. experts from the Centre for Civil-Military Relations (CCMR) [5] Monterey - United States of America. The list below shows the stages of such an analysis.

1. The framework for the Defense Policy.

2. Accepted Planning Hypothesis.

3. Plausible Scenarios/Contingency.

4. Military Assumed Missions and Responsibilities.

5. Identifying the Needed Military Capabilities.

6. Creating a Credible and Accurate Costs Catalogue.

7. Identifying Options.

8. Options to be taken.

9. Allocating Resources and Finalizing the Implementation Plan.

The first step is the analysis of the defense policy, emphasizing what should be considered: assessing risks and threats, economic and financial projections and the demographic analysis. The idea is that these areas of analysis are considered mandatory, but the subject of the analysis may be extended. Given the reality that we face today, we considered that the first stage should focus on the following components: 1) The Legislative Framework; 2) The Institutional Framework; 3) The Strategic Planning System; 4) Main Risks and Threats; 5) Economic and Financial Perspectives; 6) The Demographic Analysis.

The second step is to establish planning assumptions, namely the establishment of a constant of the defense system, such as: membership in international organizations; goals and objectives as stated in the strategic documents; principles and the decision making system. These assumptions come generally from the existing norms and framework.

The third stage is crucial. Thus, the successful analysis and development

of plausible scenarios are derived from the system of risks and threats to which Romania is exposed, from a military perspective. This stage can allow the continuation of the analysis only if the panel covers all risks and threats, so difficult when those threats are not real. For example, one of the greatest global current threats is the proliferation of weapons of mass destruction. How can Romania counter such a threat? Obviously, the threat of a general nature should be materialized in the possible action types, from nuclear attack by an aggressor aiming domestic objectives and activities, to effective participation in arms control or military action against countries that circumvent the international control. Based on these scenarios, the military component decides on the missions and the tasks they undertake, always considering the opportunities offered by the membership in international organizations and also including efforts to minimize potential overlaps between national military capabilities and those of the Alliance. A logical approach to this step allows initially for missions and tasks to be undertaken by the armed forces to achieve the targets, following that those components incumbent to the national armed forces to be specified later. However, the basic idea is that it is absolutely unlikely for the national armed forces to carry out tasks outside collective defense.

The next stage identifies those military capabilities that are necessary to carry out the tasks and duties described in the previous step. Related to these capabilities,

which are one of the main outputs of the process of analysis, we should point out some issues. Even if the Dictionary of the Romanian Language does not list the word "capability", it is worth reminding that this is a concept much resorted to in defense. Therefore, we try to describe it as accurately as possible. "Capability is the ability to achieve a specific objective ... or doing something in a given situation". (Touchin, "System of Systems Engineering for Capability"). This first definition, which describes the essence of the concept, is very general, so we will try to narrow it down so as to refine our approach. The ddefinition agreed by the Romanian Ministry of National Defense runs as follows: "capability is the ability to generate solid operating results or desired effect in relation to threats, environment and contributing coalition partners" (Ministry of Defense: Acquisition Operating Framework).

The concept has evolved and become more commonly used in various environments, especially in defense, being the basis of a true new science. Thus, the capability "is the heart of engineering systems, although unfortunately it is rarely stated as such in these science-based approaches" (Neaga, EI, Henshaw, M., Yue, Y.: "The Influence of the Concept of Capability-Based Management on the Development of the Systems Engineering Discipline). The capabilities based planning system was developed based on this concept and it means "to plan in conditions of uncertainty, the development of

capabilities to respond to a wide variety of challenges and specific circumstances of today, within an economic framework that often forces your choice" (Davis, A., "Analytic Architecture for Capabilities-Based Planning"). A capability has a number of components. While for the industrial activity these components are, in general, the Personnel (Human Resources), Products, Processes, Technology and Facilities, in the military field the components are specific and numerous. A military capability consists of the following components: Training, Equipment, Personnel, Intelligence, Doctrine and Concepts, Organization, Logistics Infrastructure. Planning for a military capability means to plan all its components.

Developing a credible and accurate Costs Catalogue is apparently an auxiliary milestone, but it is very common in the national arena. The Catalogue must take into account NATO standards to ensure interoperability and to consider the fact that most missions are conducted within the Alliance or with the Alliance member states.

Options should include the development of alternative force structures, to identify capabilities' deficiencies and develop options to cover these weaknesses (material and non-material).

Priorities have to be established because, even when all options are required, it is obvious that they cannot be covered immediately, especially because of the scarcity of resources.

The final step is to allocate resources and complete implementation plans. Beyond this

stage, the process of achieving the proposed objectives, in a certain order, and with all features set begins.

We believe that this model is sufficiently comprehensive and clear for a rational approach to the field and should not be "enriched" with various "tricks" to introduce various stages consistent with partisan interests. We believe that, in order to increase defense effectiveness and efficiency, it is necessary to use the most of the opportunities offered by the "smart defense" concept.

Under the heading "Building security in an age of austerity" the NATO Secretary General Anders Fogh Rasmussen presented a call for smart defense at the Munich Security Conference in February 4, 2011 [6]. Starting from the idea of sharp cutting budgets for European defense, the author says: "*The era of one-size-fits-all defense cooperation is over. What matters is to deliver capabilities that allow us to operate successfully at 28. Smart Defense can do just that. They make two challenges today: how to get more security for the limited resources they devote to defense, and how to invest enough to prepare for the future*".

The declaration on capabilities was signed by representatives of allied states at the Chicago summit in May 2012 [7]. Heads of State and Government agreed on this occasion, for the future as follows: "*we have confidently set ourselves the goal of NATO Forces 2020: modern, tightly connected forces equipped, trained, exercised and commanded so that they can operate together and with partners in any environment*". [8] Course objectives can be achieved through Smart Defense: "*Smart Defense is at the heart of this new approach. The development and deployment of defense capabilities is first and foremost a national responsibility. But as technology grows more expensive, and defense budgets are under pressure, there are key capabilities which many Allies can only obtain if they work together to develop and acquire them. We therefore welcome the decisions of Allies to take forward specific multinational projects, including for better protection of our forces, better surveillance and better training. These projects will deliver improved operational effectiveness, economies of scale, and closer connections between our forces. They will also provide experience for more such Smart Defense projects in future*".

"Smart Defense" is the way to achieve maximum defense effectiveness and efficiency. To be put into practice, "Smart Defense" needs correct identification of required capabilities, multinational availability and, especially, trust between partners.

3. CONCLUSIONS & ACKNOWLEDGMENT

The conclusion of our study is that the decision makers of the national defense system, whether civilian or military, should understand the need to rethink the system, depending on the current economic policy. This requires a thorough strategic analysis and identification of possible options that take into account the advantages of collective defense and the possibilities of applying the concept of "smart defense".

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CONTRIBUTIONS AND ROMANIAN OPTIONS TO STRENGTHEN SECURITY FOR SOUTH EASTERN EUROPE IN REGIONAL BILATERAL/TRILATERAL ARRANGEMENTS IN THE BLACK SEA AREA

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Regional cooperation to improve security and stability materializes in the existence of many bi or trilateral intergovernmental relations in the initiation and development of regional initiatives and organizations. All these actions provide an opportunity to identify and develop viable assessment procedures of the strategic environment, risks and threats to security and stability in the area, and to the identification of appropriate tools of crisis management. At the same time, a viable regional cooperation boosts the states of the South-East Europe area to have significant contribution to resolving tension, crisis or potential conflict that manifests in the area.

Key words: *security, political option, regional cooperation, security of the Black Sea, South-Eastern Europe*

1. INTRODUCTION

Located in an area of strategic importance for both NATO and the EU, the Romanian state has assumed consciously and responsibly a major role in the processes of identifying, establishing and implementing these organizations' policies of stability, cooperation and security, both for South Eastern Europe and as a spearhead for the Middle East and the Caspian region. In the recent past, Romania was between two hotspots of conflict. The international community's blunders in anticipating the potential crises and the lack of any suitable strategies to prevent escalation, of settlement and fighting violence and crimes against peace and security caused the situation in the former Yugoslavia and the Republic of Moldova to become explosive, and its resolution to be one on the long run. Romania has directed and intensified its efforts to assert itself as a significant contributor to regional cooperation, progress and stability of democracy and in guiding South-Eastern Europe towards Euro-Atlantic integration, while raising the country's importance in the security equation area.

Following such a global modern approach, the Romanian state has legitimate concerns about the legal position, living conditions and non-discriminatory treatment of the

Romanian communities outside Romania, in full compliance with international law, and with bilateral agreements.

In essence, regional issues have regional solutions. It is time for South-East European states to assume responsibility and take action to bandage and treat their wounds, with the help of the international community through its sustained efforts.

2. ROMANIA IN REGIONAL TWO OR THREE PARTY ARRANGEMENTS

Two or three party regional arrangements are, in fact, intergovernmental diplomatic tools dedicated to resolving any potential conflicts arising between neighbors. They are based on similar principles that emphasize transparency, openness, prevention, confidence, mutual aid, etc. In this way, the countries of South-East Europe seek to ensure a minimum of stability and security in the region. From the outset the West has encouraged and supported this kind of interstate relations based on the idea that the very security of the continent depends on the stability in the region.

However, long time, these formulas were not considered to have a high value for the politico-military elements, as their number was small and did not offer advantages to specific organizations, but the reconsideration occurred in the mid-'90s, when the OSCE summit in Istanbul adopted the *Charter for European Security*, which allocates a well-defined place to the state regions. Basically, in recent years, these simple forms of cooperation

have seen a significant increase under EU pressure, as a prerequisite for membership, as it was considered the foundation of increasing regional stability.

In its foreign policy, Romania is open to maximum cooperation with all countries; in this respect, the main lines of action are:
• expansion of diplomatic, political, economic, trade and cultural relations with all EU countries;
• development of cooperation with each Member Community, on areas of common interest;
• dynamic politico-economic relations at all levels and expanding the range of bilateral projects;
• boosting political and economic relations with all the G-8 (1) and G-24 (2) members;
• development and consolidation of all types of relations with Republic of Moldova;
• development of good neighborly relations with the South-East European non EU states;
• comprehensive development of all relations with neighbors Bulgaria, Serbia, Hungary and Ukraine;
• close regional cooperation with all NATO members in South East Europe;
• the intensification of relations with the Russian Federation, together with the diversification of regional cooperation in political, economic and security areas.

Bilateral relations with countries in South-East Europe are proof that Romania has realized the need for cooperation with neighbors, of developing normal relations with them in order to strengthen stability in the region and for mutual benefit.

In the South-Eastern Europe, Romania has advanced several proposals of Three Party Cooperation since 1995, in an effort to strengthen regional cooperation and create platforms for stability and security due to socio-economic prosperity of the area. These proposals have found their counterpart and have materialized in the form of trilateral cooperation as presented below [1].

Romania - Moldova - Ukraine, relations aimed mainly at: consultation, information and periodical documentations on issues of common interest, environment protection, border traffic, identifying and accessing international funding sources for joint projects, fight against crime and organized terrorism, illegal trafficking of drugs, people and weapons, illegal migration and border crossing, as well as cultural and humanitarian support to the Romanian communities in Moldova and Ukraine in line with European standards. Thus, major projects such as the Lower Danube Euro region, Upper Prut Euro region, creating the free economic zone Galati - Giurgiulesti - Reni; cooperation to fight organized crime, but also new border crossing points arose.

Romania - Bulgaria - Turkey. In addition to the political element, this trilateral concerns close cooperation in areas such as organized crime, the exchange of information to combat smuggling and trafficking of people, drugs and weapons, increasing the volume of trade, tourism development and economic cooperation.

Romania - Bulgaria - Greece, which, together with the above, consolidated the support of Greece and Turkey - NATO member states – for Romania and Bulgaria's accession to the Alliance. At the same time, this trilateral focused on the issues of: geopolitical developments at regional level, stability of the South-East Europe zone, overall economic development, combating illegal migration, drug trafficking and organized crime, cross-border crime, cooperation in cases of civil emergency and natural disasters, transport and energy infrastructure development.

Romania - Bulgaria - Serbia follows the framework of the Association of Danube 21, whose agenda includes solving common problems that occur on the banks of the Danube, in areas located in remote places far from large urban areas, impoverished areas without economic and transport infrastructure and directly dependent on agriculture, with an unemployment rate well above 50%.

Romania - Hungary - Serbia's cooperation objectives are shared border management and control through joint action and transfer of know-how and democratic experience, cooperation in the areas of energy and infrastructure and cooperation to prevent and manage disasters.

Romania - Italy – Serbia supports the Serbian European aspirations and the economic cooperation between the 3 countries.

Romania - Ukraine - Poland aims to combat organized crime, arms and drugs trafficking and illegal migration, political and economic development of tripartite dialogue, implementation of joint projects of road infrastructure.

Bi or trilateral relations have an important contribution to the establishment and security of South-East Europe zone, which will complete the NATO and EU efforts to find viable solutions for eliminating sources of conflict in the region. In addition, the military, the results of these efforts have translated into the establishment of multinational forces such as the *Multinational Peace Force South-Eastern Europe* (MPFSEE) *Central European Nations Cooperation in support of Peace* (CENCOOP) *Military cooperation in central and Southeastern Europe* (GENCOOP) *Naval cooperation group at the Black Sea* (BLAKSEAFOR) Tisa *multinational engineers Battalion*, *The Romanian-Hungarian Peacekeeping Battalion*; *The Joint Romanian-Moldavian Battalion*. The national units within these multinational military structures have a variable efficiency, as they represent a new phenomenon, but they have well defined purposes and pragmatic projects.

These multinational structures bear a strong international political message. Multinational components cooperate very well in a sensitive area - the military - despite all the interstate animosities in history. Militaries have shown that it can be done. The future belongs to this genre of military cooperation with emphasis on prevention.

All such collaborative schemes, in which Romania is developing concrete actions and has full responsibility, add constructively to the major concepts and actions of the world security organizations. However a stable Southeastern Europe can only be the result of joint efforts of all states, regardless of their membership to NATO or the EU. Supporting the economic development and democratization efforts of the states in this area, these forms of cooperation are a decisive contribution to the regional stabilization and many regional cooperation schemes, bilateral or trilateral, to which Romania participates, are all viable solutions to enhance the security in the South-East European region.

3. ROMANIA'S PARTICIPATION TO THE IMPLEMENTATION OF THE BLACK SEA AREA SECURITY

The National Security Strategy, together with the National Defense Strategy is evidence to Romania's will to be an active and important contributor to strengthen the security in the South-Eastern Europe, and also internationally as a country with a geopolitical and geo-strategic contribution within NATO and EU. As such, the Romanian state has a definitive interest to have stable, predictable, democratic and prosperous neighbors, who are also serious contributors to peace and understanding, to the consolidation of good neighborliness and to strengthening regional stability and security. Establishing a stable security and prosperity in the Black Sea area is a primary goal and at the same time, a course of action for Romanian security strategy, especially since the "*frozen conflicts in the Greater Black Sea Area and the relatively small distance from the theaters of military confrontation in Central*

Asia, Lebanon, the Palestinian territories and Iraq underline even more the issues of security, peace and cooperation"[2].

In essence, the fundamental strategic interest of Romania on the Black Sea is focused on stability and democracy in conjunction with the geo-strategic interests of the EU and NATO. As a corollary, one of our country's strategic objectives is to initiate and develop a massive Euro Atlantic involvement in the Southeast Europe, and implicitly in the Black Sea region. Romania also develops its responsiveness to counteract risk factors and security threats in this space, by operationalizing and optimizing its role in building stability and security in the Black Sea region, in full consonance with the specific policies of NATO and the EU. Moreover, Romania's role in the real operationalization of stability and security is determined by the very importance of the Black Sea, which is [3] *"a priority in proximity of Romania, a vital area for us and secure energy routes between the eastern producer and the western consumer of energy , an ecosystem unique in the world, the Danube Delta; an important point on the agenda of global geopolitics, due to its positioning in the space of confluence and the main realities facing the contemporary space connected with the Danube and Central Europe, especially the Rhine-Main-Danube corridor, the meeting of European civilization with the north African and the Middle East through the Mediterranean and, not the least, the connection area between the developed and developing world"*.

Romania's role is outlined through the implementation of projects that directly relate to security and stability in the Black Sea, politico-economic projects on a wide range of functions: security, stability, environment, energy, combating terrorism, organized crime and illicit trafficking of all kinds, promoting and consolidating democracy, promoting and supporting free trade, supporting a highly multicultural dialogue and resolving frozen conflicts.

From the perspective of Europe's energy security, Romania strongly supports two major energy projects in the Black Sea region– development of Nabucco and PEOP (Constanta-Trieste) oil-ducts – projects which exploit Caspian energy potential. Their development and use will contribute substantially to the economic development of the countries involved, along with the development of cooperation and the consolidation of stability and prosperity in the region. These aspects, combined with the pragmatic solutions focused on environmental issues and geographical, political, economic and cultural fragmentation that prevent progress in the region, will provide a solid foundation for sustainable development, security, and the rallying of the region to the Euro-Atlantic community values and interests. Located at the point of tangency of three important geopolitical and geo-economic zones– Europe, Central Asia and Middle East – the Black Sea region is a main energy transit bridge and at the same time, an important stage on which the risk factors and outbreaks of conflict

have a strong impact on the security of South-East Europe and therefore NATO. The specialist's forecasts show a strong growth of the energy potential of the Black Sea region in the near future, which gives the region a major position in Europe's energy security.

In this context, Romania contributes to the promotion of the Black Sea region on the agendas of both the EU and NATO, actively participates in EU actions to build viable and reliable partnerships in the region, strongly promotes the European Neighborhood Policy in particular with Moldova, Ukraine and Georgia, develops energy partnerships with the countries of the Caspian region and Central Asia, promotes dialogue and understanding in order to identify regional targets all Black Sea littoral states, especially Russia and Turkey, major players in the Black Sea, encourages and supports a constructive and effective relationship between the EU and NATO and the Russian Federation, to provide Romania-Russia relations pragmatism, predictability, trust and mutually beneficial benefits. More "*Romania's efforts to promote the Black Sea region as an important geopolitical area is in the interest of NATO and EU members, because it enhances the dynamic processes of democratic transformation in the enlarged Euro-Atlantic security architecture and creates the potential for development of an integrated area policy and regional policies that promote Euro-Atlantic values - democracy, human rights, prosperity, liberty and the fight against terrorism*"[4].

Regarding threats to regional security, the reality describes an accurate picture of new events of this kind, complete with the great potential of the region to host their experimentation. But as I have stated earlier, countering them is primary and almost exclusive the task of the Black Sea States. These states are intrinsically bound to develop policies to neutralize the negative manifestations within their own borders and reject any separatist, extremist, terrorist and criminal phenomenon that may occur on their territory or in their vicinity.

These realities prompt Romania to consider and adopt a behavior appropriate to the belief that the Black Sea region is a geopolitical and geo-strategic space open to the world democratic community. As a result, the Romanian government advocates a Euro-Atlantic strategy for the Black Sea, given the Alliance-Union concerted approach to the stability process in South East Europe. For this, the Romanian government is committed to: support democratic transformation in the region, building a theoretical and especially practical framework for conflict prevention and crisis management, stimulating a sustainable regional dialogue in order to discuss and resolve any emerging regional problem; cooperation with all international bodies present in the area, widening the educational cooperation as a long term investment in regional security, reconstruction of the Black Sea economic market in the context of its connection to European free market and increasing complementarities of actions of all actors in the region to identify and

rapidly implement reliable solutions with short-term applicability and results on long term regarding the frozen conflicts in the region. Also, a priority for Romania is to boost the cooperation and improving the institutional processes after the collapse of communism in parallel to thwarting the monopolistic or hegemonic intentions, building strategies and activities for this region. So, the Romanian state acts firmly for the actual activation of international organizations with a direct impact on the region, such as the Black Sea Forum for Dialogue and Partnership and Black Sea Euro region, and to promote and strengthen the regional dimension within the EU through the Black Sea Synergy initiative. All this come to stimulate the economic development, infrastructure, trade, investment, market mechanisms, essentially the stability of the region

Settlement of frozen conflicts around the Black Sea is an issue for which Romania takes advantage of every opportunity to keep it in sight of all the actors playing on stage of the Black Sea region security. For this, the Romanian state will have, in our opinion, to promote, even with incisiveness, political, diplomatic and economic strategies and mechanisms for a peaceful and lasting resolution of these unpredictable conflicts. It is necessary to identify and define the principles and rules needed to bring to a common ground the interests of citizens, communities and countries of the region, with the security interests of the entire region of South-Eastern Europe and the Euro-Atlantic community and in line with international law, to be able to cover the gap of

differences specific to each conflict. These strategies should outline the obligations of the parties with respect to: avoiding the international recognition of the breakaway regions, the withdrawal of foreign troops from the separatist enclaves, collection and disposal of weapons and munitions under international control, dispersion and dissolution of paramilitary groups, support and foster democratic processes of reintegration of these enclaves in the rightful states belonging. Romania currently considers direct involvement in solving frozen conflicts through actions to promote democracy and support the efforts of accession to Euro-Atlantic structures as Romania's interest is that Euro-Atlantic enlargement does not create a border at the Black Sea level.

Also, a defining role in solving frozen conflicts in the Black Sea cooperation derives from the economic element of international dialogue. Therefore, "*Romania must actively support the construction of a Euro region able to support cooperation with all EU Member States, to encourage the development of energy and transport infrastructure and to support trade, investment and market economy mechanisms*" .[5] To this end, Romania displays a pragmatic policy through effective use of the tools provided by bilateral or multilateral format of cooperation in the regional economic strategies with impact on the constancy of democracy, stability and security of the Black Sea region. It targets with priority the energy and transport corridors from Central Asia and the Middle East to the Atlantic, sea and river port facilities in the

region, environmental protection and ecological equilibrium of the Black Sea, capabilities to counter risks and threats to the security of the region and Europe, in general, and prevention and response capabilities to crises and to counter asymmetric risks.

In conclusion, Romania's actions are directed towards capitalizing the opportunity to become an attractive partner for major world power poles, to the extent that it achieves to convince on its actual ability to become a source of solutions to global and European level, instead of a source of problems.

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ENDNOTES

(1) **The Group of Eight (G8)** is an international forum - having as main activity the global economy - the leaders of the richest countries: Canada, France, Germany, Italy, Japan, Russia, the United Kingdom of Great Britain and Northern Ireland and USA. They account for 60% of global GDP, around 72% of world military spending, and four of the eight, namely France, Russia, UK and USA have over 95% of the world's nuclear weapons. Source: http://www.g8.co.uk/ accessed in December 2012.

(2) **Group of 24 G24** is an intergovernmental group of twenty-four African Latin American and Asian developing countries, responsible for international monetary matters concerning the interests of its component developing states. Member States are grouped into three regions: *Region I (Africa):* Algeria, Côte d'Ivoire, Egypt, Ethiopia, Gabon, Ghana, Nigeria, South Africa and the Democratic Republic of Congo; *Region II (Latin America and Carraibean region):* Argentina, Brazil, Colombia, Guatemala, Mexico, Peru, Trinidad and Tobago and Venezuela; *Region III (Asia):* India, Iran, Lebanon, Pakistan, Philippines, Sri Lanka and Syria. China has *special guest* status at ministerial level. Source: http://www. g24.org/ accessed in December 2012.

APPROACHES TO GLOBAL SECURITY.
ACTORS, MANIFESTATIONS AND TENDENCIES

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Nowadays, the world seems to be in a transition from the current system founded on the liberal social, economic and political model to a more diverse and heterogeneous model in which the determinant role is played by a number of state and non-state actors. The step from the Western system of cultural, political and predominant economic values to a more diverse and heterogeneous system makes the actors involved defend not only their visions, but also promote their own interests. The differences between visions gain relevance and clarity because the countries supporting them obtain increased power, and that is more than obvious. All this leads to a symmetric allocation of different means, which generates uncertainties and diminishes unilateral actions This transition process impacts global security especially through the asymmetric, unconventional and hybrid risks and threats manifesting worldwide.

Key words: *globalization, international security environment, global security, the European Security and Defence Policy, global dominance, tendencies of global security, world hierarchy, failed states.*

1. INTRODUCTION

According to opinions expressed by military analysts and experts, until 2020 the international security environment will change in an unpredictable and unexpected manner. Until now people have believed that the process of globalization would intensify leading to a rapid, uneven and transborder increase in the flows of goods, services, people, technologies, ideas, customs, etc. In the context of today's international security the positive effects of globalization are no longer dominant and they no longer determine the preservation and development of peace and automatically of a safer world, with the exception of certain domains of global interest (such as the internet, information technology, intelligent communication, etc.).

Globalization brought forth a tendency which for some meant an increase in power, while for others it meant marginalization, against a background of volatile tensions between individual and group identity. Although globalization contributed

and can still contribute to a constant economic growth by promoting common economic interests among countries, it no longer represents a safe environment because given its either positive or negative effects on various countries or regions of the world.

From another viewpoint, besides globalization, other phenomena with a negative impact on global security manifest themselves, as well. To this end, we can mention the current financial and economic crisis, the development of transborder terrorist and criminal activities (see the **offensive of Islamic insurgents** in Mali), proliferation of armaments, including weapons of mass destruction, the intensification of regional conflicts, for example the conflict in Syria that has implications on the situation in the Middle East, the proliferation of nuclear weapons (see the threats posed by North Korea and Iran).

The evolution tendencies of global security regarding the potential security risks were analyzed at the Conference of the Military Committee by the chiefs of defence from the 28 NATO countries and by more than 300 officials of this organization, hosted by Romania in Sibiu on 14-16 September 2012 [1].

Having in mind the obvious predictions and tendencies in the new security environment, NATO firmly committed during the Chicago Summit in May to withdraw its troops from Afghanistan until the end of 2014, thus affirming its determination to support Kabul on a long term in order to prevent the return of the Taliban. To this end, the North-Atlantic Alliance characterized as "irreversible" the withdrawal of approximately 130,000 personnel who are still in Afghanistan, ten years later after the beginning of an increasingly unpopular war. In principle, Romania will begin to withdraw its troops beginning with the second half of 2013 and, beginning with 2014 and in full agreement of the allies, it will ensure a minimum presence in order to guarantee the training and counselling of the Afghan security forces [1].

The Defence Package convened at the Chicago Summit was discussed in detail by the chiefs of defence during the Conference of the Military Committee, with a stress on Smart Defence and on the Initiative of the Connected Forces. Both projects were conceived in order to increase the interoperability between states and to stimulate cooperation in the field of endowment with military equipment.

In another registry of security, on 22 November 2012, on the last day of its plenary session in Strasbourg, the European Parliament (EP) adopted four resolutions regarding the Common Security and Defence Policy. One of the resolutions was based on the report *"The EU clauses of mutual defence and solidarity: political and operational dimensions"*, a report elaborated by the Romanian Euro parliamentarian Ioan Mircea Pascu - vice-president of the Commission for Foreign Affairs (AFET) [2]. One of the provisions of the report was brought to the knowledge of the assembly, namely the necessity to increase the contribution of the EU to NATO, because Europe is increasingly required to cope with the more and more complex challenges of global security and defence.

The Romanian official argued in his speech of 21 November that the *European Strategy 2003* mentions that *"Europe has never been so prosperous, so secure and so free"*, a statement that is less obvious today, when mankind is confronted with more and more complex risks and threats, approaching the EU and NATO borders at a swift pace. At the same time he states that, in these circumstances, it is not an opportune decision to reduce defence budgets, since that would cause changes in strategies, be they NATO or EU. Furthermore, according to a statement by the same Euro parliamentarian, "NATO, responsible for the security of 21 of the 27 member states, is confronted with a reorientation of the US toward Asia, which forces Europe to cope with the consequences and to increase its contribution to NATO, as well as to strengthen its security and defence dimension" [2].

2. GLOBAL SECURITY. ACTORS, MANIFESTATIONS AND TENDENCIES

Resuming the analysis in the sphere of the actors of global security, we notice that the United States of America will remain, for the foreseeable future, the leading power of the world. At the same time, they will continue to preserve their hegemonic position which they have occupied since the end of the Cold War. To this end, in order to be able to attain its strategic objectives, even in the unfavourable conditions of the fiscal crisis, the United States will undergo the *largest modernization in history of its nuclear arsenal*. According to the Washington Post,

the estimated costs exceed 350 billion dollars. The operations to be carried out envisage the renovation of the buildings in which bombs are manufactured and the replacement of the old system of delivery [3].

From another perspective, the population of the USA will increase by more than 17%, reaching 364 million in 2030, the largest proportion in this growth being occupied by Hispanic immigrants [4]. Even so, the USA are and will remain a close partner of the EU, based on historic links, converging interests and common values.

Concurrently with the "Obama era" a window opens toward the European vision of effective multilateralism [4]. The next four years will have a decisive impact on the shaping of the international order until 2020. Due to the world financial crisis, which is likely to deepen, the United States will no longer be able to assume on their own the responsibility for every regional crisis, which will make the role of the European Union increase significantly [4].

The new fiscal reality, completed by the change of elites, as well as the re-balancing of their priorities in the Pacific, forced Washington to profoundly re-think its policies toward Europe. The intervention in Libya was the first signal in this respect, the American participation being a necessary, but not sufficient condition, to ensure the success of the operation

The European Union demonstrated the fact that it is capable of playing a major role in the stabilization of a conflict, as well as in the management of its repercussions. In this context, an increase in the complexity of the situations which the EU might

be asked to get involved in is to be expected. This is possible due to the European Security and Defence Policy which promotes security and stability worldwide, and is in full progress and enjoys full public support.

At the same time, ESDP has to strengthen the transatlantic relations between the USA and the EU, in an open and transparent manner, in order to cope with the new challenges of the security environment.

The traditional image of the USA during the next twenty years will be influenced by four aspects of the culture of the American society, especially the impact of *Hispanic migration, social inequity, the increasing role of the state, the place of religion in the policy of the USA*.

The United States of America is a country of migrants and multiculturalism represents one of its defining characteristics. By 2030 the Hispanic population is expected to reach 20%, from 13-14% in 2004, and up to 25% in 2050. In spite of this multiethnic and multicultural nature, the American values are essentially Anglo-protestant, but there is little doubt that the continuous influx of Hispanic population will erode the reputation of the Anglo-protestant culture and will bring considerable changes to the American society. Unofficially, it is possible for the USA to become a bilingual society [5].

Due to the growing flux of immigrants the USA will become a more diverse society, but also an unequal one, if the current tendencies continue to exist. Inequalities are emphasized even more by the distribution of wealth, thus: one third belongs to the richest, meaning 1% of the country's population, one third to 9% of the inhabitants and the remaining third belongs to the remaining 90% of the population [5].

In the traditional model of the state - society relations, the state is perceived as a "supervisor" who makes sure that the citizens enjoy their rights, while the citizens pursue welfare and do not kill each other in the process. The state is not to exceed its role and is not to interfere in the life of the inhabitants. This paradigm of the "supervisor" is still of topicality in the American society.

Also, the American society is profoundly religious and there are no signals that it will abandon this belief in the future. The impact of religious beliefs on US foreign policy will continue to remain marginal.

At the middle of November 2012, a group of fifty experts in the field of national security proposed a project called *Strategic Agility*, as an addenda to the strategy presented by the Pentagon during the month of January of the same year. This project could be successfully implemented in the conditions of the current austerity and could give the American president the possibility to operate significant cuts in the Pentagon's budget, by limiting costs, by a better use of human resources, a reduction in the number of military bases outside national borders, by the re-evaluation of the efforts of modernization of the nuclear arsenal, as well as by other measures to increase the efficiency of the structures of the Department of Defence [6].

The strategy adopted at the beginning of 2012 marks a change in the strategic interest toward Asia-Pacific, thus achieving an expeditionary model of the US

military power, different from the current static posture focused on large military bases, characteristic for the realities of the Cold War. This means in fact the redeployment of these large units and of those from Europe, as well as the increase in the number of rotations of the US military structures, both in Europe and Asia, for training activities.

The American specialists who elaborated the proposal to change the strategy estimate that the Pentagon could save up to 500 billion dollars in the next ten years through the better use of human resources, 300 billion through compensating reforms and over 100 billion by improving the practices in acquisitions [6].

The adopted security strategy is elaborated after a decade of American troops involvement in armed conflicts and in the context in which president Obama and the Congress agreed to reduce the defence budget by 487 billion dollars in the next ten years

From a historical point of view, the emerging multipolar systems were a lot more unstable than the bipolar or even unipolar ones, and the growing diversity and power of most countries indicate a decrease in the cohesions and efficiency of the international system.

According to the evaluation obtained following the use of the International Futures computer model [8], the order in the hierarchy of world power may suffer changes until 2025, but the United States will continue to be one of the important actors on the world stage, even if not the most powerful one.

Besides China, only a few countries are prepared to play an important role at world level in the next 15 - 20 years. If the current tendencies persist, until 2025 China will occupy the position of leader in the world economy and as a military power. At the same time, it will be the largest consumer of natural resources and even the greatest world polluter

Through secret manoeuvres, China has today full control over the Panama Canal and over the Greek ports, 90% of the "rare earths" - minerals needed in military industry and in modern technology. At the same time, China produces 80% of the parts used by the US military! Also, China is the largest exploiter of natural mineral resources, because it owns mines in Australia, USA, the Middle East and Canada [7].

The growth of the power of the very populated states, like China and India, has a major impact on the world hierarchy, while other countries like Iran, Indonesia and Turkey, for example, can play important roles in the international arena and especially in the configuration of the Muslim world.

We can also notice the emergence of other actors on the world stage, like Brazil, which, due to the discovery of oil fields in the Santos Basin estimated at over 10 billion barrels, could become the main oil exporter after 2020 [8].

NATO and *EU* represent the two central pillars of stability and cooperation in the Euro-Atlantic region, a region relatively without problems, in which the possibility of a military or civil conflict is minimum. However, there are conflicts in a latent state in the Caucasus and Balkans that require special attention from the point of view of security. Cooperation between the actors in the area is essential in order to combat

criminal activities like trafficking in weapons, drugs and human beings

Full complementarity between NATO and EU is essential in the case of a global approach to security and in the case of cost efficient stability or support operations. A good cooperation can be useful in the case of non-conventional threats, such as terrorism, cyber attacks or energy vulnerabilities. In this context, it results that the EU has a better expertise than NATO in the non-military field, in the context in which the line between military and non-military threats is growingly insignificant. In this sense, we consider that NATO members and EU non-members and EU members and NATO non-members should have the same degree of transparency and involvement in common activities

NATO's force and visibility could be required to answer challenges that do not directly affect the security of its own citizens, and those interventions will not impact the international image of the Alliance. Among the challenges for which such a scenario could be applied we can mention: humanitarian consequences in the failed states, natural disasters (earthquakes, floods, solar explosions, etc.), dangers caused by genocide or the violation of human rights.

Russia is the largest neighbour of the European Union and its most difficult partner. Due to its geographical size, *Russia* will inevitably play a prominent role in shaping the Euro-Atlantic security environment. Positively speaking, Russia manifested good will for the air and land transports supporting ISAF and strongly combated terrorism and piracy.

In its Security Strategy, the European Union considers Russia as one of the basic actors at world level and with which it intends to develop a strategic partnership. Thanks to the large profits obtained by exploiting and exporting oil and natural gas, Russia continues to modernize its strategic nuclear forces, maintaining significant production capacities [8].

For geostrategic reasons, Russia emphasized even more its military doctrine and national security policy and the nuclear option in military planning aiming to regain a dominant position on the world political stage. At the same time, Russia has the possibility to be richer, stronger and safer around 2025, but multiple constraints could limit Russia's capacity to reach a high economic potential. The population decline predicted for this period will determine tough political decisions. Thus, in 2017 it is estimated that Russia will only number 650,000 18 year olds with whom to maintain an army of 750,000, as it has nowadays. In the future, Russia will continue to maintain its main role at world level, to be an important partner of the West, Asia and the Middle East. It will also continue to be the main opponent to the global domination by the United States [8].

Controlling the main energy hubs and the routes between the Caucasus and Central Asia, a vital element for its own ambitions of energy superpower, Russia will try to re-establish its sphere of influence in the near vicinity. Last year, Russia re-opened a new project that intended to integrate the energy systems of Russia, China, South Korea, Mongolia and Japan. The project, elaborated in

1998 is known by the name of "The Asian Superring". According to it, a hydroelectric plant in Siberia would be the main exporter to the countries in the "superring", which will allow Russia to control the flux of energy toward them [9].

The existence of liberal economic and political tendencies, corroborated with Russia's sensitivity to political instability or the emergence of a major political crisis can lead to the exacerbation of the nationalist trend, the emergence of an authoritarian state or even a dictatorship. The version of Russia becoming a country open to progress around 2025 is also plausible.

The challenges faced by the states in Latin America and the Caribbean belong more to the field of crime, and the possibility to conduct stability operation could be most probably in the case of a humanitarian emergency.

In the Middle East the tendencies in the evolution of the security environment can be grouped as follows: a) ongoing extremist violence; b) growing Arab-Israeli tensions; c) Iran's nuclear policy, that does not comply with UN Security Council resolutions in this matter. Furthermore, Iran also contributes to the aggravation of the security environment through its non-conventional arms programmes: long range ballistic missiles and anti-ship cruise missiles, which raises concerns related to the commercial maritime routes [10].

Thus, Iran's interest to destabilize the area of the Middle East results from the statements of the leader of the Islamic Jihad, who said on Al-Jazeera television that "the Palestinian groups in the Gaza Strip attack Israel with weapons manufactured in Iran".

In the same context, the leader of the state of Israel accused the Iranians of delivering Fajr-5 missiles to Hamas, which were launched in the second half of last year against the Jewish state, without hitting major objectives thanks to the efficiency of the "Iron Dome" anti-missile shield [11]. The position regarding the attack against Israel was immediately expressed by the EU foreign minister, who condemned the actions by Hamas to launch missiles on Israel and made an appeal to Israel to use adequate means to solve the conflict.

As failed states, Iran and North Korea continue to threaten the international order. By running nuclear programmes and future proliferation of nuclear weapons and related technology they continue to cause serious concerns among the other countries. Being interested in the nuclear technology and the development of capabilities to enrich uranium, Iran creates a serious threat to the already volatile security of the region. The Iranian regime sponsors terrorism and continues to disrupt the fragile democracies in Iraq and Afghanistan [12]. The North Korean regime creates problems by nuclear proliferation, by threatening countries in the area with ballistic missiles and the illegal trafficking of narcotics and counterfeited currency, but also by the use of tough treatment inflicted on the population. Furthermore, these proliferations were manipulated by terrorist networks, such as Al Qaeda.

In *Asia-Pacific*, the main actors - Japan, the Korean Republic, China, India and Australia - are factors of regional stability and their interests are, in general, in accordance with international norms. Among the long

term sources of instability we can emphasize two: the rivalry between India and Pakistan and the nuclear programme run by the government of the Democratic People's Republic of Korea. Due to the regional dynamics, India and Pakistan require increased attention from the international community, as the two countries give significant importance to their nuclear forces.

With regard to *Central Asia* area we believe that several states in this region are favourable to the stability operation carried out in Afghanistan. The activity of the terrorist groups, especially Al Qaeda, determines an increase of transborder dangers which cause serious threats to the states mentioned above. For this reason, political reforms and better governance can be factors that will contribute in a major way to a healthy security environment in Central Asia. If these changes do not occur, this region may experience serious problems that will impact both the inhabitants of this area, and those outside it.

On long term, *China* will continue the broad transformation of its military forces in order to improve their capabilities to project forces and to wage interdiction and repulse operations [12]. On a short term, China is preparing for probable operations in the Taiwan Strait, including as a contingency plan US intervention. In spite of these, China's expanding military capabilities influence the military equilibrium of the Far East. The improvement of China's strategic capabilities has implications on the Asia-Pacific area. From the point of view of its nuclear armaments, China is modernizing its nuclear arsenal both quantitatively

and qualitatively, developing and deploying new classes of missiles, modernizing the old launching systems and elaborating new ballistic defence methods. The improvement of the Chinese nuclear forces adds to its classical land, air, maritime and cyber capabilities.

It is believed that important economic progresses have been made in *Africa* during the last years, but civil conflicts, terrorist actions, diseases and inefficient governance have also evolved. Thus, we can mention a number of countries that will continue to raise concerns: the Democratic Republic of Congo, Somalia, Mali and Sudan. Although the leaders in the region tend to solve their problems through the African Union, the North Atlantic Alliance may be asked to carry out stability and support operations.

Having in mind these tendencies and threats, the United States will continue to maintain their nuclear supremacy in the XXI century, as well.

In order to face the new evolutions of the security environment, the European Union developed the European Security and Defence Policy (ESDP), which is expected to answer to the following principles: freedom, democracy, respect for the fundamental rights and freedoms of man, fundamental values nowadays and which must remain valid in 2020, as well [14].

To this end, the ESDP established a number of priorities for the following ten years, which will have to become reality, even in the context of the current economic and financial crisis and the cuts in military budgets. These are briefly presented below.

The management of today's crises - common defence until 2020. The military missions by ESDP are vast, among them disarmament, humanitarian missions, military assistance, conflict prevention and peacekeeping. The mission will become even more vast, as follows: conflict management in non-European states, combating piracy, transborder crime, terrorism and cyber-terrorism.

The fulfilment of civil and military objectives for "force generation" is achieved through the development of crisis management civil and military structures, like the EU Peace Corps.

The prioritization of European military and civilian command. The structure of military and civilian command at the level of the EU is extremely bureaucratic and this is why it constitutes an emergency to establish an autonomous civilian-military command for the European Union missions [14].

The position of the European Union and of Romania toward the hottest crisis of the moment, the one in Syria, sets off from the premise that all UNO member states must honour their international commitments with regard to the respect for human rights. In this context, the violence used by the rival sides in Syria against the civilian population can in no way be justified. For this reason, it is imperative to open an as comprehensive as possible social and political dialogue in Syria, oriented toward the satisfaction of the legitimate aspirations of the Syrian population.

To this end, several resolutions were adopted by the UN General Assembly and by the Human Rights Committee which demanded the end of violence in Syria and the identification of a political solution to this crisis. On the same basis, the mission of the special common envoy of the UNO and the League of Arab States was carried out in an attempt to define a political solution to this crisis, as well as the measures decided by the Security Council in Resolution 2043 (2012) by which a monitoring mission was sent to Syria (UMSMIS), a mission in which five Romanian observers participated [15].

3. CONCLUSIONS

The international security environment is in an ample process of transformation and re-shaping, characterized by the manifestation of two antagonist tendencies: on the one hand, the spreading of the democratization process, the assertion of the rights of man and of the principles of a market economy, concurrently with the broadening of cooperation and integration in European and Euro-Atlantic structures; on the other hand, a process of disintegration and fragmentation of multinational state entities. In parallel, we can observe the conservation and diversification of military and non-military risks, mainly terrorism, as well as the increase of the vulnerability of national and international institutions to it.

The most important aspect of our times is the higher probability for events in one part of the world to have repercussions on another part, at a great distance. The anarchy in one country can create opportunities for terrorists to find a safe haven from where they can operate beyond borders. A state that evades

or rejects international norms can become a precedent that other states could follow. As a consequence of the progress of information and communication technologies, the terrorist groups, groups of pirates or other criminal groups use these opportunities to have a worldwide audience when they act.

The growing complexity of the world political situation may lead to a weaker cohesion of the political-military alliances and not only. Thus, the economic problems can distract attention from real security needs, and old rivalries can re-erupt, which may divide the political leaders and weaken cohesion at the level of human communities (states, federations of states, international inter-governmental organizations).

To conclude, a major preoccupation of military experts and planners should be to know and predict the new risks and threats to the international security environment, to take the adequate measures in order to reduce the possibility of their emergence and the management of their effects in case they occur. For this reason, they are required to evaluate the potential impact and to revise the strategic plans accordingly, as well as the need for resources and means for future operations.

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CRITICAL INFRASTRUCTURE PROTECTION
WITHIN THE EUROPEAN UNION

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The new dynamics and intensity of the risks and threats posed to societal functioning and citizens' security have acquired new meanings. Consequently, an integrated approach to the concept of "critical infrastructure" is necessary. The critical nature of some of the basic characteristics of the critical infrastructures has made them acquire new meanings within the national/transnational strategic planning. Moreover, the complexity and importance of critical infrastructure protection for social stability have generated the correlaton of the strategies developed by states and organizations.

Key words: *critical infrastructure, vulnerability, risk, threat, critical infrastructure protection*

1. INTRODUCTION

The swift and highly unpredicatble changes in nowadays world, coupled with the complexity of vulnerabilities and risks lead to a major concern regarding the protection of the critical infrastructures. The transnational links among these enabled by the globalization process and the extended risks to which they are prone make it possible for any aggression against a state, a system or a process to generate a cascade effect. Consequently, the globalization of insecurity should be countered by a globalization of security measures and systems in order to better cope with current and future threats.

The new dynamics and intensity of the risks and threats posed to societal functioning and citizens' security have acquired new meanings. Consequently, an integrated approach to the concept of "critical infrastructure" is necessary. The critical nature of some of the basic characteristics of the critical infrastructures has made them acquire new meanings within the national/ transnational strategic planning. Moreover, the complexity and importance of critical infrastructure protection for social stability have generated the correlaton of the strategies developed by states and organizations.

The past few years characterized by terrorist attacks, by deliberate energetic supplies cutouts at state level, by technological accidents triggered by human mistaks or by natural disasters have revealed the vulnerability of national critical infrastructures. in this respect, the EU member states have taken firm action towards identifying a joint

approach to the protection of their strategic objectives.

The terrorist attacks of 2011 in the USA, of March 2004 nin Madrid and of July 2005 in London, the economic crisis, the global spread of diseases and the energetic problems have revealed the vulnerability of modern societies to asymmetric threats. As a result, national interest and the adoption of measures towards identifying and protectin critical infrastructures have become of prime importance. The state that coined the phrase of critical infrastructure in 1995 and took the first steps in this direction was the USA by establishing a Critical Infrastructure Committee to deal with border security and the prevention of attacks from outside. Important legal and institutional initiatives in the definition of critical infrastructurees were also developed aby NATO and by EU member states. In this respect, at NATO level, the Senior Civil Emergency Planning Committtee was established to find and identify integrated strategies to analuze and protect critical infrastructures. At the EU level, especially after the 2004 and 2005 terrorist attacks in Madrid and London, a set of measures was adopted in oredr to shape the legal and operational framework needed to protect critical infrastructures.

2. THE CONCEPT OF CRITICAL INFRASTRUCTURE AT EU LEVEL

2.1. Definitions [1]

According to the National doctrine on security information [2], the concepts of "vulnerability", "risk factors", "threats", "danger", "aggression" are defined from the perspective of the overall concept of "critical infrastructure" as follows:

Vulnerabilities – processses, phenomena that diminish the reaction capacity of the critical infrastructures to existing or potential risks, or that favor their emergence and development with consequences for their functionality and usefulness. The mismanagement or lack of knowledge can generate risk factors, threats or dangers to national goals, values, interests and necessities, all of which are considered critical infrastructures.

Risk factors – refer to all circumstances, both internal and external, that favor the emergence of a threat to critical infrastructures due to a gven vulnerability and with direct effects at security level.

Threats – are the capacities, strategies, intentions, plans that contribute to the increase of threats to critical infrastructures. They may be in the form of attitudes, gestures, deeds that lead to imbalance or instability and generate danger impacting national security.

Threat state – is a situation that appears and threatens the existence and integirty of critical infrastructures.

Aggressions – are the attacks, the armed ones included, that endanger the existence, balance or equilibrum of critical infrastructures.

National Critical Infrastructure (NCI)– an element, system or system component that is to be found at national level and that is essential in ensuring the vital functions of a society, as well as the health, security, social or economic welfare of people and whose disruptiion can significantly impact a nations' stability.

European Critical Infrastructure (ECI) - a national critical infra- structure whose disruption would siginficantly impact at least two EU member states. The seriousness of the impact is evaluated based on the dependecies between the given infarcstructure and others and the extent of the damage brought to all of these.

Critical Infrastructure Protection (CIP) - is aimed at ensuring the functioning, continuity and integrity of NCI/ECI by descouraging, diminishing or neutralizing a threat, risk or vulnerability. The CIP refers to the activities concerned with risk analysis and evaluatin, classified information protection, security planning on behalf of those who operate the critical infrastructures, etsablishing the liaison officers and the communication means, as well as drills, reports, reevaluations and documentation updates.

Risk analysis - is the analysis of the scenarios concerning the emergence of critical threats undertaken in order to identify the likely impact of a critical infrastructure's disruption or destruction.

Critical infrastructure sensitive information - is the information concerning a critical infrastructure that could be used, in case of revealing, to disrupt or destroy the elements of a critical infrastructure.

Owners/operators of a European critical infrastructure (OECI)- are the entities in charge with making investments in a given element, system or component of a critical infrastructure.

2.2. Critical infrastructures defined by specialised litereature

Specialised literature identifies three types of critical infarstructures depending on their importance to the stability of the economic and social security systems:

- **Regular infrastructures** that provide the framework for the establishment and functioning of a system;

- **Special infrastructures**, with a role in ensuring the functioning of systems and processes and with a high impact on the overall stability and security of the socio- economic systems at regional level. Once subjected to vulnerabilites or dysfunctions, as well as under the influence of insecurity they can become critical.

- **Critical infrastrutures** have a major role in the stability, security and safety of systems and processes unfolded at economic, social, political and military level. Their critical nature is the result of the effects their disruption, even temporary, may yield at national or global level [3]. An infrastructure or set of infrastructures can be considered critical if:

- It has a unique status within a process or system or and it is tightly knit to the other infrastructures within the latter;

- It plays an important role in the stability, feasibility, safety, functioning and security of systems;

- It is exposed to direct threats and, hence, represent a vulnerability within the systems or processes it is part of;

- It is highly influenced by the changes in the environment [4].

2.3. The development of the critical infrastructure concept witihin the EU (2004 – 2008)
2.3.1. A global strategy for Critical Infrastructure Protection

The multifarious effects of the terrorist attacks in the USA (2001),

Madrid and London on the critical infrastructures of nations and of alliances revealed their vulnerabilities. Consequently, in June 2004, the EU Council asked the EU Commission to prepare a global strategy for Critical Infrastructure Protection. In October 20 2004, the latter adopted a set of communiqués concerning the topic: *Prevention, preparedness and response in terrorist attacks, COM (2004) 698; Prevention of the Fight against Terrorist Financing, COM (2004) 700; Preparedness and consequence management in the fight against terrorism, COM(2004) 701;* Critical Infrastructure Protection in the fight against terrorism, COM (2004)702.

2.3.2. The Critical Infrastructure Warning Information Network - CIWIN

In 2005, the European Commission established the CIWIN. Ist role is to provide the specialists in CIP within the EU to contribute to the creation of a program that allows information exchange at EU level concerning common threats and vulnerabilites, as well as the development of an appropriate countering startegy. The USA counterpart is known by the name of **Critical Infrastructure Warning Information Network (CWIN)**.

2.3.3. The European Programme for Critical Infrastructure Protection (EPCIP)

In November 17 2005, the Commission adopted the *Green Paper* that concerns the etsablishment of a European Programme for Critical Infrastructure Protection through public debate and discussion with the operators of the critical infrastructures identified in the EU documents, as well as the founding of a Critical Infrastructure Warning Information Network (CIWIN). The elements that were brought to the attention of the EU members were as follows: the requirements for the establishment of European Programme for Critical Infrastructure Protection; the concept's delineation; the actions needed to implement the concept; the definition of critical infrastructures at EU level; the definition of national critical infrastructures;the role of the state, owners and operators of critical infrastructures;the information flow iwithin the Critical Infrastructure Warning Information Network (CIWIN); providing financial support for EU member states to undertake activities in the filed under discussion; evaluation and monitoring of the activities/missions undertaken in the filed of critical infarstructures.

The European Programme for Critical Infrastructure Protection mission specifies that the EU cannot provide the protection of all critical infrastructures. Thus, even though the transnational character of vulnerabilites requires an integrated approach at the level of the Union, each member state needs to develop supplementary national programs and make areal contribution concerning national capabilities engagement to the benefit of the orther EU states.

The definition provided by the European Programme for Critical Infrastructure Protection for critical infrastructures identifies these as the networks, services, physical activities and information means that, if disrupted or stalled, can seriusly impact the health, safety, security and economic welfare of the citizens or state governance.

The goals of EPCIP are as follows: to identify and list, with the support of the member state governments, the critical infrastructures identifiable at national level in accordance with the priorities established by EPCIP; to ensure the collaboration of organizations and governments in information dissemination and risk reduction in order to counter any events that may lead to extended or long-lasting disruption of critical infrastructures; to ensure a common approach to critical infrastructures management through the collaboration among private and public stakeholders.

Another goal of EPCIP is to join in a network all national representatives and specialists in critical infrastructure protection from all EU member states. Thus, the proper functioning of the Critical Infrastructure Warning Information Network – CIWIN established in 2005 is ensured.

As far as the latter is concerned, its goal is to encourage information exchange about the common threats and vulnerabilities, as well as to contribute to the adoption and implementation of the necessary measures and strategies aimed at limiting risk impact and at protecting the critical infrastructures.

2.3.4. The EPCIP critical infrastructures taxonomy

As a result of the numerous investigations and research undertaken in the filed, the EPCIP, launched in 2006, December 12 mentions a number of critical infrastructures identified within the EU. These cover 11 critical sectors and 32 servces related to these4, as presented in **Table no. 1.**

Table no.1 Critical infrastructures: critical sectors and related services

Sector	Product or service
I. Energetic	1. Oil and gas production, refineries, storage facilities, pipelines; 2. Electrical energy production; 3. Gas, oil, electrical energy transprotation; 4. Gas, oil, electricity distribution activities.
II. Information and communication technology	5. information systems and networks; 6. Command and automation systems; 7. Landline and mobile communication services; 8. Radiocommunication and bavigation systems; 9. Sattellite commmunication services; 10. Radio services;
III. Water supplies	11. Drinkable water supply; 12. Water quality control; 13. Dam building and water quantity control;
IV. Food supplies	14. Food supplies, food security and safety;
V. Health	15. Medical care; 16. Drugs and pharmaceuticals; 17. Biolaboratories şi bioagents;
VI. Financial	18. Payment services and related facilites; 19. Government financial systems;
VII. defense, public order and national security	20. National defense, public order and national security; 21. Border integrated management;
VIII. Administration	22. Governance; 23. Armed forces; 24. Services and administration; 25. Emergency services;
IX. Transportation	26. Roads;27. Railways; 28. Naval, river, maritime and ocean trasports; 29. Air transport;
X. Chemical and nuclear industry	30. Chemical and nuclear substances processingand storage; 31. Pipleines for hazardous chemical substances and products;
XI. Space	32. Air traffic.

3. CONCLUSIONS

The traditional concepts of physical protection and security have evolved as a result of the direcst, visible and immediate threats posed by a globalized world. Moreover, the concepts of risk, vulnerability or asymmetric threats have been resignified and coined. The numerous events that have occurred lately and their effects have heavily influenced the debtaes of the specialists and of the civil society representatives. Worth reminding in this respect of the following: the terrorist attacks on air, road, railway, underground transportation, on information systems, the natural distaers, the human mismanagement of critical systems, major technological accidents, cyber attacks, etc. Therefore, the intiatives in the field of critical infrastructure protection mentioned by this article express the concern on behalf of the governments and international organizations for the citizens' welfare.

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CONSIDERATIONS ON USING THE SITUATIONAL CRISIS COMMUNICATION THEORY IN THE CRISIS COMMUNICATION PLANNING ACTIVITIES OF ROMANIAN ARMED FORCES' INFORMATION AND PUBLIC RELATIONS STRUCTURES

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Organizational crisis situations – quite frequently met in military establishments, as well – represent a major threat against reputation, one of the most important intangible resources that organizations own. The Situational Crisis Communication Theory (SCCT) suggests focusing managerial efforts in organizations facing crisis situations on preserving reputation through the proper management of stakeholders' perceptions. Moreover, besides the theoretical framework, SCCT offers a wide range of practical tools to be used by managers and communication experts, tools which can be exploited successfully by the military information and public relations structures, too. This paper particularly focuses on the crisis communication planning effort, reviewing the main theoretical aspects of SCCT, as well as practical solutions which can be helpful to crisis communication planners.

1. INTRODUCTORY REMARKS

The **reputation** of an organization is considered to be among its strategic resources, placed by scholars in the category of intangible resources, together with intellectual property rights, trademarks, patents, commercial secrets, know-how, organizational culture, etc. From the elements above-mentioned, organizational reputation and employee know-how are considered as the most important, because they have the most substantial contribution to the success of the organization [1]. Reputation is strongly linked to the organizational achievements, especially to those characterized by consistency/permanence [2].

As a strategic resource of an organization, reputation is primarily

threatened in organizational crisis situations, because crises generate among stakeholders numerous perceptions related to the event itself, as well as to the organizations involved, most of these perceptions being usually negative.

Hence, crisis communication, as the main instrument through which the organization can manage stakeholder perceptions, plays an essential role thus being able to preserve or defend its reputation.

The above-made assumptions are also fully valid when it comes to military structures; as a matter of fact, this is the reason why information and public relations activities are carried out within the military. Indeed, in the Romanian Armed Forces, "information and public relations activities … aim at establishing, maintaining and developing relationships based on trust between the military institution and the Romanian society" [3] (M148, art. 1, pt. 2); in other words, it has as a goal to build and maintain organizational reputation. Otherwise, this supposition is confirmed by the explicit mention of reputation as a resource of the military organizations: "maintaining reputation of the military unit …" (M148, art. 111, pt. b).

In our opinion, information and public relations structures (IPRS) could gain significant benefits in their crisis communication from the application of the **Situational Crisis Communication Theory** (SCCT), developed by the American scientist W. Timothy Coombs. This is not the only theory able to support communication strategies; we can mention, for instance, the **image restoration/repair theory** shaped by W. L. Benoit (1995) [4], or the **"black swan" theory** belonging to Nassim Nicholas Taleb (2007) [5]. However, in our opinion, SCCT has de advantage of offering practical tools easy to use by managers and experts considering a proper management of crisis situations which may challenge their organizations; more than that, SCCT allows a proper planning of crisis communication, aspect which we intend to examine more thoroughly below.

Briefly, we can state that SCCT is an important tool addressed primarily to planners who prepare crisis management plans, because it allows an accurate analysis of a given crisis situation and, based on its conclusions, it allows a pertinent estimation of the degree of the reputational threat posed by the crisis. Crisis planners thus can identify the factors which shape the threats to the reputation (initial responsibility for the crisis, crisis history, and the relation between history and previous reputation) and use them to estimate as far as accurately these threats, as well as to determine the most suitable communication strategies to be employed in the crisis response effort.

2. LITERATURE REVIEW

We would like to make it clear from the very beginning that, whenever we refer to **crisis situations** in which SCCT may be applied, we do not actually take into consideration political-military crisis situations, regional or world crises, but only unpredictable events occurring at the

organization/s level and generating certain perceptions capable of jeopardizing important stakeholder expectancies, thus being able to affect organizational achievements and to generate negative outcomes [6].

Among such events likely to occur in military organizations, too we can list natural disasters, rumors about the organization, workplace violence, accidents producing deaths/injuries or major damage, organizational misdeeds.

A characteristic of these kinds of events consists of the fact that frequently the effects produced by the event itself are much less damageable – at least as far as organizational reputation is concerned – than the outcomes generated by stakeholder negative perceptions, as well as by behaviors which may come up from these perceptions. Therefore, the communication activities meant to manage this kind of perceptions frequently go up to 70-80% from the activities carried out by the crisis management teams [7].

SCCT – initially made public by W. Timothy Coombs in 1995 and then developed by him and other researchers, too – as a theory which generates concrete crisis communication tools has its roots in the **attribution theory** from the field of psychology, originally shaped by Fritz Heider in 1958 and then developed especially by Bernard Weiner. This theory starts from the premise that people tend to attribute causes to events, especially when they are unexpected and produce negative results; also, people tend to attribute responsibility for these events. Such

premises best describe organizational crisis situations [6], thus being pertinent to affirm that, through the degree of responsibility attributed by stakeholders, a certain crisis situation requires certain response strategies based on communication.

Attribution of responsibility is a process of mind dominated by emotions. Indeed, the attribution theory states that sympathy and anger (dissatisfaction, irritation, worry, anxiety, etc.) are essential emotions of people perceiving a situation to which they tend to attribute causes and for which they would try to assign responsibility to somebody [8]. In our opinion, these emotions will substantially influence stakeholder perceptions and, consequently, their attitudes and behaviors towards the organization confronting a crisis.

In order to appropriately manage perceptions, managers must consider not only the degree of attributed responsibility, but also the context of the crisis situation, the concrete phenomena and processes that generated the crisis, the events and actors influencing directly its development, the crisis management history of the organization/s involved, their attitude and behavior in previous crisis situations. As to this last element, Coombs [9] points on the importance for crisis communication to take into consideration all the crisis situations which the organization faced in its whole history, particularly its attitude and behavior (managerial achievements) during those situations. All these elements describing the crisis situation as a whole produce major consequences

for the attempt of defining the crisis type, shaping the crisis communication content, drafting the communicational strategies, and setting up the messages to be sent out while applying the strategies.

In this respect, together with Sherry Holladay, Coombs elaborates, in the framework of the SCCT, a prescriptive system – that is a system with proactive features – designed to harmonize the crisis response strategies with the crisis situation itself, so that the organizational reputation can be preserved.

In the theoretical construct of the SCCT, the **attributed responsibility for crisis** – as a result of the perceptions and evaluations made by the organizational stakeholders – is considered to be a key indicator of the potential of damaging the reputation, due to the fact that organizational publics would expect the organization that, the more responsible it is considered for a particular situation, the more it does for victims [10]. Defining the crisis types this way and using the level of the reputational damage generated by the crisis in conjunction with the history of previous organizational achievements – particularly those recorded during the management of crisis situations which the organization faced up before as a criterion allows a quite reliable predictability as to the level of responsibility that stakeholders will attribute during a certain crisis situation; as a consequence, the SCCT makes possible the setting up of a mix of adequate crisis response strategies containing both verbal and non-verbal aspects (words

and actions), strategies which the organization designs and utilizes in such circumstances [6].

The focus of the SCCT on the reputational aspect must not be identified at all with a selfish and exclusivist manner of defending the reputation of the organization/s involved in crisis situations. On the contrary, the authors believe that crisis management – crisis communication management included – is primarily aimed, before anything else, at assuring stakeholder security and safety, organizational reputation thus being a secondary goal [11]. Therefore, an organization involved in a crisis must first make sure that it offered its stakeholders **instructing information** (advice on how they may physically protect themselves against crisis consequences) and **counseling** (information helpful for their psychological adaptation to the crisis situation, demonstrating that the organization is concerned about them). As the crisis situation unfolds, the instructions and counseling may be accompanied by **corrective actions** (measures taken to reassure stakeholders that their safety is a priority).

3. CONSIDERATIONS ON THE CRISIS PLANNING PROCESS

According to Coombs' (2011, p. 157) statement [6], "three factors are used in SCCT to evaluate the reputational threat presented by a crisis: crisis type, crisis history, and prior reputation".

However, planning a performant crisis management also involves the consideration of other variables as well, as the responsibility attributed

for crisis, personal control, crisis response strategies, stakeholder emotions [10], as well as the correlations among all those.

Consequently, the authors make the recommendation that crisis communication planners follow a **two-step process** in order to estimate the reputational threats of the crisis event.

The **first step** consists in determining to whom the crisis responsibility will be initially attributed, in accordance with the stakeholder perception: one can consider the event for which planning is to be done as being an accident, sabotage, or criminal negligence? [9]. In reference to the answer of stakeholders, planners may detect the existence of three clusters of crisis situations (**Table 1**).

Table 1. Clusters of responsibility attributed to an organization facing up a crisis

	"Victim" cluster	"Accidental" (unintentional) cluster	"Preventable" (intentional) cluster
Attributions of crisis responsibility	very little	Low	Strong
Examples	• Natural disasters • Workplace violence • Product tampering • Rumors about the organization	• Technical-error accidents • Technical-error product harm • Challenges (disputes) with stakeholders)	• Human-error accident • Human-error product harm • Organizational misdeeds
Communication strategies	Responsibility-**denial** posture: • Attacking the accuser • Denial • Scapegoat	Responsibility-**diminishment** posture: • Excusing • Justification Reputation-**bolstering** posture • Reminding • Ingratiation • Victimage	Reputation-**rebuilding** posture: • Compensation • Apology

There are various opinions as to accepting the responsibility attributed by stakeholders, because it produces often significant consequences in the financial, legal, or reputational field. Our opinion, repeatedly expressed before [12], is that an organization must assume responsibility whenever it exists and communicate this assumption using the most adequate crisis response strategies. Otherwise, even if favorable short-term developments may occur, the lack of assuming responsibility may generate long-term risks for the organization, risks which are likely

to produce more dangerous and less manageable threats.

The **second step** planners should take when estimating the threats takes into consideration two features of an organization, which may become **intensifying factors** in a crisis event:

• **consistency**: the history of the organization, particularly regarding to previous crisis management; thus, a history characterized by frequent crisis situations (great consistency) may suggest stakeholders the presence and persistence of systemic and managerial problems;

• **distinctiveness:** the interaction between organizational history and its prior reputation, especially in relation with the stakeholders; the perception of the fact that the organization successfully solved previous crisis situations, and, particularly, showed consideration to stakeholder interests and expectancies, may generate trust and confidence in its capacity of getting over such kind of events.

In the case of high consistency and/or low distinctiveness, the crisis response strategies suggested by planners must keep into account not only the amount of attributed responsibility, but also these two above-mentioned features. Consequently, the amount of attributed responsibility will be greater, thus intensifying the threats to the organizational reputation.

By taking the two steps described above, the planners may choose either a strategy or a mix of strategies adequate to the amount of the estimated responsibility to be attributed by stakeholders; they

should also be adequate to the stakeholders themselves, as they will be subjects of crisis communication. Thus, starting from the three clusters identified in Table 1, Coombs [6] suggests a list of communication strategies which is not exhaustive, their variety depending only on the professionalism and creativity of planners:

• attacking the accuser (the crisis manager confronts either the person or the group claiming that his/ her organization is involved in a crisis situation; the confrontation can go up to the threat to use force against the accuser (lawsuit, for instance);

• denial (the crisis manager affirms, appealing to evidence, that there is no crisis);

• scapegoating (someone outside the organization – either a person or a group – is blamed as responsible for the crisis; the blame must also be based on solid evidence);

• excusing (the crisis manager strives to minimize the organizational responsibility, proving that the organization had no intention to produce damage/harm or had no control over the events that initiated the crisis);

• justification (the crisis manager tries to minimize the perceived damage associated with the crisis event, to show that there has been no severe damages or injuries, to explain that people affected have been treated adequately);

• compensation (the crisis managers offer money or other compensations to the victims). This strategy is required in the cases

when the victims are numerous, have severe injuries or/and suffer serious damage. The accidents and injuries occurred in the theatres of operations fit into this typology;

• apology (the crisis manager publicly admits the full responsibility of the organization for the crisis situation and asks forgiveness from stakeholders);

• reminding (the crisis manager reminds stakeholders on the past good works of the organization, thus appealing to its positive consistency and distinctiveness);

• ingratiation (the crisis manager praises stakeholders for their behaviors and actions);

• victimage (the crisis manager explains that his/her organization is a victim too).

Planners must also consider the actual way in which these strategies may be applied: they may be delivered either as **accounts** (justifications) or as **apologia** (excuses), in accordance with the amount of responsibility attributed by stakeholders to the organization (Table 1).

This brief review of the SCCT allows the conclusion that, from the perspective of crisis planning, this theory permits an **effectively prospective approach**, oriented more to new opportunities in crisis communication and less to benefits from the previous experiences (either of the organization itself or of others).

The use of SCCT also offers the advantage of understanding the crisis situations from the **stakeholder perspective**. Indeed, the perspective of the organization itself on the crisis event in which it is involved may produce perverse effects as excessive concern for the preservation of its own reputation, selfishness, subjectivism, or the consideration of the situation out of its context. Therefore, "an important trend in crisis communication research is the move from a sender perspective (what the organization communicates) to a receiver/stakeholder perspective (how stakeholders perceive the messages)" [13]. Or, from this point of view, M148 (art. 3, pt. c, as well as the stipulations referring to media crises) [3] still seems to give importance primarily to the sender, thus maintaining a certain disadvantage to the receiver.

Moreover, one should not ignore the advantage offered by the SCCT as to the **efficient use of the organizational resources**: in the circumstances of undersized budgets assigned to information and public relations activities, the good planning of the crisis response strategies and their right implementation will result in the optimization of the resources required in such situations [14].

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ENDNOTE

[1] Stakeholder: a person (group, organization) having interests or concerns in an organization (businessdictionary.com). Terms as "relevant publics", "involved publics" or "interested publics" are used as well in the Romanian literature.

FRAMING AND AUTHORIAL ATTITUDES IN ROMANIAN OPINION DISCOURSE ON THE STRATEGIC PARTNERSHIP BETWEEN ROMANIA AND THE UNITED STATES

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This article continues a previous study on the evaluations of the strategic partnership between Romania and the United States reflected in the Romanian media, by focusing on the authorial attitudes expressed and on the discursive strategies involved, especially on the framing strategy. Recent history appears to play a significant role in the interpretations of the contemporary events which the journalists advance. In the deontic sphere, a major dichotomy in use is 'democracy' versus 'communism', as a new articulation of the good – bad opposition. From this perspective, Romania's recent past is negatively viewed by Romanian opinion discourse. The texts enhancing the affective dimension construct a different view of the past, based on an idealized representation of the former times, which is contrasted with a negative depiction of the present. Similar to previous research on European media (Riegert, Pettersson 2011), this brief analysis shows that the strategic partnership with the United States is therefore valued from the viewpoint of Romania's needs and capacities. Although it is often perceived as incongruent with Romania's present conditions, media discourse also reveals the effort to integrate the new events in the previous common sense scripts of Romanian life.

Key words: *opinion discourse, Romania, U.S.A., framing, scripts.*

1. INTRODUCTION

It is widely acknowledged at present that media's role goes beyond mere dissemination of information, as they also contribute to the shaping of public opinion or of setting the agenda for public debates. Moreover, media provide not only descriptions, but also interpretations of events aiming to construct solidarity relations with their audiences which leads to a representation of journalists as an 'interpretive community', able to create a sense of belonging to a group with a shared view' [1]. This function is salient especially in opinion discourse, which 'serves as a forum for sharing and casting ideas in imagined communities' [2]. In the case of the Romanian media, news and opinion discourse represents an interesting research area, especially from the angle of the evaluative and interpretive functions of media texts in connection to the cultural background of their production and reception.

My previous article [3] brought into discussion the evaluations of the military cooperation between Romania and the United States reflected in two Romanian print and online newspapers. Military issues do not usually receive a large coverage in Romanian media, except in cases of war and international conflict, still the strong cooperation between the two states attracted constant media coverage in the last years, especially in the news. The events which took place during 2011, especially the conclusion of the agreement regarding Romania's decision to host ground-based components of the Ballistic Missile Defense System on its territory, were debated not only in the news, but also in opinion pages and triggered comments, general evaluations and interpretations from authorities, experts and journalists. The reason for choosing this particular topic as an object of analysis in the previous and the present study was that a state's involvement in military actions or partnerships cannot pass unnoticed in the public sphere or be neutrally treated in the media. Cooperation and conflict determine media to reassert common beliefs and values, to reinforce solidarity, to reiterate the national identity in relationship to 'otherness'.

2. THEORETICAL FRAMEWORK

Representations of the United States in the European media have been examined in previous extended studies; for example, Riegert and Petersson's study (2011) [4]on Finnish, French, German, Russian and Swedish media, covering a period from the Cold War to president Obama's first term. The results showed similarities in the depictions of the U.S.A. and also that media discourse in these countries expressed a state-centric perspective, focusing more on the national problems and identities in the relationship to the U.S.A. [4]. Research on the depiction of the United States in the Romanian media is still needed, especially a comparative approach which would be able to signal similarities and differences in regard to the media in other European countries.

The present article aims to investigate discursive strategies and the linguistic resources employed in Romanian opinion articles regarding the strategic partnership to the United States. The framework used is the one proposed by A. Carvalho (2008) [5] for the analysis of media discourse. This framework consists in two levels of analysis, the textual and the contextual one. Textual analysis examines the layout of the texts, the objects of discourse, the actors mentioned or represented in the texts, the linguistic dimension of the texts, the discursive strategies and the ideological standpoints. The contextual analysis is developed by taking into account the comparative-synchronic and the historical-diachronic dimensions. This study is focused on aspects at the textual level. In the first part of the study, the linguistic dimension of the texts will be discussed in connection to the objects of discourse and with the authorial attitudes stated. The main categories of authorial attitudes are considered to be epistemic, deontic and affective [6]. The epistemic attitude refers to the speaker/ writer's belief about

the truth of a given state of affairs, the deontic attitude encompasses the expression of judgments from a moral or ethical perspective and the affective attitude results from the expression of the speaker/ writer's emotions regarding a certain topic or situation [6]. In the next section, the discursive organization will be taken into account by the examination of the framing strategy.

3. OBJECTS OF DISCOURSE AND AUTHORIAL ATTITUDES

The notion of 'object of discourse' is preferred by Carvalho [5] because of its ability to suggest that reality is constituted by the discourse, not simply referred to. The complexity of the military and diplomatic relations between Romania and the U.S.A. leads to their treatment by the media as a broad and composite object of discourse, encompassing various more specific subtopics as: the negotiations for the military agreement between the two countries and its conclusion, the visit made by the Romanian president to the USA with this occasion, the negotiations for the purchase of American F-16 military planes by the Romanian government or the participation of Romanian troops in conflict areas and their cooperation with the American forces.

In the analyzed texts, the types of attitudes expressed vary according to the choice of the specific object of discourse. The expression of an epistemic attitude is not very common in opinion texts; still this authorial attitude is visible in the articles which endorse the partnership with the U.S.A. by bringing forth economic

advantages as a main argument. In such cases, the evaluation is placed in the epistemic sphere by the use of facts and concrete data, for example chronological ones. Another trait is the lack of personal deixis and, as a consequence, the repetition of the name 'Romania' or of the syntagma 'the Romanian state' instead of the pronoun 'we', thus reducing the impression of subjectivity.

While deontic judgments are clearly stated, the expression of an epistemic attitude appears to be more cautious in the opinion texts on the topic of the strategic partnership. Caution in the degree of certainty expressed is salient in the two examples below, where the general positive evaluation is realized with the help of superlatives and graduation. The endorsement of the partnership and the positive estimation of its effects are, however, mitigated in these extracts by specific devices:

(1)   „*Cea mai importantă consecinţă nonmilitară a amplasării scutului antirachetă în România ar putea fi deschiderea fluxului de investiţii americane către România*". [The most important nonmilitary consequence of the installment of the shield agaisnt missiles in Romania might be the opening of an American flow of capital towards Romania.] ('Banii de sub scut', *România liberă*, May 4, 2011 [7]).

(2) „*Faptul că România va face parte, la nivel operativ, din acest sistem de apărare antirachetă, din 2015, este un câştig politic greu de estimat. Un câştig politic care poate fi transformat, de persoane capabile, e drept, într-un avantaj economic*

deosebit în relaţia cu SUA, în special. [...] România nu a profitat de statutul de membru NATO. România nu este pe lista ţărilor care au înflorit economic în urma semnării de acorduri militare cu SUA. România nu a profitat şi nici nu profită de calitatea de membru al UE. Ba, mai degrabă, din contră. [...] România poate face următorul pas: poate trece la diplomaţia economică". ["The fact that Romania is going to be a part, at the operational level, of this missile defense system, is a political gain difficult to estimate. A political gain that may be turned, by competent persons, it's true, into a special economic advantage in the relation to the U.S.A., in particular. [...] Romania hasn't taken advantage from its status as a NATO member. Romania isn't one of the countries which have grown economically after signing military agreements with the U.S.A. Romania hasn't taken and isn't taking advantage from its status as an E.U. member. Rather on the contrary. [...] Romania might make the next step: might shift to economic diplomacy."] ('*Cum ar putea aduce scutul antirachetă bani pentru România*', *Gândul*, May 3, 2011 [8]).

The extracts illustrate a balanced authorial attitude created through the combination of enthusiasm and skepticism. First, the use of modals places the economic consequences in the sphere of possibility, but not certainty. Then, the idea of economic gains is mitigated by a concession ('by competent persons, it's true') which casts doubts about the Romanian officials' ability to negotiate or

to exploit the opportunity for the national interest. In the final section of the second extract, the topic shifts from the partnership to the current state of Romania's finance. The presentation of the external politics and economic strategies is composed by successive negative statements, with a similar syntactic structure ('Romania' as a subject, followed by a verb in the negative form). This parallelism draws attention to what the author perceives as a political failure and the contrast aids to highlight the importance of the military agreement. At the semantic level, the author creates a bridge between the failures of the past and the desired future development of the country.

The category of deontic attitude is manifest in the texts which discuss the military agreement focusing on the decision-making process. In the following extract, the author expresses disapproval by drawing attention to the sphere of ethics: it is stated that the decision is undemocratic because the citizens have not been informed about it and their opinions have not been taken into consideration.

(3) „*Un apanaj prezidenţial şi al unui CSAT amintind de unanimităţile entuziaste ale CPEx-urilor de altădată a fost acceptul pentru amplasarea scutului antirachetă american în România, la Deveselu*". ["A privilege of the president and of a Supreme Council for National Defense reminding of the enthusiastic unanimity of former Political Executive Committees was the consent for the installment of the American shield against missiles in Romania, at Deveselu."] ('(Nenea Iancu) de Deveselu', *Adevărul*, June 1st, 2011 [9]).

What is criticized here is the behavior of Romanian authorities and not the project itself. Statements regarding the value of the project are not clearly expressed throughout the article. In this text, the negative judgment is realized by means of a comparison referring to recent history, more exactly, to the meetings of the Romanian Communist Party, which implies the lack of democracy, imposition, forced consent and thus it is likely to convey a negative meaning to the readers. Interestingly, a similar argument is used by another journalist in order to advocate the opposite point of view:

(4) „*În sfârşit, dacă veţi auzi oameni care să susţină că acordul privind scutul ar trebui supus referendumului pentru că România ar putea deveni o ţintă pentru ruşi, atunci ar trebui să ştiţi că devotamentul acelor oameni este faţă de Moscova, nu faţă de Occident. Şi-acum, poate ar trebui să vedem câţi dintre politicienii, experţii şi jurnaliştii noştri au exprimat poziţii identice cu cele enumerate mai sus*". [Finally, if you're going to hear people saying that the agreement regarding the shield should be an object of referendum because Romania might become a target for Russia, then you should know that those people are devoted to Moscow, not to the Occident. And now, maybe we should see how many of our politicians, experts and journalists expressed identical stances with those listed above.]". ('Cine submineazǎ parteneriatul cu America', *România liberă*, September 16, 2011 [10]).

The authors of both texts make use of a particular type of argumentation, the 'argumentum ad populum', which is frequent in opinion texts and it is based on the topos of common well-being, common interest, honesty and solidarity [11]. Besides the generic reference to the 'people', both texts resort to the strategy of 'boundary' or 'adversarial' framing, aiming 'to delineate the boundaries between "good" and "evil" and construct movement protagonists and antagonists'[12]. The difference lies in the discourse labeled as adversarial: in example (3), the opposed discourse is that of the authorities, while the other text endorses the main official discourse and hence the antagonists are represented by a larger community which is not only restricted to some politicians but also including experts interviewed in the media and journalists, therefore a part of the media itself. Both texts propose an antagonistic representation of the Romanian society: for the first text, the power relationship between the state and its citizens is contested. In the other text, the society is viewed as consisting of two major groups, according to the agreement or disagreement to the cooperation with the U.S.A. The scheme which is applied in both cases is not merely good versus bad or ethical versus unethical, but democracy and progress versus communism, by means of the reference to the communist regime and to the influence of Russia, whose image is constructed in the discourse as close to that of the former Soviet Union.

It may seem probable that the sphere of affect would not be frequently represented in editorials on military topics. Contrary to this

hypothesis, it appears that affect is involved in editorials and reports referring to objects of discourse which are specific and treated from a personal perspective: affect is linked to the personal stories inserted in articles on military topics which are meant to lower the degree of generality and appear more interesting and appealing to the reader. Such an example is represented by the texts about the local community in the area of Deveselu, which will host the ground-based components of the AEGIS project. After the installment of the US military base in the village Deveselu was announced, articles in the news media included not only information about the project, but also regarding the local community and the history of the military base which once existed here. The following extract comes from a larger article – documentary by its nature – and its organization is relevant for the depiction of this theme in the media; the general organization of the discourse, alternating information about the community's past and present life with testimonials of former army men, leads to the construction of a marked affective perspective:

(5) „*Baza militară construită de sovieticii lui Stalin, închisă din motive geostrategice în 2002, e redeschisă tot din motive geostrategice pentru americanii lui Obama. Localnicii sunt obişnuiţi cu uniforma de soldat, fie ea de data asta a armatei SUA. Sunt însă pesimişti că traiul lor va fi mai bun odată cu venirea americanilor. Două tunuri stau de strajă la intrarea în satul Deveselu. Amintesc trecătorilor de piloţii care «şi-au frânt aripile» la*

baza militară de aici. Steagul NATO şi cel al UE te readuc în prezent.[...] Scutul antirachetă le aminteşte deveselenilor de vremurile bune. A.P. a lucrat la aerodrom. A păstrat până în ziua de azi permisul de sergent. [...] Are amintiri plăcute de pe vremea aceea. [...] În 2002, totul s-a terminat. Consilierul administraţiei prezidenţiale de atunci, generalul I.T., a anunţat deveselenii că baza se închide din motive strategice. Mulţi civili şi militari au rămas pe drumuri. [...] Aici locuieşte şi locotenent-comandorul în rezervă V.J. A pilotat MIG-uri 21, la baza Deveselu, nouă ani, aproape jumătate din carieră. Este dezamăgit de modul în care sunt trataţi astăzi aviatorii în România. «[...] Când mă duc sau vin de la Caracal, involuntar privirea îmi fuge spre pistă. Un om care zboară uită să facă altceva, spune militarul în rezervă. Vă spun sincer, nu sunt nici pro, nici antiamerican, sunt român. Mă simt înfrânt»". [The military base built by Stalin's Soviets, closed in 2002 for geostrategic reasons, is reopened for geostrategic reasons too, for Obama's Americans. The inhabitants are used to the soldiers' uniforms, even if they belong to the US army this time. But they are pessimistic about the improvement of their life thanks to the Americans' arrival. Two cannons guard the entryway to the village Deveselu. They remind the persons walking by of the pilots who «broke their wings» at the military base here. The NATO and EU flags bring you back to the present day. [...] The anti-missile shield reminds the villagers of the good old times. A.P. worked at the aerodrome. He has kept his sergeant identification card till now.

He has pleasant memories of those times. […] In 2002, everything was over. The former counselor of the presidential administration, general I.T., announced the villagers that the basis would be closed for geostrategic reasons. Many civilians and military personnel have become unemployed. […] Reserve LCDR V.J. lives here too. He piloted MIGs – 21 at the Deveselu base for nine years, almost half of his career. He is disappointed by the way airmen are treated presently in Romania. «[…] When I go to or come from Caracal, I can't help myself from looking to the airport runway. A man who flies forgets how to do anything else, says the reserve army man. I'm telling you honestly, I'm neither for, nor against the Americans, I'm Romanian. I feel defeated. » („România sub scut: de ce aici şi ce câştigăm", *Adevărul*, May 16, 2011[13]).

The affective stance is created by lexical items which function as markers of subjectivity: adjectives ('pessimistic', 'disappointed') and verbs ('I feel defeated'). Moreover, these lexical items belong to the sphere of negative feelings which supports a key idea of the text, the construction of a particular type of narrative. This is a modern reiteration of the ancient myth of the golden age, praising 'the good old days' in opposition to the sadness of the present. This idea is sustained by the temporal deixis, which acquires an affective connotation in this context: 'The anti-missile shield reminds the villagers of the good old times', the former sergeant 'has pleasant memories of those times'.

The narrative is first focused on the history of the air base and of the small community in Deveselu, as the base was built during the communist regime with the help of the Soviet Union and it was closed in 2002. The image of the heroic past is created by the use of metaphors: 'two cannons guard the entryway' or 'pilots who «broke their wings»'. Next, as the focus moves to the present days, personal stories are inserted in the narrative. There are two kinds of focus shifting in the text: from past to present and back and from the community to the personal level. The result is however coherent and contributes to the creation of a special type of framing, opposing not only the past to the present, but also the 'great' history based on 'important' events to the smaller, personal history of common people or, in this case, of pilots and soldiers who were forced to resign or to retire. The 'great' history appears to be absurd and cryptic for the people who become its victims; this idea is supported by the repetition of the syntagma 'din motive geostrategice (i.e. for geostrategic reasons)', implying that the people received only a vague explanation for the government's decision to shut down the base. 'Small' histories, represented by the life stories of the persons interviewed draw attention to their problems, their understanding of politics and of events which are now perceived as distant. As the second officer interviewed states, the topic of discussion is shifted from a clear-cut alignment (pro or against the U.S.A.) to the affective sphere of the people which seem to be no longer agents but subjects of history.

4. DISCURSIVE STRATEGIES

In Carvalho's framework, the main discursive strategy is labeled 'framing' and it is used for the operation of organizing the discourse 'according to a certain point of view or perspective'. Emphasis is put on the speaker/ writer's unavoidable effort to present the message from a particular point of view instead of the hearer's/ reader's interpretation. In contrast to other discursive strategies, which may or may not be present in the elaboration of a text, framing is a sine-qua-non condition of every discourse: 'what is at stake in the analysis of framing as a strategy is *how*, and not *whether*, an actor frames reality' [5] (italics in original). It includes two processes: the selection of certain aspects of the reality discussed and composition or their organization in a coherent discourse. Although opinion editorials include varied types of framing, only two specific types will be discussed here in detail and in connection to the notion of 'script'. One of these types of framing is based on coherence or on established similarities of two different scripts, the other one - on the incongruence or opposition of different scripts that are juxtaposed. The term 'script' is used here as defined by Victor Raskin, as a 'large chunk of semantic information surrounding the word or evoked by it. The script is a cognitive structure internalized by the native speaker and it represents the native speaker's knowledge of a small part of the world' [14]. Raskin distinguishes three types of scripts: individual, based on the personal knowledge and experience, 'restricted scripts',

which are common for the members of a small group and 'common sense scripts', which are internalized by a larger community or by the members of a particular culture. Common sense scripts are frequently propagated by the media and, as the next examples show, they provide a basis or a filter for the interpretation of contemporary social and political events.

In some opinion texts, the strategy of framing is employed with the help of what may be regarded as cultural scripts; more precisely, the authors use historical or literary references in order to interpret the actual events and to legitimate their position on the topic of military cooperation. The resort to cultural scripts is often manifest in the headlines. For instance, the headline *(Nenea) Iancu de Deveselu* (*Adevărul*, June 1st, 2011) [9] alludes to the nickname of a Romanian writer from the 19th century, Ion Luca Caragiale, famous until today because of the literary value of his comic prosa and theatre plays. The cultural script is present in the headline and in the closing paragraph and, in this manner, it guides the reader's interpretation: as mentioned above, the main idea of the text is that the decision-making process for the installment of the BMD system in Romania was unethical. References to the Romanian comic writer's works add a new dimension to the deontic stance: the fictional world of his comic works is a profoundly absurd one, where characters act like puppets on a string, uncultivated and unable to judge for themselves, although they show a great interest in politics. By the use of this script, these characteristics are viewed as representative for today's

Romanian society. Another article, *Ce-ar fi zis Ionel Brătianu despre vizita în SUA* (*Adevărul*, September 18, 2011), reactivates a historical script, reminding the readers about a famous Romanian politician, Ion Brătianu, and his activity in the period between the two world wars. His discourse is used as a source of authority, by being extended to the current state of affairs: the message of the text is that the alliance with a stronger state is not desirable, because the country has more important internal problems. The quotation of the historical character is taken to offer a filter for the interpretation of actual events.

The cultural framing is based on a particular mode of selection and composition: contemporary social events or facts are linked to a set of previous cultural knowledge (about events, personalities, literature a.s.o.). This set is taken by the writer to provide a valid tool for the interpretation of the present. It mainly functions as an argument of authority, contributing to the construction of the writer's competence based on his/her knowledge. Moreover, it may also help to establish a special connection between the author and the audience as the ideal reader needs to share this knowledge in order to understand the message correctly. In the previous examples, it is not a casualty that the writers recur to references from the Romanian cultural space. This may be another feature adding to the state-centric view expressed in the text, helping to endorse the idea of necessary concentration on the internal state of affairs from the part of both authorities and people. By contrast, a text expressing agreement with the Romanian - American cooperation includes two quotes, one from the British poet Alfred Tennyson and one from the works of the American-born poet T.S. Eliot. (*America și cauzele pierdute*, *România liberă*, April 1st, 2011 [15]).

The second type of framing under discussion consists in the combination of two scripts which are in a relation of opposition or of difference; in this case, coherence is ensured by the fact that both scripts are triggered by the same object of discourse. This strategy was used in reportage texts and editorials describing the village Deveselu. The discursive strategy underlying the entire text is visible in the headlines, too: e.g. *Cum s-a infiltrat CIA pe străzile comunei românești unde americanii instalează scutul antirachetă [How the CIA sneaked in the streets of the Romanian village where the Americans are installing the shield against missiles]* (*Gândul*, May 7, 2011); *Cum stă scutul american printre căruțe și bovine [How the American shield lays among carts and cattle]* (*România liberă*, May 4, 2011 [16]). This discursive strategy seems to be a more or less accurate description of facts and places, but, in fact, it is marked by subjectivity precisely because of the elements selected and because of their combination:

(6) *„O căruță trasă de un cal costeliv cu coama sură își face agale drum pe povârnișul din fața unității militare de la Deveselu, aruncată undeva după dealurile Caracalului, unde semnalul mobilului e la preț mare. La doi pași, pe islazul din fața bazei, doi localnici pasc vacile. Totul se întâmplă la*

doar câteva minute după plecarea coloanei oficiale, ticsite de autorităţi române şi americane. Aceştia tocmai anunţaseră oficial amplasarea sistemului antirachetă în zonă." [A cart drawn by a skinny grey-maned horse is moving slowly forward on the cliff in front of the military unit in Deveselu, which lies somewhere behind the hills of Caracal, where the mobile phone signal is very rare. Nearby, on the meadow in front of the base, two villagers are tending their cattle at pasture. Everything happens only a few minutes after the departure of the official group of cars, full with Romanian and American authorities. They had just made public the installment of the anti-missile system in the area.] („Cum stă scutul american printre căruţe şi bovine"*, România liberă*, May 4, 2011 [16]).

Not surprisingly, the general image does not differ very much from the image presented in the article from which extract (5) is taken. In the text above, the contrast between the scripts is not created by the use of explicit markers of affect, but by larger discourse units. Extract (6) represents the opening paragraph of a report about the village and the first elements selected by the writer shape the readers' representation of the events and guide their reading of the entire text. Two main scripts can be distinguished here, one regarding ordinary country life and another one regarding the shield installment. What draws attention is the fact that the insertion of the first script seems to be irrelevant from a mere journalistic perspective: the mention of a cart moving slowly or of cattle

grazing is not likely to be considered newsworthy. Such information becomes 'news' only after the incongruence relation is created by the juxtaposition of scripts. A strong contrast emerges between 'common sense' knowledge and recent information regarding the diplomatic and military event. This contrast is also sustained by the selection of lexical items with a negative superlative connotation (for example, the adjective describing the meagerness of the horse or the construction referring to the very low phone signal). On the one side, we have the script of rural life, which here encompasses tradition, lack of progress and underdevelopment while, on the other side, the script of the military cooperation involves development, innovation, technology and progress.

This incongruence constructs an added 'news value' for the event but it also limits the information given to the readers. Instead of explaining the reasons for the installment of the system in this geographical area, the text creates a form of absurd humor as, after the emphasis is placed on the depiction of country life, the decision of choosing this area for the installment seems to be peculiar. The comic effects are more extensively developed in an editorial:

(7) „*Pe celelalte şapte le ştiţi (cimitirul pe strada Învierii, puşcăria pe strada Libertăţii etc.). A opta minune se săvârşeşte acum, sub ochii noştri: americanii însămânţează saci cu dolari. La vremea culesului, ţăranii din împrejurimile Caracalului vor recolta scut antirachetă.*" [You already know the other seven (the graveyard on the Resurrection Street, the prison on the Liberty Street a.s.o.)

The eighth wonder is done right now, in front of us: the Americans are planting sacks of dollars. At harvest time, the peasants in the surroundings of Caracal will harvest anti-missile shield.] („A opta minune de la Caracal", *Gândul*, May 7, 2011 [17]).

This text mimics the style of the news reports and constructs an absurd reality by the use of incongruent scripts. What is overrated here is exactly the 'news value' of the entire event, presented by means of a hyperbole as 'the eighth wonder'. The author manages to convey two possible interpretations of the ambiguous message: at the surface level, it appears to be enthusiastic and positive. At a deeper level, the message might be interpreted as less enthusiastic, because of the scripts combined: from a logical perspective, money or technological equipment cannot take the place of the harvest. The editorial offers an ironic reading of previous media texts which expressed positive evaluations of the project in terms of financial advantages.

5. CONCLUSIONS

The topic of the strategic partnership to the United States was discussed from varied perspectives in the Romanian media. It is visible that the authorial attitudes expressed in opinion texts vary depending on the object of discourse and that epistemic, deontic and affective attitudes are all represented, even if the topics are connected to the military sphere. Recent history appears to play a significant role in the interpretations of the contemporary events which the

journalists advance. In the deontic sphere, a major dichotomy in use was 'democracy' versus 'communism', as a new articulation of the good – bad opposition. From this perspective, Romania's recent past was negatively viewed. The texts enhancing the affective dimension constructed a different view of the past, based on an idealized representation of the former times, which was contrasted with a negative depiction of the present.

Similar to previous research on European media [4], this brief analysis shows that the Romanian media's view of the topic is markedly state-centric. Romania's situation is highlighted by descriptions and evaluations of the internal state of affairs, at the national level, or of local situations and problems. A recurrent feature is the negative representation of Romania which may range from asserting the need of financial support to self-denigration. The strategic partnership with the United States is therefore valued from the viewpoint of Romania's needs and capacities and often perceived as incongruent with the existing conditions. However, the two types of the framing strategy discussed show that the media attempted, in various manners, to preserve the common knowledge, the core beliefs and values of the community they belong to and, at the same time, to integrate the new event in this knowledge set. The use of the framing strategy based on cultural or commonsense scripts does not convey a marked rejection of the strategic partnership but it reveals, instead, the first steps towards integration.

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ENDNOTES

RISKS RESULTING FROM THE DISCREPANCY BETWEEN ORGANIZATIONAL CULTURE AND LEADERSHIP

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Leadership is the art of obtaining maximum support and effort from a group of people, of stimulating them to want to do things which they normally would not do. Leadership is the art of creating a vision for the future of the organization and increasing the level of performance above the normal level. Nevertheless, none of these things could happen if the leader's values and vision collide with the culture of the organization.

Key words: *culture, leadership, performance, leaders, goals, objectives.*

1. INTRODUCTION

Organizational culture is increasingly perceived as one of the key factors for organizational performance. In most cases, the best results are associated with the leaders' ability to create, maintain and develop a "strong" organizational culture, which will lead its members towards achieving the goals. It is a set of conscious and unconscious, rational and irrational, individual and group elements which develop strong connections with a dynamic impact upon organizational performance [1].

The military organization has a distinct organizational culture, often, with an unwritten set of rules, regulations and operating procedures. Like any other organizational culture, it changes over time in response to changes in society's culture, the evolution of technology and the impact of leadership. This culture is based on the unique tradition, mission, structure, and leadership of military history. Leadership and the military are strongly connected and leadership was and continues to be a defining characteristic of this organization. The military organization develops leaders through formal education and practical activities in order to fit its culture and mission. There is a strong link between the military organizational culture and the leadership and efficiency of the organization. Using the position and status the leaders /commanders have in the hierarchy of the organization they can shape attitudes and influence their subordinates' decisions and behaviors.

The leadership culture appears as an integral part of the organizational culture and it can have a positive or negative influence upon the latter. The culture of an organization reflects the vision and perspectives on how things are and should be done. Its importance

grantedby the individuals who act in accordance with their shared values and those promoted by the organization influencing thus organizational effectiveness and efficiency.

2. ORGANIZATIONAL CULTURE & PERFORMANCE

There are three aspects of the organizational culture which are important when analyzing the impact the culture has upon an organization and its performance: direction, penetration and strength. **Direction** - is the extent to which a culture supports the achievement of the organizational objectives (setting the direction is often the attribute of the leadership, but the culture can have a great influence on the efficiency of the organization). **Penetration** shows the spread of the culture among the members of the organization. Force refers to the degree to which values and other aspects of culture are supported by members.

The military is part of a global system whose transformations it takes over and reflects. Like any organization, it has its specific culture with norms, values, beliefs, a culture which features a mix of specific elements (discipline, respect, control etc.) and elements common to all bureaucratic organizations. Along with discipline and control comes focus. Focus is important to mission success, and the services teach every new member how to focus in challenging situations, situations where they lack sleep, are physically exhausted, or are under extreme stress. Learning to stay focused, in control, and disciplined in all situations are skills that members use throughout

their military careers as they are faced with uncertain and often dangerous situations. The armed forces are conservative in terms of rules and regulations, they focus on values and traditions, and still they have to fulfill the present day requirement of being efficient. The environmental and social changes and challenges have had a major impact upon processes and phenomena taking place in the organization, thus forcing some changes in the organizational culture and leadership methods in order to achieve a more efficient leadership.

The culture of an organization is crucial to the way the leader works because it establishes restrictions on what they can do and the ways in which they can influence the organization's members so that they can perform their tasks efficiently. The culture influences the perceptions of the leader, his thoughts and feelings. Great military leaders are rigorous, determined, selfless and they see themselves as a part of a great mechanism, the armed forces. The more the culture develops, the more strength it gains, it becomes more influential and leaves its mark on every thing the leader undertakes, including the manner of thinking and the leading style. Leadership decisions are based and reflect the history of the organization and the agreed manners to accomplish the tasks. It can be said that a strong organizational culture will restrict the commander's views on how to take decisions for the organization and it will influence the organization's performance.

Culture is increasingly accepted by leaders as a tool for improvement and obtaining the desired outcomes because by using it they can influence
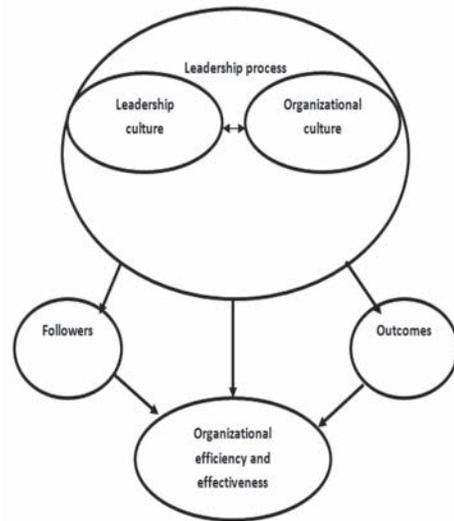
organizational relationships and operation. Culture influences and solves two basic needs of the military organization: the need to adapt to the external environment and the need for internal integration of its members. Understanding the specific organizational culture facilitates the promotion of strategies consistent with the principles and values of the members, which can result in better performance. If there is a discrepancy between the two, neither objectives nor performance can be achieved.

3. LEADERSHIP & ORGANIZATIONAL CULTURE

The leadership process and culture cannot be separated. Once created, a culture can limit the activity of the leader. In order to efficiently manage an organization it is necessary to avoid a conflict between the two forces: the culture and the person in charge with the organization.

Leaders can turn into a symbol of the organization thus determining its effectiveness so, every contradiction between the leader's vision and the organizational vision will hinder the activity and the efficiency. Without a culture shared by most people in leading positions, the success the organization would be difficult.

It is important to begin to see culture as a context for creating interpretations and meanings, to notice that organizational leadership issues are closely related to the organizational culture. Organizational culture can help clarify many phenomena that occur in organizations. It is thus a key element in the formation and development of an organizational culture conducive to efficiency as in **Figure 1**.

Figure. 1. *Leadership – culture- efficiency*

The first actor of this process is the leader and leadership is nothing more than the ability to read, interpret and operationalize the organizational culture in order to drive the organization towards knowing and understanding its own identity, to determine the organization's members to know and to use this "force"[2]. From this perspective, culture and leadership are factors underlying the success of the organization. Thus, culture must be the source of competitive advantage.

The research in this field has led to the question whether organizational culture can be managed in terms of exercising influence and control in organizations. If so, then we can conclude that it is possible to manage the organization's norms and values in order to obtain desired behaviors and organizational effectiveness. Consequently, the leaders are the people with the greatest impact on culture. They can become a powerful symbol of organizations but the impact of this symbolism is given

by the way organizational culture is decoded and viewed by other members.

Leaders are those people who motivate by example. One of the leaders' responsibilities is to create and maintain organizational characteristics that reward and encourage collective effort and this depends very much on the culture of the organization. This is what helps the organization to adapt and cope with the environmental change. Volatility, uncertainty, complexity and ambiguity, which unfortunately are characteristics of the environment, cause situations that no longer fit in well known patterns.

Many of the problems the leaders face are due to their inability to analyze, evaluate and understand the culture of the organization. Many of them, especially those who have just taken over this responsibility try to implement strategies without analyzing if they fit or not the culture. A common mistake made by those in charge with leading an organization arises from the desire to make radical changes abruptly, which will trigger staff resistance. This is due to the lack or minimal understanding of the existing culture and often leads to failed initiatives.

4. CONCLUSIONS

In the current context, characterized by dynamism, volatility and permanent changes, leadership style and culture are closely related to the effectiveness and efficiency of the organization. Thus, any discrepancy between them will have negative consequences upon organizational success. Often, leadership values, particularly of top leadership, have a remarkable impact on the evolution of the organization, they are favoured, they are communicated and displayed throughout the organization, in order to give new momentum, to push the efforts of all the individuals in a new direction. Effectiveness and efficiency are closely related to the leadership style. The leader uses his influence to reach the objectives, to obtain performance and to keep the organization moving.

The activity of leading an organization is not an end in itself, but a decisive factor for obtaining increased organizational effectiveness and efficiency. Modern leadership requires a transformation process that will combine the personal qualities of the organization members with those gained from education and practice, so that gaps in the functioning of the organization will be eliminated and the performance will be achieved under the best conditions of time, materials and quality.

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CHALLENGES IN THE IDENTIFICATION AND ACQUISITION OF STATE OF THE ART INTELLIGENCE

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When states and organizations want to take an important decision they must obtain valuable data and information. The whole intelligence cycle must be very fast and clear for all decision makers, because time elapses and there are people waiting for their mistakes. All over the world information is flooding in great streams in all directions, and only the one who is well trained and watchful can pick up that information which is necessary to complete a process or to complete one's own data bases.

Key words: *information, data, intelligence, organization, state, performance, decision-making.*

Any kind of human activity, from the beginning of the mankind, continuing with Metal and Bronze Ages, Middle Ages till today, has been based on the identification and implementation of all the elements necessary for human development in all its forms and for knowledge increase for the future. If initially knowledge was limited to a few items that now are taken for granted from a very early age, human society has gradually evolved and now it is characterized by complex processes, both at individual and social level in terms of social groups' development and actions as a result of using technology.

In the intelligence domain all countries have made huge efforts to maintain a high growth rate of population welfare, and in some countries even to expand it for being at the top of the economic chart.

All countries are interested in research that covers the relevant economic, political, social, and military areas and in their interactions. Only few succeed in this competition.

Even though most countries do not have the financial strength to go hand in hand with economic and military powers, some of them fail in some niche areas, mainly due to a shortage in highly trained human resource. Success is where the human resource manages to discover new areas of work, so as to ensure the supremacy of the State, mainly over neighbors and then, by extension, at regional, continental and / or global level. An example in this respect belongs to the Chinese military thinker Sun Tzu and concerns his discussion with King of Wu, Ho Lu, on training women. In those days no one counted on using women in the military structures for battle. Thus, Sun Tzu established two companies, and began their training with explanations and demonstrations. The activity was comical for court personnel until Sun Tzu ordered the execution of the two companies' commanders. Sun Tzu had nominated commanders from king's concubines. After their

execution, Sun Tzu wrote to the king that the two companies could be used for advanced training. He told king Ho Lu: "The troops are now in order. The King can come to review and inspect them. They can be used in accordance with the will of the king, they can go through fire and water." The use of women in combat as regular military structures represented an avant-garde spirit at that time, although for many skeptics they represented a total failure in battle, due to the fact that besides the fighting technique, the most important feature of the military is represented by the physical strength of men. In addition, Sun Tzu imposed a new trend concerning strategic military thinking, related to discovering those elements which can be decisive in winning the war. In fact it is hard to meet an enemy woman in the battle and behave like meeting a man. In time this theory has proved to be highly impactful because important battles were often won with such interesting moves (see in this respect the role of national heroines like Queen Boudicca, Joan of Arc, Catherine Teodoroiu and so on).

Nowadays, Research & Development have a great relevance for competitiveness and in finding niche areas. However, it was demonstrated that in many cases valuable human resource is not sufficiently developed inside particular systems. Hence, they are "imported" by being provided excellent research conditions and great income. For the past seventy years, with the emergence of the bipolar world, a number of states have become integrators of performance, primarily seeking to develop their own resources, but also to attract / recruit those specialists who live in states that would not allow individual rights like freedom of speech or democratic choices on behalf of individuals and social groups. This battle was fierce after the end of the Second World War when the major players, the U.S. and the USSR, started "head-hunting" German specialists. Big winners of this competition were, by far, the Americans who welcomed German scientists not because of their desire to host them but because of their fear of not letting these experts reach the Russians. As a result, Americans acquired knowledge that was worth more than all their losses in Europe and the Pacific. Technological advantage would unfold over the next 60 years, when the U.S. distanced a lot from all its competitors. Furthermore, resources were acquired and processed in accordance with two goals: to help the development of their own system and for the destruction of adversary systems, represented by the USSR and communist ideology.

Gaining strategic advantage can be achieved through the development of strategic intelligence performance, which incorporates highly trained human resource, technology and almost limitless financial resources. At the beginning, Intelligence was a military specialization, with an exponential growth for the last 100 years. Its main information source were individuals. Then, in time, the methods and techniques have diversified. So, today, the role of the human being as a source of acquiring information has been surpassed by technology. Thus, in the early 2000, information obtained from human sources in military and economic states and organizations amounted to around five percent of the entire information system. In recent years

states have focused on lowering costs in all areas. However, in the intelligence community, and especially the strategic one, the expenditures have increased, so anything could be discovered by some states regardless of the methods used for this.

Similarly to military organizations, private firms have been struggling to obtain strategic intelligence in order to gain and maintain the markets in which they operate. This meant boosting their research and development field, increasing the specialization of staff, and obtaining information about processes and standards development in organizations from the same field of activity, inside the State or in those countries with technologies and similar performance.

Increasing specialization of personnel inside the organization is the key to success. Moreover, creaativity is the privilege of the human and less of technology. In this respect, reesearch carried out by the Carnegie Institute of Technology shows that 85% of financial success is due to skills in human engineering, personality and ability to communicate, negotiate, and lead. Shockingly, only 15% is due to technical knowledge. Moreover Keld Jensen, an American specialist claims that instead of exclusively focusing on your conventional intelligence quotient, you should make an investment in strengthening your EQ (Emotional Intelligence), MQ (Moral Intelligence), and BQ (Body Intelligence), to maximize the benefits. Thus, although many complex activities are accomplished with highly advanced technologies, ultimately, the decision of what is right, good and responsible is only for the human resolution.

For the last 20 years technology has exceeded most visionary minds of 100 years ago. At the same time human thinking has gone beyond many barriers, which years ago were unknown and new discoveries occur daily around the world. Economic, social and military phenomena are conducted, unveiled and reconsidered continuously, sometimes with expected results, but in some cases with unforeseeable outcomes. Just as those who thought that the U.S. housing market would not reach the turning point of 2007-2008, when Wall Street was disturbed and global losses were huge. The 2007-2010 period has demonstrated once again that some issues are completely predictable based on mathematical calculations, and man is always a linkage able to disturb political, economic and social systems.

The acquisition of advanced intelligence used to mean, on behalf of interested states, the planning of strategic areas. Development of strategic interest for performing intelligence acquisition was, according to some experts, states' and private organizations' concern. The private side is particularly found and developed in highly industrialized states, which have left segments of strategic interest to private companies, many of them multinational but the majority of stakeholders are indigenes. At the same time, many specialists, recruited by private companies, are former state employees, retired or attracted by higher salaries offered by these companies.

Another aspect of the problem is how to make strategic intelligence. For this reason there are Rating Agencies and Analysis Magazines (political, economic and military) designated

to create trends and directions, in most cases for the benefit of those countries that sponsor them. Although some expert's opinions really have a relatively high level, many results are made in order to manipulate. Such "achievements" were investigated even by the U.S. Senate committee (one of the sponsors) as a result of the "subprime" credits crisis, which led to the U.S. government's intervention in Wall Street to avoid the general collapse of the American and global economic system.

In the intelligence strategic game of "subprime" credits, major economic players represented by Banks managed to negotiatiate huge profits, which the year before had been unimaginable. Furthermore, their highly risky game created huge information resources to maximize all future opportunities to win with private players or the State.

State of the art intelligence acquisition has led to the phenomenon of resource "sharing" between all partners, organizations or countries. Although this happens very often, the research and development area is not under "sharing" conditions. Many states maintain their strong industrialized economies and military and technologies development within small groups, especially those who finance projects called "next generation", such as: "F35 multirole aircraft", "Mistral" ships, nuclear submarines, intercontinental missile and space programs.On the other hand, other states provide new military structures, like the Shanghai Cooperation Organization, as a counterweight to NATO. China, the second economy in the world, with huge growth potential, where labor is the cheapest in the world, following the policy pursued by the Chinese state, and with the largest population in the world joined this organization, both at economic and military level. The advantages of cheap labor and of a large population can be currently countered only by India. This state remains outside any military organizations, even though their assets are 80% of Russian make.

Gathering strategic intelligence often led states and organizations to obtaining competitive advantage, creating the prerequisites for a rapid and sustainable development, especially where the state or the (multinational) organization, could support such an effort. Based on the first step in identifying areas, identities and resources, highly skilled individuals directly or covertly led the game for obtaining competitive information. The intelligence cycle run by humans has created important databases for each area of concern and their sub-branches to increase, primarily research and development and to ensure sustainable development elements of any state. Moreover, possession of strategic intelligence at higher levels has enabled disparity between countries participating in the negotiations, or between those in conflict. Obtaining data and strategic information has been a continuous activity for at least 2500 years, and its relevance has contributed to the identity and the existence of the modern state.

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CONSIDERATIONS ON OPTIMUM RESOURCE ALLOCATION IN AVIATION SECURITY

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This paper proposes a framework description for the implementation of a simple tool to the problem of optimal allocation of resources in the aviation security system, in the context of terrorist threats. The analysis shows that even when the uncertainties are large, plausible hypothesis with regard to the conditions in which the security systems could produce benefits can be developed, on the basis of well founded risk analysis. Amid the current economic climate, but also with the more evident trend to transfer airport administration to private management, decision-makers need to understand and to respond to the acute need of financial efficiency for airport activities, without negatively affecting the safety and security of passengers.

Key words: *security, aviation system, resource, economic resilience.*

1. INTRODUCTION

Security in general and aviation security in particular is a subject of growing interest. Today, in an unpredictable security environment characterized by a degree of instability, it is unanimously accepted that, in a complex socio-technical systems such as aviation, deployed on a large area, it is difficult to talk about security in absolute terms.

Aviation security can be implemented in terms of: human solutions (procedures) and technical solutions (security systems). Relations and interference of these components are difficult to assess, particularly in the context of technological progress, which is characterized by sustained dynamism. The difficulty in prediction and detection of asymmetric threats requires substantial resources allocations for the protection and security of the aviation system and associated infrastructure. In the current context, the problem of efficient investment in security, in terms of adaptability to new technologies, and the ability to respond to future challenges, becomes urgent.

Decision-makers responsible for aviation security must prove responsibility, efficiency and liability in the resource allocation [1]. Both qualitative and quantitative analysis of asymmetric risks, using vulnerability-threat-consequence architecture, contributes to the definition of a strategy for resource allocation in aviation security technology.

After the attacks of 9/11, the costs for aviation security (especially for physical security and control and surveillance capacity) have increased about 10 times the initial estimates of the federal Government of the United States in fiscal years 2000 and 2001 [2].

The challenge is not just in determining the cost of security measures, but in determining the cost necessary to achieve the system resilience. Estimating losses should include parameters such as [3]: stopping the activity (e.g. closing the airport, airlines insolvency due to inability to ensure safety and security in air transport); the temporal dimension (e.g. the time required to recover the system after the attack); direct and indirect loss/damage (e.g., contamination with dangerous substances and the contagion effect); costs of mitigation, response and recovery. In practice, it is likely to get step-by-step investment (planned by decisional trees) able to mitigate the effect of irreversibility. The first issue of the resource allocation is to bring the risk to an acceptable level. **Figure 1** shows the typical relationship between the investment cost in the security and risk, which expresses the dynamics of security.

Quantifying risk-cost ratio for each element of the infrastructure and the system as a whole, in an analysis of "portfolio optimization", provides substantiation in security investment decisions. The specific analysis is used to determine the global level of risk, using specific analysis, to assess quickly developments and to provide information on the future dynamics. The interest is to reduce the global risk to an acceptable level, in accordance

with budgetary restriction proposed/ possible. The ability to influence the evolution of the system on the most favorable trajectory is also essential [4].
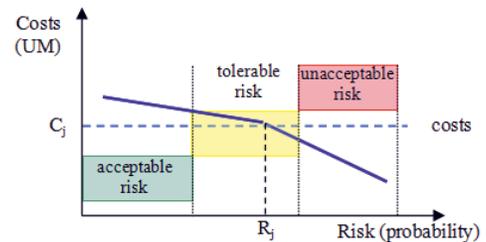
Figure 1. The relationship between the investments cost in security and risk

Performance measurement is essential to the success of any organization, because it creates the necessary behavior to improve competitiveness [5]. And in the case of security investment, especially in terms of budgetary restrictions, the determination of performance on the basis of efficiency indicators allows the finding of the desired way.

The research is important for designing an effective security system, based on maximizing the probability of achieving an optimal cost-benefit ratio, in terms of security objectives with limited resources. Also for Romania, where the airport infrastructure will be expanded considerably in the next period, airport management should consider designing security strategies with the help of such cost-benefit analyses.

2. OPTIMAL RESOURCES ALLOCATION PROBLEM

The allocation of a limited budget to defend critical infrastructure by the dynamic palette of threats is an

important task and at the same time a difficult one for decision-makers. The problem of optimal dynamic resource allocations must be substantiated so as to include both the cost of investment and security uncertainties faced by the defended system related to the possible targets.

Air transport system is one of the 'favorite' terrorists' targets, therefore, questions such as *How many resources should be allocated in order to ensure the anti-terrorist protection of an airport? How to spend an international airport to the local one?* need to find the answer through the application of rigorous calculation models that to substantiate the optimal allocation decisions.

In modeling activities on the basis of costs (ABC), emphasis is on the veracity of the information related to the cost of services/processes or activities, but there is the danger of exclusion of indirect costs [6]. While not offering solutions to improve the current situation, the method is particularly useful for controlling the use of resources or periodical financial reporting [7].

In terms of the airports privatization and the new features of the external environment of the organization (enhanced competition or threats diversity), approaches such as the identification of the success parameters, the development of quantitative methods to assess the performance on activity areas or the planning and control of operations become extremely necessary.

Performance model based on costs (PBC) has been developed to move the centre of gravity of the analysis from activities to performance, both

in financial and non-financial terms Estimating the precise costs starts from the identification of the areas that adds value to the organization [8].

The needs to achieve a high level of security within the air transport system, through a proactive, rather than reactive approach, and promoting agility, are some of the reasons for recommending the use of a PBC. Decision on implementation of the PBC should substantiate on the potential impact of the success parameters associated with each relevant area/field of activity.

Strategic game theory provides a solution to identify optimum allocation of budgetary security resources in a potential terrorist target system, in which players are: the attacked system and the attacker. The model was used by specialists [9] for investments in urban areas.

In the sequential game where the attacked system acts first, on the preventing principle, the main purpose is to minimize the potential consequences of an attack (eq. 1) [10]. (1)

$$\min C(H, D | b_T) = \sum_{j=1}^{l} \sum_{i=1}^{n} \sum_{k=1}^{s} p_{a_j}^{t_{ik}}(b_{t_{ik}}) \cdot p_{v_j}^{t_{ik}}(b_{t_{ik}}) \cdot w_{t_{ik}}$$

$C(H, D | b_T)$ represents the total consequences (human losses and material damages) estimated due to the terrorist attack, in any of the possible scenarios j; b_T represents the budget allocated to ensure the security of the system T, expressed in monetary units, calculated as a sum of the budgets allocated to the system components t_{ik}; s is the number of possible components/targets, and n is the number of subsystems associated

to the assessed system T; $p_{a_j}^{t_k}(b_{t_k})$ represents the probability of a terrorist attack on the target t_{ik}, depending on the existing budget allocations; $p_{v_j}^{t_k}(b_{t_k})$ is the likelihood of success of a terrorist attack on the target t_{ik}, depending on allocated budget that targets; w_{t_k} is the value of the target t_{ik} within the system.

The attacked system does not know the attacker's evaluations related targets. In order to simplify calculations, we consider that the attacker's assessments y_{t_k} follow a triangular distribution which probable value is equal with w_{t_k}.

The probability density function for the triangular distribution is given by equation 2.

If $y_{t_k} = m \leq 0$, then we have a situation in which there is no attack. Also, we consider that an attacker will choose to attack a single target in the complex system.

$$f(y_{t_{ik}}) = \begin{cases} \dfrac{2(y_{t_{ik}} - m)}{(M-m)(p-m)}, & m \leq y_{t_{ik}} \leq p \\ \dfrac{2(M - y_{t_{ik}})}{(M-m)(M-p)}, & p < y_{t_{ik}} \leq M \\ 0 & , y_{t_{ik}} < p; \quad y_{t_{ik}} > M \end{cases} \quad (2)$$

The probability $p_{a_j}^{t_k}(b_{t_k})$ of an attack on the target t_{ik} is actually the probability that the target t_{ik} will achieve maximum expected value. In this way, the probability of attack on target t_{ik} considers both defenders uncertainties relating to evaluation of the targets by the attacker, expressed by f distributions and success probabilities of attack resulting from

security investments of the system, expressed through $p_{v_j}^{t_k}(b_{t_k})$.

Optimum analysis in the resources allocation to investments in security against terrorism can cause transformation of possible targets in less attractive targets for attackers or offers capability of defense to a larger number of targets with the same initial resources.

3. THE IMPACT OF SECURITY INVESTMENT ON AVIATION INFRASTRUCTURE RESILIENCE

Economic resilience is the ability of the system to continue to operate in the context of events with catastrophic effects [11]. Regarding this study, the economic resilience refers to the ability to respond to the terrorist threat, which allows the system to avoid some of the potential losses.

For the exact description of this systemic feature, we associate two dimensions to economic resilience:

- *static*: efficient allocation of available resources for the time of the event management process;

- *dynamic*: the recovery speed of the system after the produced shock, including long-term investments associated with the reconstruction and recovery.

The ability of the system to achieve a certain level of economic resilience involves, in addition to the intrinsic component (developed before the disaster), and an adaptive component, which tries to maintain the basic function (e.g. substitution of damaged components). Thus, in terms of system performance, economic

resilience comes from internal motivation and intensifies decisions of the pre and post-disaster (**Figure 2**).
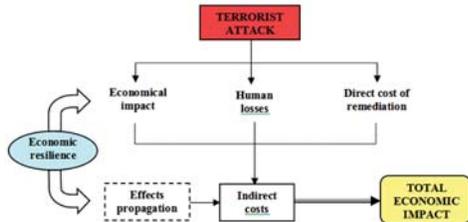
Figure 2. The modeling framework of the total economic impact in case of asymmetric extreme

The economic resilience study encounters numerous challenges: identifying actions, standardization of behaviors, or collection of data for building models.

In order to quantify the economic resilience, we considered the scenario of biological weapon attack in the land side of an airport. The number of canceled flights is estimated at an average of 70% of the total number of canceled flights in a year, direct economic losses were estimated to be only 45%. This difference results from the resilience actions (e.g. flights redistribution on unaffected terminals or other airports, the reallocation of passengers for other flights) associated with traffic disturbances.

Thus, the measure for direct economic resilience of system (REDS) can be expressed with the equation (3).

$$REDS = \frac{\%\Delta R_{cost-benefit}^{max} - \%\Delta R_{cost-benefit}}{\%\Delta R_{cost-benefit}^{max}} \quad (3)$$

where $\%\Delta R_{cost-benefici}^{max}$ is the maximum percentage of change to the cost-benefit ratio, and $\%\Delta R_{cost-beneficiu}$ is the calculated percentage. For this scenario, REDS has the value of 35%.

The usefulness of applying the concept lies in the ability of decision-makers to offer a rapid assessment of the situation, including the losses, which allows the improvement of recovery capacity of the system, efficient operating capabilities of the ad-vantage of resources dynamic reallocation, so as to minimize the effects of possible asymmetric attack.

4. CONCLUSIONS

It is a certainty that the terrorist attacks directed against aviation critical infrastructure cause significant human losses and damage. The protection of such infrastructures, as well as components as entire system should be based on rigorous analysis in order to provide decision-makers relevant knowledge indicators about the actual situation and a basis for dynamic adaptation of plans and actions. Understanding the dynamics of global risk can be achieved from the cost-benefit analysis that emphasizes efficiency and how resources can be optimal allocated to maximize the security and safety of the air transport.

The proposal presented offers a simple but effective method of understanding the relationship between losses resulting from asymmetrical extreme events and associated investment costs for security measures, through incorporating the principles of cost-benefit analysis in risk analysis. The method allows the incorporation of dynamic elements, which are essential in this type of approach, by developing unique recognized picture as a critical function for risk decisions in the medium and long term.

This analysis could be a decision-making support tool created to evaluate and compare the costs and benefits of security measures/procedures against terrorist threats.

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TECHNICAL ASPECTS REGARDING THE IMPROVEMENT OF AEROSPACE AIR DEFENSE VECTORS' PERFORMANCES

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Confronted with the spectacular evolution of the aircraft and other aerial vehicles, the systems destined to combat them, especially Surface-to-Air Missile Systems (SAMS), went through an accelerated loss of their performance. The financial crisis has forced an extension of the system operation even if the system is outdated. Therefore, a new modernized version has been designed. Many times, it is better to improve an existing system than to buy a new one. This article describes the diversity of SAMS's challenges, involving a decrease in time regarding their number. The types of challenges can be divided in two categories: technical and institutional ones. The technical challenges can be also divided in two categories: deterioration of material and obsolescence. The classes of material that present interest for us are aerodynamic vector structure, propulsion, and special systems. From an institutional point of view, the main problems are: cost versus performance and cost versus the remaining lifetime (technical resource) of the air defense system. The article finishes with conclusions that support the possibility and necessity of a SAMS upgrade, given the change of the threats characteristics.

Key words: SAMS (Surface-to-Air Missile Systems), Technical and Institutional challenges, LCC (Life Cycle Cost).

1. INTRODUCTION

Romanian military and other countries' armed forces use outdated air defense systems that had many years of service and still do not consider feasible to improve or update those systems in the next 20 years or more. The types of technical challenges that system operators will meet during operations can be separated into three categories:

- mobility and interoperability;
- material damage;
- obsolescence.

The components of integrated systems that can be subject to further improvements can be categorized as follows:

- aerodynamic component (the missile body);
- propulsion system;
- optoelectronic systems of guidance, navigation and control.

Missile aerodynamic structure is mainly composed of metals susceptible to wear (due to cracks, corrosion) and other components such as missile control systems (wing ailerons) which are based on honeycomb structures or carbon fiber.

The composite structure of the missile. Honeycomb structures.

Honeycomb structures served as the control surfaces of the missile, margins for the wings and stabilizers and entered into the composition of parts that make up the body of the rocket. A common arrangement for such structures includes a pair of outer plates made of a metal, such as aluminum or epoxy resin mixed with carbon fiber, a core of honeycomb structure made of aluminum or other materials being included glass fiber and an adhesive with the help of which the plates are glued to the honeycomb core.
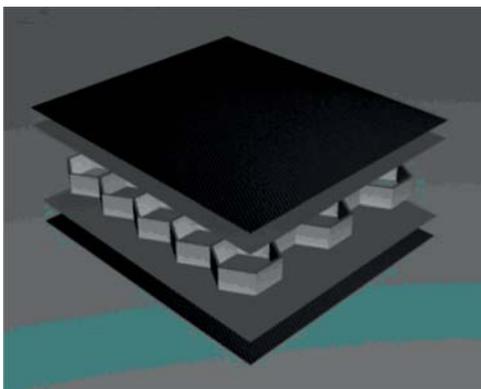
Figure 1. Composite honeycomb structure

Adhesive joining parts damage can be caused by moisture penetration, damage caused by impacts and premature aging of adhesive. Kernel vulnerability to damage depends on the material from which it was manufactured.

Carbon fiber structures

Carbon fiber structures were used to manufacture exterior panels for control surfaces and stabilizers. A common arrangement for such structures include carbon fiber layers oriented so as to match with the main directions in which tasks are acting on the missile body. Before placement, carbon fibers are combined with certain chemicals such as epoxy resin. After all the fibers are placed in position, the ensemble is placed in an autoclave where a program pressure and temperature causes the chemical interaction to form a strengthened structure with a system of fibers which are embedded. The role of the fibers is to distribute uniformly the forces acting on missile components (wings). The resin is used to prevent the collapse of the fibers. Structural damages can result from various problems, including manufacturing imperfections that expand when the missile performs various maneuvers or when moisture penetrates inside the structure which leads to exfoliation of the carbon fiber.

The evaluation of the assurance level to achieve a satisfactory return on a long-term investment in the purchase of new engines face a number of challenges which become increasingly severe with increasing time of using missiles.

Ancillary systems and board equipment

This category includes all components except the missile aerodynamic structure and propulsion system (engine and its accessories). Cables, hydraulic systems, pneumatic systems, fuel pumps, valves, electronic components, charge of explosives, missile components that communicate with ground control equipment and flight control elements, all these equipment are included in board equipment and ancillary systems of missiles.

Any of these components present a high risk of vulnerability to wear

caused by material aging leading to a number of problems such as increasing maintenance costs, low availability of spare parts and failure of safety devices when handling the missiles at ground. A unique system, unlike missile aerodynamic body, is unlikely to cause early exit of the resource. However, these types of problems can be solved without much difficulty unlike aerodynamic problems and propulsion. Of course, is required to consider that reliability, availability, cost and safety can become an issue if the missiles are too old.

Material damage

Materials from which are built ancillary systems and board equipment may be damaged in so many different ways than fatigue and corrosion. Some systems such as hydraulic and pneumatic systems may present leaks which may cause a change in the flight path of the missile. Fault caused by worn wires or damage of electronic components can also cause the missile explosion before reaching the target or make it no longer manage to initiate explosion charge near the target.

2. THE METAL STRUCTURE OF THE MISSILE SYSTEM

The main technical challenge regarding the wear of the missiles includes:
- small cracks caused by material fatigue;
- multiple cracks caused by material fatigue;
- various forms of corrosion.

Ironically, the success obtained in terms of solving small cracks occurrence (through careful selection of materials during design, through regular inspection and replacement of material presenting problems) open the way for more complex vulnerabilities. The success obtained in managing and preventing small cracks gave us the possibility of maintaining missiles in service for such a long period of time so they become vulnerable to multiple cracks spread on a specific portion or the entire surface of the missile. Damages caused by material fatigue represent a problem much more serious and harder to solve than damages caused by simple cracks.

2.1. Simple cracks caused by material fatigue

Simple cracks are the main factor in missile frazzle. These cracks can only occur if a part of the missile was exposed to cyclic stress, including stretching efforts. Crack initiation, their stable and subsequent propagation is governed by the intensity of the stress level of the material and initially appears as a flaw in the material, which then leads to the crack. Material stress intensity is determined by four factors:
- the size of the crack;
- peak magnitude of the voltage near the crack for reverse cycle;
- minimum stress for that cycle;
- details regarding the geometry of the affected area near the crack.
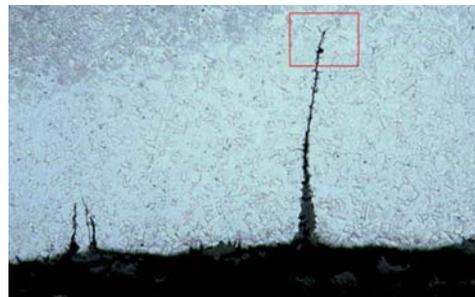
Figure 2. Simple crack

Regarding this aspect there are some questions such as:

1. Where could cracks appear, how quickly can they increase and when should inspectors begin their search in the material structure?
2. If they could develop undetected and lead to structural failure that would cause structural collapse of missile, will that part which caused the destruction ever be found?
3. How will inspectors know what to look for in the analysis to discover the malfunction which caused the failure?

These are the kind of problems facing air defense missile systems due to the use of outdated missiles and due to the extension of their resources way after their end of life cycle (because of financial reasons).

2.2. Multiple cracks caused by material fatigue

Another issue is the high concentration of simple cracks on a significant surface of missiles structure. Such concentration may appear in several places on one surface of the structure, such as a missile wing or might occur on multiple missile components (major damage). Regarding this aspect the questions that arise are mostly the same as in case of simple cracks. The understanding of this type of wear was made possible due to the study of fracture mechanics and through the management of aircraft components fatigue in general.
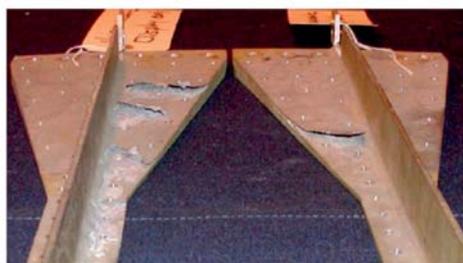
Figure 3. Multiple cracks due to material stress

Aviation community interest has been directed toward this type of problem only after the collapse of Aloha 737 flight in April 1988. However after 20 years the experts are still searching solutions for preventing the appearance of cracks in aerodynamic structure of aircrafts and missiles.

The crash of Aloha flight 737 showed how simple cracks join to form a large crack that leads to the failure of a large area of wings aerodynamic structure. Detection of this type of failures before determining the crack of o important missile parts is a major problem in the aviation industry because of inspection methods limitations. Even we know what missiles and which missiles parts must be inspected, the problem still remains due to the great variety of missiles and their large numbers. For all these reasons, the development rhythm of methods to provide protection against both simple and multiple fissures was slowed down both in aviation and air defense.

2.3. Damages caused by generalized fatigue

While fatigue cracks reach a significant size in several areas of the structure, the maintenance

and modification costs increase inevitably. Because their impact on the economy is major:

• the economic viability of continuing operations decreased (under limited resources conditions), or

• the risk of failure increases - because is required to execute a large set of inspections using available resources, without allocating additional resources.

The existence of a significant number of cracks requires an increasing number of inspections (or changes) at some levels that may be considered unacceptable, this level of the wear could be referred as *generalized* or *fatigue damage*. This type of wear may be the result of multiple cracks that have developed in different parts of the structure. The dismantlement of an aerospace system (missile, airplane) depends on the material and the geometrical characteristics, and also on operating conditions. Figure 3 presents a summary of the main causes and forms of deterioration which leads to the appearance of wear particles.
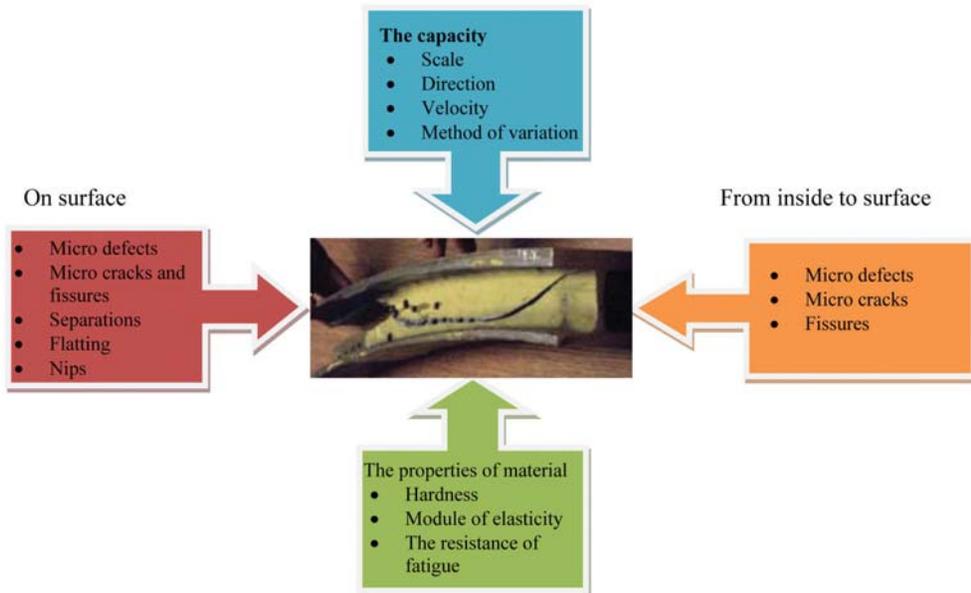
Figure 4. Causes which lead at the appearance of wear particles

2.4. Cracks caused by corrosion

The class of issues caused by corrosion of the material can take a variety of forms. A common cause attributed to this type of problems includes the presence of both the corrosion process and the stress level applied on the material perpendicular to the direction of the greatest strength of the material. This type of stress that applies transverse across the resistance structure can be developed in the ways described below.

1. Exposure of the fibers – Cracks caused by corrosion can grow on a part of the material (at the edge) where the longitudinal fiber of the material (parallel to the direction of

the fibers which assure the highest resistance) is exposed to the action of corrosive agents. Those agents are acting as a feather (used to split wood) spacing the parallel fibers of the material on a transverse direction. Such behaviour is a consequence of the fact that corrosion products require a greater volume of material than the one which is consumed during the corrosion process.

2. Residual stress – Also known as internal stress, may occur when the material is laminated, extruded or forged in order to obtain different parts of the missile (fuselage, wings, ailerons, resistance structures). The corrosion that occurs in an area affected by residual stress may lead to the formation of cracks caused by corrosion.

3. The stress that occurs during the manufacturing process - When the parts of the rocket are assembled to form the final product, fitting them together can create transverse tensions or the phenomenon of stress due to merge. Again, if an area that presents such a phenomenon is subject to corrosion rises the risk of corrosive cracks appearance.

Certain alloys of aluminum, some thermal treatments and some methods for materials processing were found as causing this type of damages.

2.5. Corrosions made through exfoliation

This type of corrosion is characterized by the formation of small bumps which appear on the surface of the affected material or by peeling it similarly to wood which has been attacked by bugs. In general, this type of corrosion does not include a stress mechanism.

It has been discovered that thick panels that form the upper surface of the missile body are vulnerable to corrosion made through exfoliation, beside the fixing holes where the aerodynamic body panels are attached to the missiles interior skeleton. The rockets are much more vulnerable to corrosion when exposed to moisture. One of the factors that lead to this type of wear is represented by peeling off the layer of cadmium from the joining bolts; this prevents the contact between steel and aluminum. This coverage is very important because steel and aluminum are very different in terms of electric potential.

Missiles are very vulnerable to atmospheric factors such as moisture. Pickling the paint and the base layer of material (in order to restore the barrier against the moisture) had the unintended effect of removing the layer of cadmium from the surface of the connecting bolts.

Figure 5. Corrosion around the joint pins

Because of this some panels need to be replaced and as the storage life of missiles in service increases, this would lead to higher costs in comparison to costs involved in modernizing certain types of missiles or the purchase of new types of air defense systems.

2.6. Corrosion due to cracks

The corrosion caused by the cracks may develop at the interface between two adjacent parts if every part is prone to corrosion and moisture makes contact with the surface of each side.

The application of one or more barriers against the moisture may also protect the material against corrosion caused by cracks, as follows:

- a coating applied in the area where the missiles body components are combined, to prevent moisture and to provide a conductive path of electricity between the parts in contact;
- apply a coat of primer and topcoat paint before joining the parts and after they were merged to prevent moisture to penetrate into areas where the parties are merged and applying a protective layer against corrosion.

However as time passes, the ability of paint to provide a barrier against the ingress of moisture can degrade.

3. MATHEMATICAL MODELING OF RELIABILITY GROWTH WITH A PONDERAL INFLUENCE OF THE ELEMENTS WHICH ARE PREDISPOSED AT DEFORMITY

Let us consider a new element (one aileron, from maximum 4), in a proper functional way at a moment $t = 0$. The deformity is produced at the moment t.

As defined, the reliability of the aileron at moment t, is given by the following formula of probability:

$$R(t) = P(T > t) \qquad (1)$$

Applying this relationship is made by using the concepts for estimates, samples and probability laws for a period of life T. Considering a number n_0 - element in a proper functional way at the moment $t = 0$.
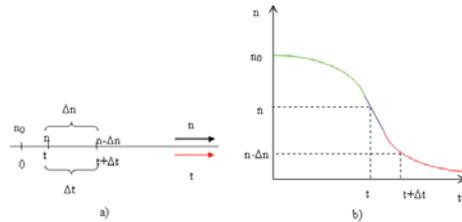
Figure 6. Variation of products number in a proper functional way

Observation:
a) The number of falls during Δt;
b) Decrease in time of elements number in a proper functional way.

At t moment there are still n elements in a proper functional way. During $(t, t + \Delta t)$, Δn elements fails. So n is the number of elements in a proper functional way before the $(t, t + \Delta t)$ range. The relation between Δn and Δt is realized considering that Δn is proportional with Δt:

$$\Delta n = -\lambda(t)\Delta n \qquad (2)$$

Where: λ is a factor of proportionality, ($\lambda > 0$), and the minus sign takes account that n decreases when t increases.

Considering as a theoretical model, for continuous and differentiable function, which has the limit:

$$\lim_{\Delta t \to 0} \frac{\Delta n}{\Delta t} = \frac{dn}{dt} \qquad (3)$$

we reach at the first order differential equation which can be also named „the differential equation of falls":

$$\frac{d}{dt} + \lambda(t)n = 0 \qquad (4)$$

This differential equation is the underlying for defining the relations of the fundamental identities of aileron reliability.

Specifying relation (3) in relation to *n*, obtain:

$$\frac{dn}{n} = -\lambda \, dt \qquad (5)$$

Considering following limit conditions:

$t = 0, \ n = n_0$;
$t = t, \ n = n$;

by integrating the relation (4) it becomes:

$$\ln \frac{n}{n_0} = \int_0^t \lambda \, (t) dt \qquad (6)$$

Proportionality factor λ is named "the rate (instantaneous) of failure". These can be considered constant, $\lambda = \lambda_0 = const.$ or variable $\lambda = \lambda(t)$.

The fraction $\dfrac{n}{n_0}$ represents the proportion of elements in a proper functional way or the frequency of the elements in a proper functional way at *t* moment.

Aileron's reliability during operability

In case we are interested on reliability only during a specific range (t_0, t_1), reliability is named „mission's reliability" and it can be determined as follows:
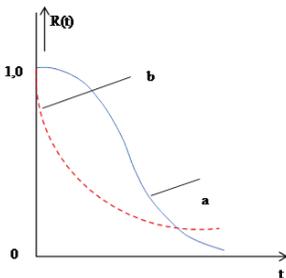
Figure 7. Variation of reliability:
a) reliability with λ variable;
b) reliability with λ constant

Considering the events:

A – Optimal operation during $(0, t_0)$;

B – Operation during (t_0, t_1);

C = A∪B – good operation during $(0, t_1)$.

The probability of these events represents the following reliabilities:

$$P(A) = R(t_0) = e^{-\int_0^{t_0} \lambda \, (t) dt}$$

$$P(C) = P(A \cup B) = P(A) \cdot P(B/A) = e^{-\int_0^{t_1} \lambda \, (t) dt} \qquad (7)$$

B event is conditioned by the fulfillment of A event. The conditioned probability of B event represents the mission's reliability, R (t_1/t_0) or conditioned probability:

$$P(B/A) = \frac{P(C)}{P(A)} = \frac{\exp[-\int_0^{t_1} \lambda \, (t) dt]}{\exp[-\int_0^{t_0} \lambda \, (t) dt]} = e^{-\int_{t_0}^{t_1} \lambda \, (t) dt} = R(t_1/t_0) \qquad (8)$$

In the particular case,

$\lambda = \lambda_0 = const.$

$$R(t_1 / t_0) = e^{-\lambda_0 (t_1 - t_0)} = e^{-\lambda_0 t} \qquad (9)$$

where $\theta = t_1 - t_0$ represents the mission's time.

It is noticed that in all cases where $\lambda = \lambda_0 = const.$ The reliability depends only on θ range indifferent where it is that specific range on time scale.

So the element with $\lambda = const.$ is the element "without memory" or without wear. The reliability on a specific range does not depend on the time of previous operation or the probability of operation without failure on a specific (t_0, t_1) does not depend of how much did this functioned before. Concluding, it does not depend on time, it depends on range.

4. INSTITUTIONAL CHALLENGES FOR OPERATORS OF INTEGRATED AIR DEFENSE SYSTEMS

Romania and other operators of outdated air defense systems can expect to encounter difficult institutional challenges. Air defense systems are outdated and become older. What is their real functionality? How much attention they need to keep maintenance costs as low as required? The main institutional challenge for such questions includes limitations on independent verification of operating status of missiles and limiting conditions for engineering analysis including risk assessments and also a decreased global resource that should be considered before making an investment no matter how insignificant in outdated air defense systems.

Independent verification of integrated air defense systems status and forecast of future conditions

Although objective assessment of the current and future conditions are fundamental to effective management of the life cycle of resources, only few operators seem to have the resources necessary for technical expertise. Thus, of necessity, most operators of integrated air defense systems depend largely of spares manufacturers and their suppliers.

Limitations regarding the information needed for material analysis

Achieving effective management of the lifecycle of the missile systems requires detailed analysis of the current status of the resource, forecasts of future conditions of integrated air defense systems and those options that could better

correct any errors of evaluation, in order to reduce uncertainty and for mitigate some risks. Such analysis requires both objectivity and access to the information that can be used to analytical methods.

Structural fatigue

For this problem, achieving an efficient life-cycle for integrated air defense systems requires the following information: early detection of cracks caused by material fatigue, monitoring the severity of cracks of each air defense system, inspections planning and maintenance work to extend their life depending on the severity of wear and the decision to make a compromise between the remaining life of the system and the costs to eliminate the damage caused by material fatigue. Any delay in providing accurate and timely information on material fatigue help reduce life cycle of integrated air defense systems. For example, failure to detect an early stage of crack caused by material fatigue could cause more expensive repair or worse can reach a stage where there can be nothing to do, missile cannot be longer used. On the other hand, an inspection earlier than needed is a waste of economic resources.

5. CONCLUSIONS

As the cost of sustaining aging integrated systems continues to rise, and as the competition for scarce resources continues, getting each S.A.M.'s sustainment road map right will become increasingly important to controlling sustainment costs and protecting the operator from disruptions caused by unanticipated sustainment problems.

The new approach addresses the technical and institutional challenges of aging and the associated issues related to managing resources by using a total-systems paradigm that breaks a resource-management system into its principal domains to analyze how major challenges and issues relate to values that are important within each domain and to the customer. Connections to such a value structure can help the decision of makers set policy priorities for enhancing the resource-management system that must deal with the further aging of already-old Air Defense aerospace vectors.

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INNOVATIVE MULTIPLE IT&C LOW COST SYSTEMS USED IN SECURE COMMUNICATIONS

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The purpose of this article is to point out the main aspects regarding the use of VoIP (Voice over Internet Protocol) to discover and locate the source of information, but also to create a data base with the information gathered this period. The user can not only access the files, but he can also use other types of Internet services at the same time. The applications refer to multiplex system, but a low cost solution will diminish the trust of the decision-makers in implementing and using these innovative solutions.

Key words: *network of organizations, VoIP, partnership, multiplex or multiple accesses, inspiration from Virtual Enterprises (VE).*

1. INTRODUCTION

Communications in collaborative organization networks are realized today through a diversity of methods at lower costs which limits the benefits of networking and partnership. Looking at the recent financial turbulence (global crisis, the debt of some countries in the EU) with an impact on companies' survival, finding business opportunities is essential, but we also must take into account the initial costs [1]. Starting from these contradictory conditions people will always look for new solutions to make collaborative networks more efficient at acceptable prices.

The main parameters belonging to a military communication system are:

- quick adaptability in various conditions and in unsorted conflict zones;
- high reliability;
- special endurance for controlled or uncontrolled disturbance in case of optimal redundancies;
- flexibility;
- high security yield for infrastructures, networks, network nods and other various elements;
- maximum security regarding information;
- high capacity for data transmissions on broadband;
- the insurance of communications in real time;
- modulation and short time for deployment;
- retranslation (retransmission) function.

2. INNOVATIVE SOLUTIONS FOR ELECTRONICAL AND MOBILE PHONE MULTIPLEX SYSTEM

A method of network multiplex used today by various companies is VoIP. Voice over Internet Protocol (in short VoIP) or Mobile IP or Mobile Internet. This is the process of transmitting vocal conversions through data points or networks using this protocol. VoIP is characterized through human voice conversion in packet data which is transmitted from the source to its destination using IP networks, and then the packed data is introduced in the same order and converted directly into acoustic signals [2].

C. E. Shannon establishes informational entropy starting from an experiment called X in which we can realize finite number of independent elementary events (x1, x2,...,xk,...xn). Likewise we take in consideration the probability of the appearance of these events (p1, p2,...,pk,...pn). The undetermined measure for the X experiment is a probability function of the elemental events and is equal with the medium quantity of information provided by realizing or creating an event/element:

$$H = \sum_{k=1}^{n} pk \cdot \log pk \qquad (1)$$

In which:

H - Information entropy;

p - The probability of realizing or the existents of a event called k from the system.

Because we do not know the priori results from the X experiment we can only conclude that it contains a specific undetermined grade which we can affirm that:

- After realizing the experiment we will receive a information, only and if only this result will clear any undermined grade;

-The information and indetermination are direct proportional measures, only there variation ways being opposed;

- The information will replace the indetermination [3].

Figure 1. VoIP system

Today the most used network is the World Wide Web, in other words the Internet, which connects millions of users from all over the globe. Still there are private networks that belong to private companies, private networks and institutions.

The biggest advantage of VoIP compared to the old voice transmission network is the low price for resources and materials. This connection can be achieved quickly, efficiently and with little money thanks to technology.

Still this isn't the only advantage; the IP network can use other services simultaneously, for instance web navigation, e-mail and many others. This service can be used anywhere in the world, no matter the country as long
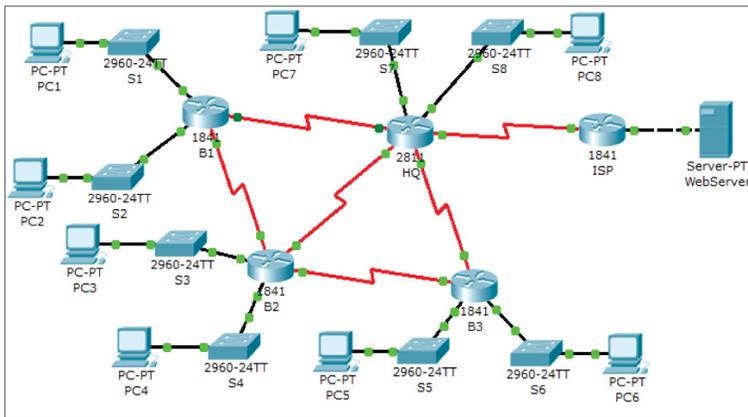
Figure 2. VoIP in a campus (scheme designed in Packet Tracer CISCO)

as it is connected to the Internet. Such a network is presented in figure 2.1.

VoIP is the most used process in the 21 century dominating the cell phone market. In other words VoIP is the one which ensures communications in our days.

It has a big advantage compared to the old mobile network. Thanks to the connection to the Internet the cell phone number (user) receives an address, an IP, private or commercial. We can see the IP classes in Table 1.1.

Table 1. IP Classes

IP Class	No. of possible users	Possible addresses
Commercial A Class		0.0.0.1-127.255.255.255
Private A class	16.777.216	10.0.0.0. 10.255.255.255
Commercial B Class		128.0.0.0-191.255.255.255
Private B class	1.048.576	172.16.0.0 - 172.31.255.255
Commercial C Class		192.168.0.0-223.255.255.255
Private C class	65.536	192.168.0.0-192.168.255.255
Commercial D Class		224.0.0.0-239.255.255.255
Private D class		224.0.0.0-255.255.255.255

Due to the allocation of an IP address the user of the mobile phone can see the phone number from which someone is calling him even if the person is using a withheld code to hide his mobile phone number.

At the moment we use IPv4 addresses, but because the number of Internet users keeps growing we will be force to use IPv6 addresses. An example of IPv4 would be 128.1.2.3 which uses 32 bits while IPv6 has the address 2001:0db8:85a3:0042:0000: 8a2e:0370:7334 which uses 128 bits. IPv6 will use numbers and letters in IP allocation due to increasing number of network users.

VoIP decodes the hidden bite so that when a user receives a call you can see his phone number or e-mail address from which is he/she calling. The code for withheld numbers is #31#0748123456 or for withheld messages *RI# 0748123456 (the phone number is a random example). Today the withheld message service is no longer available due to the agreement between mobile phone companies which settled that the message service or how we call it

today, SMS (short message service) would be centralized in a VoIP server so that any SMS, MMS (multi media service) or any other type of message that receives help from the internet would be decoded and sent to the receiver with the phone number of the one sending the SMS. Still they have not yet succeeded in implementing this system because of the large data space and high speed transfer rate required for voice and video transmission in real time.

In better developed countries like U.S.A., Great Britain etc., people started to buy telephones with VoIP included in the motherboard of the phone, but with a bigger security when it comes to voice calls. These phones can register the calls in a data base where it will last a week or maybe more, this depending on the user of the telephone. Such telephones can be bought online and is represented in figure 2.2.

Figure 3. Telephone with VoIP motherboard

As we can see in the image above, these phones are equipped with video cameras for video calls, but also we can send images and photographs which were made using this widget. This type of telephone will replace in time house-hold telephones or maybe mobile phones thanks to the uprising popularity of the video calls [4].

For a person to implement the VoIP system for any mobile phone it is necessary to redirect the call to a digital phone number, more exactly to an IP address belonging to a company so that the phone calls your receive would be monitored.

For example if a withheld number calls you, you will reject the call and at the same moment the number will be redirected to the digitalized number. There the hidden bite will be decoded and will see the number. A normal phone number has 32 bits of data, while a withheld phone number has 31 bits of data, the last bite being the one coded [5].

To use redirection you need to possess a digitalized number. These can be easily found on the World Wide Web. In Figure 2.3 we can observe the web page start page of a VoIP website service.

You will create a online account, the user needing a e-mail address to create and use such an account. While creating the new account you will be asked which phone number would you like from their data base. This service is identical to the one offered by the mobile phone companies when a person buys a new phone number.

The next stage would be to activate the account by accessing the link received in the e-mail address. After creating and accessing the account, you will use the redirection system according the rules of the mobile phone company where you have a contract or from which you bought a phone number. You will call the information service from your phone number where you will receive information about redirecting a phone call. This service is also available online at the web page of

each mobile phone company or just by calling the information service.

After you finished fixing these settings the VoIP service will be available 24 hours a day, 7 days a week and if a person from a foreign country call you the number will be decoded and you will the country from which he/she is calling.

This service also includes localization on Google Earth or any satellite localization if the person calling you has a GPS module integrated in the phone and if it is reconcilable with 3G network even if the person has or not Internet. This will locate the person calling with an error of 9 till 30 feet [6].

At the GPRS system the moment you are called and redirected the phone call it will take a second to decode the number. You can see the phone number by accessing the VoIP account you have created, accessing history calls where you will see missed calls, received calls, dialed calls and others, visible in **Figure 2.4.**

Figure 4. Mobile VoIP

Figure 5. Calls received or missed on VoIP

Even this type of network cost money. For example for the VoIP accounts which are not recharged with credit will be available maximum 3 months, but you can create a new account after the old one expired using a different e-mail address. This law is available for all types of VoIP networks which exist on the World Wide Web.

For the moment the VoIP service is not available for all mobile phone networks due to the fact that not all of them implemented the call diverter system to all of it's users, only the one's that pay a monthly fee can benefit from this service. Still there are companies that implemented this diversion system to all of its users becoming the leader of the market without any competitor due to the advantages that the firm brings.

Even if it's not available for everyone, this service remains one the best in the world allowing the use of many applications in the same time and decoding and locating the addresses from which the user receives data. This way every person can control his/hers activity without being forced to remember with whom he/she spoke or what document was accessed in the last days, all of them being included in each person's data base. In other words a personal library for each person that holds an IP address.

The advantages of using such a network are enormous, the costs being low. There is only a need for a computer which most posses a hard-disk big enough to detain and work the data which are accessed by users, each file been secured and arranged by the users address(the IP address that each person holds) [7].

Nowadays, only multi national companies which were inspired from Virtual Enterprises applied this system which reduced the costs and raised the efficiency of the personnel which has permanent access to the data base and multiplication of the system which allowed them to access data bases simultaneously with other documents, web pages from a mobile phone, laptops etc. Using these widgets the companies created partnerships to detain a larger and more accessible data base becoming faster and faster in finding solutions for a problem or to find date in the companies' library [8].

The multiplication service of VoIP is being used more and more nowadays, due to the fact that it is cheap and the fast development of technology. If 20 years ago a computer was big as a house room and the main data of a company was held in files nowadays almost each child posses a personal computer (laptop) or any other type of smart widget that can use and access from anywhere the data base of the firm through Internet. Still there are many which confuse the VoIP multiplication service with multiplication or they simply associate it with the Internet. Many people don't understand the difference huge difference between these domains.

3. THE MULTIPLEX VOIP SYSTEM IMPLEMENTATION AND USE PRICE. SOME ASPECTS

The solution that is proposed has the role to dramatically reduce the cost for a firm, company or institution. Thus, inspiring from the Virtual Enterprise system, the people have proposed to simulate or to create a prototype of this network, the next step being the price/cost analysis for such a network and the maximum efficiency that it will produce at minimal capacity.

The price/cost analysis is sensible domain in which will take place various functional optimization processes without losing sight of the minimal performances of such a network/system. For example we will point out the minimal prices/costs according to the simplest VoIP network which is represented in Figure 2.1 and it will be detailed in Table 2.2.

Table 2. The cost of the cheapest VoIP network

Seq.	Equipment and services	Price (Euro)
1.	Adaptor Cisco	50
2.	VoIP Terminal (VoIP telephone)	65
3.	Voice Terminal (normal telephone)	35
4.	Router	30
5.	Data Terminal(Desktop)	200
6.	Data Terminal(Laptop)	300
7.	Internet provider	20
	Total	700

The prices from table 2.2 had target a functional network for minimal services and for maximum 2 users at the same time. These users/persons will work at high capacity as long as each one of them has access to desktop computer or laptop. In other

words the more computers or access point a company owns the more data or documents are worked, this way increasing the maxim capacity and efficiency of a company or institution. Let's not forget that such a system also guarantees maximum security at the same time in the network or if it is accessed by outside, with a module that locates and saves the data and addresses that are being accessed even if they are hidden.

4. CONCLUSIONS AND FURTHER RESEARCH

An innovative solution is important and urgent in the context of actual global crises in which there is reluctance for the implementation of new ICT technology. Because of this we consider that it is vital to use such multiplex networks in our days offering a considerable advantage due to the speed and sharing of information's for any user of the World Wide Web and for secured files each user owning a password or certificate to access the secured file.

Due to the global crisis, partnerships between companies or institutions become harder to realize because of the global market competitively for technology which searches for new innovative solutions at low price and maximum efficiency.

From the military point of view they are looking for solutions to create a database with a high speed and adaptability that would react instantaneously when someone transmits large data. It will react in real time and will have the highest security level. The only users that could access such a network will be the employees of the company or institution, each holding its own access code even if they work in the system or from home.

For the next phase in research, people will try analyzing the economical part of the system and point out the effects of using and integrating it for household, industrial users, but also for defense and security institutes, other then the army.

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THE AERODYNAMIC ANALYSIS
OF THE PROFILES FOR FLYING WINGS

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The possibility of using an un-piloted aerial vector is determined by the aerodynamic characteristics and performances. The design for a tailless unmanned aerial vehicles starts from defining the aerial vector mission and implies o series of geometrical and aerodynamic aspects for stability. This article proposes to remark the aerodynamic characteristics of three profiles used at flying wing airship through 2D software analysis.

Key words: *airfoil, flying wing, aerodynamic analysis, Reynolds number*

1. INTRODUCTION

The vector from the robotized aerial system acts the same as piloted airships having the same aerodynamic laws. While projecting a lift surface type flying wing an important aspect would be maneuverability and stability which is directly influences by geometrical characteristics used in the designing phase.

Normally airships type flying wing could have lift surfaces with any aerodynamic profile, everything else resuming to the type of mission and the performance of the bearing surface. To design such an airship at a large operating scale, the wing must present optimal geometrical characteristics so it can maintain induced resistance, the moment coefficient and the lift coefficient at suitable levels. A few aerodynamic profiles used at tailless airships are represented in **Figure 1**.
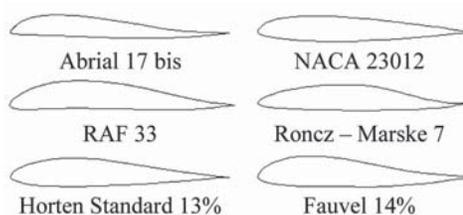
Figure 1 Airfoils for flying wing

The majority of the aerial vectors for the fixed wing have a conventional geometry with the tail, the low cost design determining to create a tailless project that has a blended wing or not, see figure 2. [1]
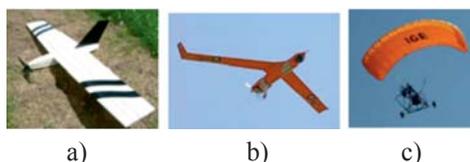
a)   b)   c)
Figure 2. Flying wing UAV.
(a.Model free plan, b. Scan Eagle, USA, c. Maxi 10, France)

Mainly there are 3 types of flying wings determined by obtaining longitudinal stabilization: plank (fig. 2a), swept (fig. 2b) and parafoil (fig. 2c).

By choosing one of the longitudinal stabilizations we use a series of aerodynamic profiles corresponding to the momentary coefficient (low values), as examples we choose Phoenix and Clark YH profiles for plank and swept wings and MH 91 for parafoil wings (see figure 3)[2, 3].
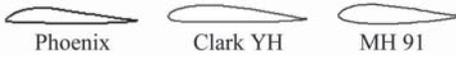
Figure 3. Airfoil for flying wing

2. THEORETICAL LANDMARKS

Aerodynamic analysis for airfoil reveals limits of performances can be obtained: the angle of incidence for zero lift (α_0), the angle of the incidence for zero drag $(C_d)_{min}$, maximum smoothness $(C_d/C_l)_{min}$ (figure 4), the angle of incidence at maximum lift – $(C_l)_{max}$. [4]. Incidence reference values are shown in Figure 5.
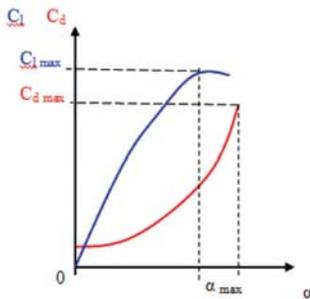
Figure 4. Dependence of lift coefficient (Cl) and drag coefficient (Cd) with angle of incidence (α)
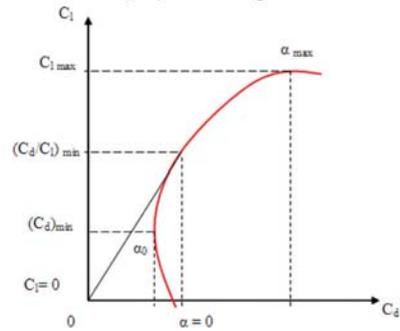
Figure 5. The classic polar

For performances calculus is necessary an explicit dependence of $C_d = C_d(C_l)$. Show in figure 4 a linear variation of C_l small incidence angles above 7^0 but the variation is nonlinear because of the separation of fluid layers. We have:

$$C_d = C_d\left(\alpha, M, R_e, C_l = C_l\left(\alpha, M, R_e\right)\right) \quad (1)$$

removed α, result:

$$C_l = C_l\left(C_d, M, R\right) \quad (2)$$

Variation of the coefficients is show in figure 5 with M and R_e known and constant, where: $M – nr.$ *Mach, Re – nr. Reynolds*

$$c_l = \frac{L}{\frac{1}{2}r_\infty v_\infty^2 \, c \, b} \quad (3)$$

$$c_d = \frac{D}{\frac{1}{2}r_\infty v_\infty^2 \, c \, b} \quad (4)$$

$$c_{m_0} = \frac{M_0}{\frac{1}{2}r_\infty v_\infty^2 \, c^2 \, b} \quad (5)$$

where: *L- lift, D- drag, M_0- aerodynamic moment, b- span, c-wing chord.*

3. AERODYNAMIC ANALYSIS
3.1. Profili v.2.21software

For the 2D analysis we choose the profiles from figure 6 which are mainly used in building tailless aerial vectors, the analysis being performed by Profili 2.2.1 software [5] using the data from table 1.
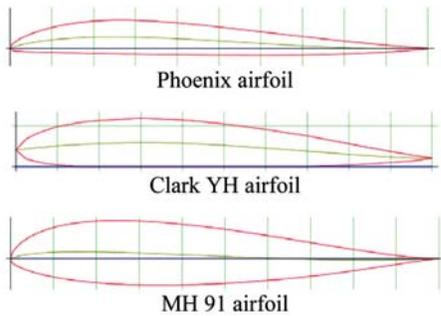
Figure 6. Airfoils

The analysis methodology for comparative graphics is described in the diagram in figure 7.
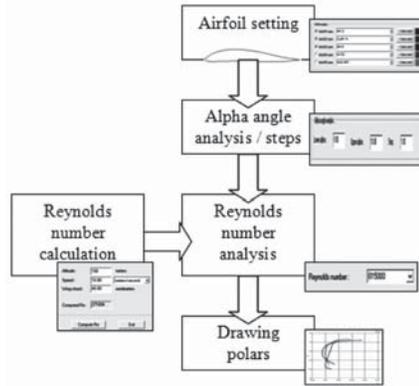

Figure 7. Analysis methodology [5]

Table 1. The conditions of the analysis

Features	Value		
CMA(mm)	400		
Flight height (m)	100		
Angle of incidence (0)	- 5 ÷ 15		
Speed (m/s)	10	20	30
Reynolds number Re	272000	543000	815000

For speed of 10 m/s ($R_e = 272000$) the polars of three airfoils are shown in figure 8 (a, b, c).
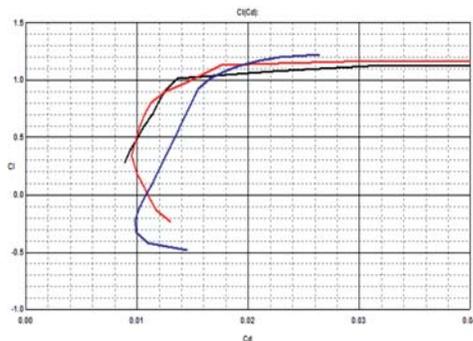
Figure 8 a. Chart Cl-Cd
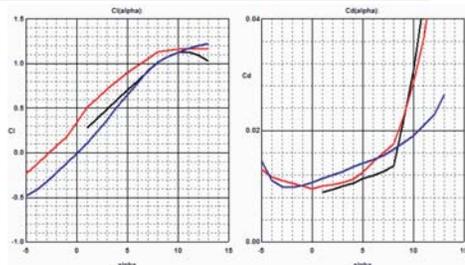
Figure 8b. Charts Cl - angle of the incidence, Cd – angle of incidence
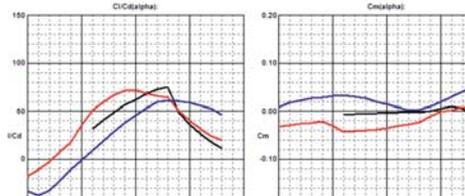
Figure 8c. Chart Cl/Cd – angle of the incidence, Cm – angle of incidence

The characteristics the three profiles are shown in table 2. [5, 6].

Table 2. Airfoil features

Features	Phoenix	Clark YH	MH 91
Thickness:	8,2%	11,9%	15%
Camber:	2,8%	6%	1,7%
Max C_l:	1,17	1,11	1,11
Max C_L angle:	11	15	15
Max L/D:	92,61	32,83	20,09
Max L/D angle:	7	4,5	3
Zero lift angle	-0,69	-2	0

We can see in the graphs (figure 9) pressure coefficient variation (C_l) reported at airfoil chord depending angle of incidence (α) at Re = 272000 for minimum speed of 36 km/h. We observe pressure coefficient (C_l) that is influenced by camber.

Analysis of the airfoil, made at Re = 272,000, in the case the curvature changes (flaps out at 5^0 and 10^0) to 20% of chord, show increasing lift coefficient (C_l) and change the value of the moment coefficient (C_m), as graphs in figure 10 (a, b), figure 11 (a, b), figure 12 (a, b).
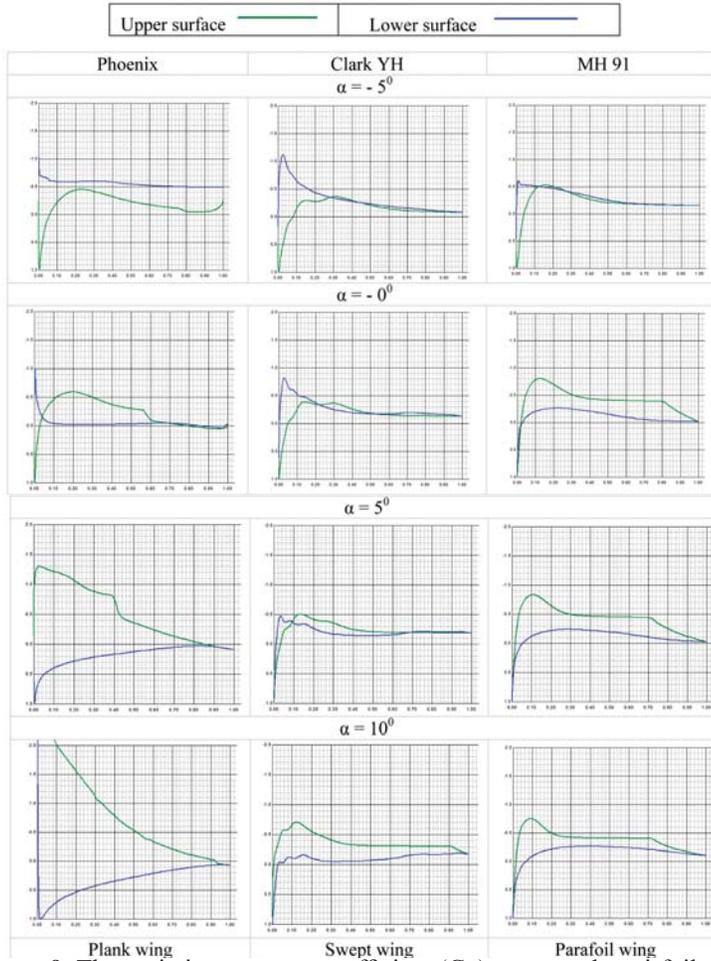
Figure 9. The variation pressure coefficient (Cp) compared to airfoil chord

| Flaps 0⁰ | Flaps 5⁰ | Flaps 10⁰ |
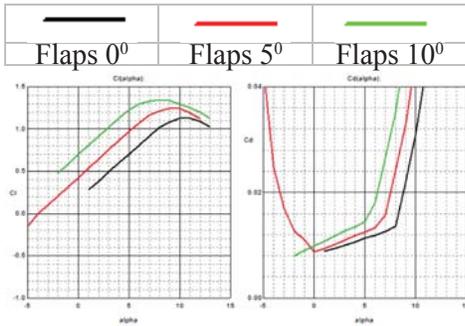
Figure 10 a. Phoenix airfoil, the charts Cl – angle of incidence, Cd – angle of incidence
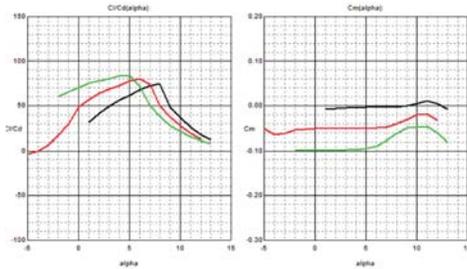
Figure 10 b. Phoenix airfoil, the charts Cl/Cd – angle of incidence, Cm – angle of incidence
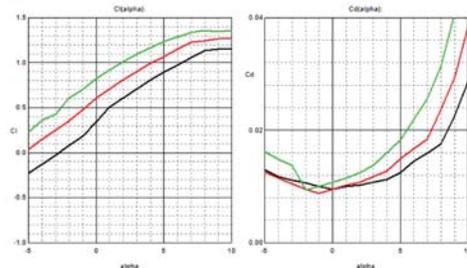

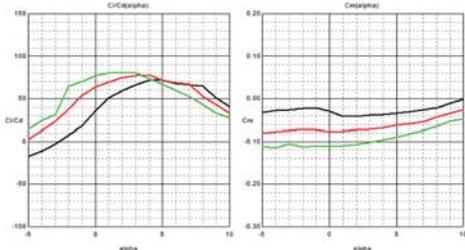**Figure 11 a.** Clark YH airfoil , the charts Cl – angle of incidence, Cd – angle of incidence

Figure 11 b. Clark YH airfoil, the charts Cl/Cd-angle of incidence, Cm – angle of incidence
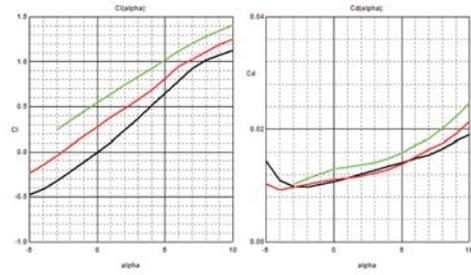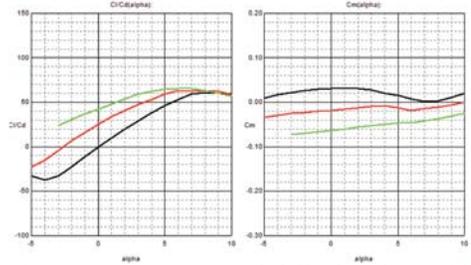

Figure 12 a. MH 91 airfoil , the charts Cl – angle of incidence, Cd – angle of incidence

Figure 12 b. MH 91 airfoil, the charts Cl/Cd – angle of t incidence, Cm – angle of incidence

3.2. Easy CFD v.4.1

It is a calculation instrument used for the fluid dynamic based on the numerical solutions of the fluids and heat transmission in Cartesian coordinates systems. We present the analysis with EASY CFD_G v.4.1 which is realized according to the methodology from figure 13 and the data from table 4 so we can find out the pressure coefficient that is around the three profiles which are subjected to laminar stream.
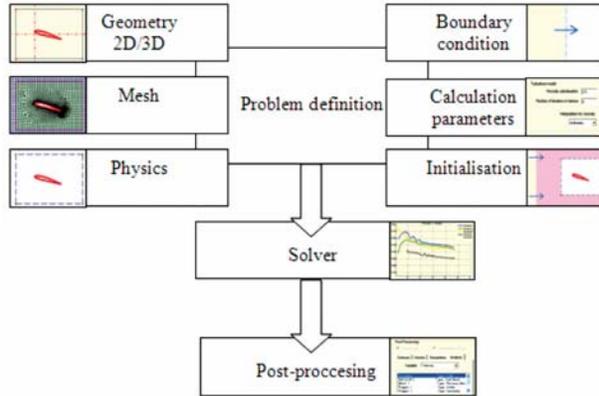
Figure 13. Analysis methodology

Table 3. Analysis data

Meshing	unstructured
Mesh spacing method	uniform
Mesh elements (max)	3000
Regime	steady-state
Thermal effects	isothermal
Iteration	100
Airfoil incidence	0^0

The speed and pressure prints are remarked in figure 14. The validation of the analysis presented in Easy CFD_G v.4.1 could be start ups for deeper studies with refinements for the initial entry conditions for flow and advection models.
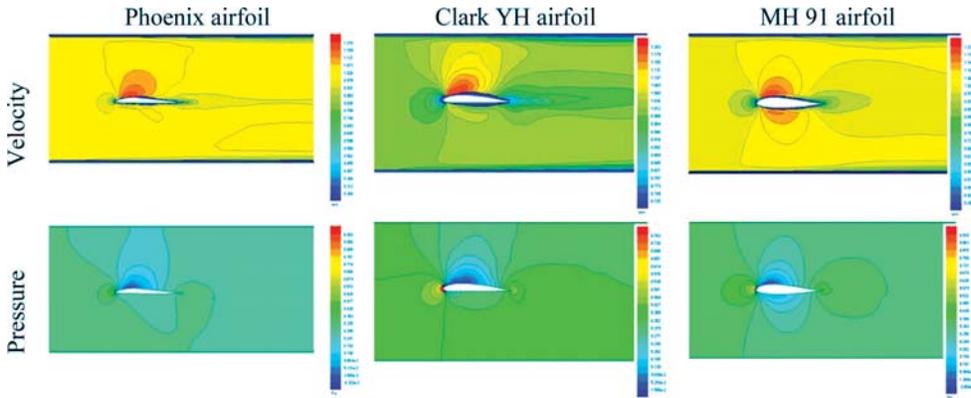

Figure 14. Easy CFD analysis.

Limits and options of the software

Profili 2.2.1 offers an aerodynamic analysis with a series of instruments and criteria which lead to a high trusted result. The most important analysis instruments are: profile manager (with a data base that contains 2000 profiles), Reynolds calculator (rope functions, speed and altitude), polar analysis profiles, speed and relevant analysis coefficients for profile flow (pressure, friction).

EASY CFD_G v.4.1 is simple software, mainly oriented for educational purpose becoming a valorous instrument for a first analysis. It presents a few options and characteristics which recommend him: laminar or turbulent flow, isothermal or non-isothermal flow, steady-state or transient flow, structured and unstructured mesh generation, two turbulence models, conduction in solid and conjugate heat transfer, multi component fluid flow, transport of passive scalars (smoke), geometry import from DXF or point data files [7].

4. CONCLUSIONS

By choosing one of the versions, stabilization for the flying wing is realized with the help of an auto-stabilized profile with negative geometrical torsion of the wings extremities and placing the gravity center under the pressure center of the lift surface. An important aspect is the speed and pressure distribution for small Reynolds numbers which can lead to instability. The best compromise for a UAV flying wings is to adapt curved moderate line of the profile with a maxim curve moved to the leading edge [8].

Recent research with the help of the software led to the design of new profiles with multiple applications without too much experimental effort. The applications in unmanned aerial vehicles request abnormal qualities that are not met at piloted airships: maneuverability at small speeds and high overload.

ACKNOWLEDGMENT

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THE SCIENTIFIC OPTIMIZATION OF SPORT TRAINING FOR BODY FORTIFICATION

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The aim of this article is to compare and contrast sport training in general and sport education in school in order to emphasize the general differences and similarities between them As a result of this approach, the role of physical exercise in both situations, the benefits it brings to the human body in terms of an improved physical condition and health will be discussed and underlined.

Key words: *energy source, inner balance, physical condition, physical exercises, sport education in school, sport training.*

1. INTRODUCTION

The human body is the material unit which, thanks to the physiological structure, is responsible for the vital process, interacts with cosmic powers, with the world of plants and animals. The human body is a complex informational system that simultaneously and repeatedly acts as information receiver (i.e it receives, develops and assimilates information). The human body is a complex energetic system, it is matter and energy. The human being has a specific biped conformation that places it above all other beings on Earth and probably above all other beings that can exist on other planets [1].

The normal functioning of the human body in good conditions involves good health and is determined by the inner balance, which in turn submits to the movement, breathing, nutrition, circulation, excretion and reproduction functions. These functions are ensured by complex organs that constitute various structures (muscular, bone, nervous, endocrine).

The general wellbeing represents a physical and psychological wellbeing. The physical wellbeing is determined by the normal functioning of the body's structures and systems. From the psychological point of view, the wellbeing involves a person's inner balance reflected in its level of respect and esteem, its full involvement in life's events and not in the least in its joy of life. This state will influence the person's social life quality. Its social status and social role will develop the inner wellbeing and identity, feelings of fulfillment and satisfaction. Having a guaranteed working place is also a key element which can affect the general wellbeing, integrity and bio psychological balance of the person. Thus we identify a circular causality,

because the 3 states depend one on the other and influence each other

The general wellbeing shapes the mental and the social environment. The satiric poet Juvenal, a critic of the Roman corruption, addresses the famous hexameter from SATIRA I to those who show no interest towards body health, but only to spiritual health: "**Optandum est ut sit mens sana in corpore sano"** - *it is desirable that a healthy mind should inhabit a healthy body* (Juvenal, cited by Kirițescu, [2]).

The famous Latin hexameter is the expression of the ancient Roman educational ideal, as well as its Greek correspondent KALOKAGATHIA, which reflects in equal measure the respect for body-soul-spirit that represents the unity of the human being. The approach for body problems can only be done through correlation with the psychological life and not least with the material component of the body.

The Cartesian expression the man is a "unity in duality" signifies the fact that human beings exist through body-soul-spirit, as particular entities one to the other, but in the same time connected through an indestructible bond, influencing and conditioning each other.

Generally speaking, physical condition involves the capacity of the human body to adequate its diverse reactions to the needs of the environment (daily activities incurred by professional requirements, family issues, social roles, etc.). The more tasks and activities a person is likely to accomplish, without fatigue affecting its physical state and energy resources, the healthier the person is.

The assessment of the physical condition is relative and it depends on the following variables: genetics, age, sex, life style, etc. The improvement of the physical condition can be made through physical exercise, which is the main method of physical education and through the physical exercise characteristic of in sport training.

Every body structure (digestive, respiratory, circulatory) and system (muscular, bone, nervous, endocrine) participates to physical exercise. The systemic and continuous practice of physical exercises has an important role on the proper physical development of the human body, resumed in morphological and functional indices, as close as possible to the values attributed in this way to a healthy body at different ages.

Cârstea [3] claims that 3 primary objectives are pursued this way:
- harmony between the morphological and the functional indices;
- balance between the anthropometric indices;
- balance between the functional indices.

2. PHYSICAL EDUCATION AND SPORT

Physical education and sport refer to every form of physical activity meant, through an organized participation or independent one, to express or to improve the physical condition and spiritual comfort, to establish social civilized relationships and to obtain results in competitions on any level. The practice of physical education and sport represents a right of the person, without discrimination, guaranteed by the state, and the administrative

authorities and sporting institutions have the obligation to support physical education, sport for all and competitive sport and to ensure the conditions of its practice.

Physical education represents the conscientious physiological activity of the human body pursuing health maintenance and the growth of the biological potential of the person, in order to boost its social input. It is closely linked to the intellectual education, moral and esthetic one, constantly being under the influence of the intellect and influencing the other two [3].

In other words, physical education means the instructive/educational process that pursues the formation, the growth and development of the physical capacities of human beings, with clear objectives, for all ages. It can be met as an instructive/educational process, specially conceived in educational institutes, military system, different associations, etc. or as an independent activity: various games, walks, hikes, gymnastics, etc.

Sport training, unlike physical education, is addressed to a smaller number of people and represents the instructive/educational process which takes place systematically, conscientiously and continuously, aiming to adapt the human body to physical and psychological effort of very high intensity, with the purpose of obtaining high performance sport objectives, in different sport branches. In comparison with physical education, it has a smaller number of physical exercises, but these represent specialized techniques.

In conclusion, performing physical education and sport training involves sustained effort consisting in muscle contraction, as well as in

important body functions and also psychological effort. For a better understanding of the orientation and the conduct of physical effort in physical education and sport training the following structure is proposed:
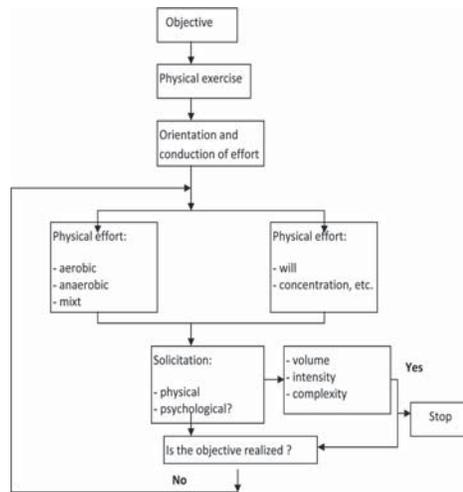

Figure 1. Physical effort orientation and conduct

During physical effort, through the contraction of muscle structures energy is consumed. The largest part of the energy obtained by the muscular groups necessary to the body is obtained through the glucose-oxygen reaction.

Amide is a carbohydrate present in rice and pasta. It is a polymer of glucose. In the process of digestion the enzymes dissolve the amide in the glucose. The glucose obtained passes through the intestinal wall in the blood circuit which in turn distributes it throughout the entire body. A part is deposited in the liver under the form of glycogen. When the level of glucose from the blood drops, then the reserve from the liver is liberated. The rest of the glucose is distributed to all the other cells of the body.

During physical effort of great intensity, the muscular structures that are activated need to be fed with energy as fast as possible. This energy is obtained from glucose

The energy required for muscle contractions in the effort made in the aerobic regime is obtained from the reaction between glucose and oxygen. A big part of it is used for the movement of the body, and the rest for temperature fixture. Another result from the reaction is the carbon dioxide which is transported in the blood and eliminated through the lungs. Water will also be transported by the blood, and the elimination of the largest part is done from the lungs, and the rest through urine

For the anaerobic regime, the effort made is an intense one and the energy is consumed in very little time. The muscular system requires a rapid alimentation with a large quantity of energy. Since oxygen cannot be transported fast enough to the muscle structures activated, the effects of the anaerobic effort appear. Thus, glucose transforms very fast in the energy necessary for muscle contractions, but also in the required thermal energy. The quantity of energy obtained is much smaller: about a minute after lactic acid occurs, muscle fatigue and pain also appear. As a result, effort must be stopped in order to avoid collapse.

3. ENERGY SOURCES

Energy is the capacity of the athlete to produce effort, and the effort itself represents the contraction of muscles to apply a force against a resistance. Energy is the required condition to perform an exercise or to perform structures of physical exercises in practice or in competitions. Energy is obtained from the transformation of food, at cell level, in a rich energy compound known as adenosine triphosphate (ATP), which is then stored in the muscular cell. ATP represents a molecule of adenosine released from the transformation of ATP (rich in energy) in ATP+P (adenosine+ diphosphate+ phosphate). When a phosphate link is decomposed in ATP+P, energy is released. In the muscular cells only a limited amount of ATP is stored. Therefore, as Bompa [4] underlines, the ATP reserves need to be constantly restored to facilitate the physical activity in development. This is also displayed in Fig. 2. The body can replenish the reserves of ATP through any of the 3 energy systems presented in the figure below, depending on the type of activity: the ATP-PC system, the lactic acid system and the oxygen system (O2).
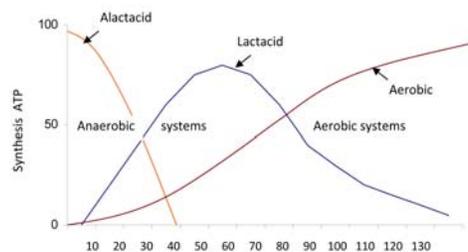
Figure 2. The primary sources of energy in sport activities (modified after Del Monte, Sardela, Facini and Lupo, 1985, cited by Bompa, [4]

4. PHYSICAL CONDITION

The physical condition is the physical capacity of the body to deal with long distance efforts of high intensity, maintaining the efficiency indices constant, in other words through overcoming the apparition of the phenomenon called fatigue.
The physical condition can be:
A – general;
B – specific for certain sport branches.
A. The general physical condition has the following components:
   ✓ cardiovascular resistance, represents the capacity of the circulatory system to provide oxygen to the muscles;
   ✓ muscular resistance is the capacity of muscle structures to contract, without having the fatigue occur to soon;
   ✓ physical vigor ("freshness"), represents the combination between cardiovascular resistance and muscular resistance. The common feature of this component is the resistance of the body to long periods of effort, without getting tired;
   ✓ mobility is of maximum importance. Mobility represents the physical capacity of realizing movements of great amplitude, in a passive or active way and it refers to joints, to be supple signifies elasticity of the muscles structures, conditioning mobility;
   ✓ the speed is the capacity of the body to execute acts and actions involving movements, in a short period of time;
   ✓ the tissue structure of the body refers to the fat tissue and the muscle tissue.

The level of physical constitution depends on the degree of solicitation of the body of the person, in physical effort. In normal conditions, any person who works out, must have a minimum level of physical condition.

B. Specific physical condition for certain sport branches.
The physical condition specific to a certain sport branch, is generally built on the general physical condition. In other words, in order to be a good athlete you must have a very good condition. That is why, it is important to identify the factors that influence physical condition. A very good physical condition is imposed by an excellent level of health.
The most important factors are:
   ✓ age: the maximum level would be 20-23 years of age; a good physical condition is determined at all age categories by 2 things: the optimization on scientific basis of the training and continuity;
   ✓ sex: boys and girls as well can work out starting with young ages; from 10-11 years old boys start growing in height and mass, the muscle structure is developing, making them stronger than the girls, while girls posess a greater degree of joint mobility;
   ✓ eating program: a good physical condition is determined by a balanced diet and of good quality;
   ✓ physical exercise: the primary tool of physical education and sport, it represents the main support upon which physical condition is built, consolidated, perfected and maintained;
   ✓ over-training: as any exaggerated thing, it does not help the

body and leads to chronicle fatigue, which can be solved through break;

✓ drug abuse: drugs are chemical compounds that influence in a negative way the primary functions of the body, automatically physical condition;

✓ stress: stress has many harmful effects on health; the solution is through movement;

✓ environment: has a positive effect on health and physical condition, if clean, unpolluted.

5. EFFECTS OF TRAINING ON THE BODY

The vast majority of professionals in the domain have considered that the even though the effects of sport training do not appear right away, they have an effect in "the long run". Motivated and responsible training based on principles and rules always produces the desired effects.

Training in the anaerobic regime has spectacular effect on the breathing system and circulatory one. As far as the breathing function is concerned, the effects are:

✓ the cord grows in dimension, the walls thicken;

✓ the capacity of the cord improves, the contractions become more powerful, and the quantity of blood pumped will be bigger;

✓ a larger amount of blood is covered, with more erythrocytes in this way a larger quantity of oxygen can be transported;

✓ the diameter of the arteries is bigger, the walls become more elastic and the blood pressure drops;

✓ the cardiac frequency is diminished while in pause;

✓ After work out, the pulse regains normal state more rapidly.

Training in the anaerobic regime has the following effects:

✓ The cord expands its dimensions, the wall become thicker in order to support the great tension generated by efforts of maximum intensity;

✓ The elimination of lactic acid is more efficient, because of the tolerance of the muscular system towards it

Training in both the aerobic regime and in the anaerobic one also results in the improvement of muscular resistance as well as muscular force.

The development of muscular resistance triggers:

✓ The development around muscular structures of a network of capillary veins, that, through this form of training, will be provided with more blood through which oxygen and nutritive substances will be transported;

✓ The capacity of the muscles of transforming fats (lipids) in energy;

✓ The muscular system will resist facing efforts longer, without getting tired, using oxygen more efficiently.

The growth of muscular strength involves:

✓ A development of the muscular mass, contractions becoming stronger and more dynamic;

✓ A development and definition on joints and tendons.

The 2 forms of training mentioned above have spectacular effects on the fat tissue, joints and bones. These can be summarized as follows.

Effects on the fat tissue:

✓ Improves the capacity of the muscular structures activated, transforming fats in energy sources;

✓ Elimination of surplus which represents an unnecessary load for the body, it transforms those who train in flexible people, strong and confident in their own powers with maximum rating on all levels.

Effects on the joints:

✓ They fortify and the resistance of ligaments improves;

✓ The synovial glands secrete more synovial liquid that lubricates bones, leading to their thickening;

✓ Through the diversity of physical exercises from stretching the general mobility and that of joints is improved.

Effects on the bones: the resistance of the bone system is enhanced.

The human body undertaking physical solicitations due to various forms of training, needs in a general, 4 types of nutritive substances, necessary to obtaining energy. Water along with food fibers, occupy an essential spot.

The substances mentioned above and their characteristics are:

✓ Carbohydrates, which found in foods rich in amide and sweets;

✓ Fats generate energy. They can successfully replace glucose, which as we know it is itself a source of energy. The more intense the trainings are, the larger quantity of fats will be burnt in the muscular structures;

✓ Proteins are considered by the specialists in the domain, as the "material of construction" of the body, that participate directly to rebuilding the tissues after effort and especially rebuilding the muscular structure. They participate as well to improving the blood circulation and are also used as source of energy.

✓ Vitamins and mineral substances.

Depending on the intensity of physical effort, the body needs certain quantities of vitamins and mineral substances, with a triggering role. These are:

✓ Vitamin A: found in fish, eggs, liver, vegetables and it is necessary for a good eye sight, as well as a good quality of the skin tissue. The lack of this vitamin creates problems at eye level (incapacity of seeing at night and dark places), degradation of skin;

✓ Vitamin C: found in citric fruits and vegetables. A sufficient quantity of this vitamin, has an effect on the skin tissue, healing wounds much faster. It insufficiency causes scurvy;

✓ Vitamin D: present in milk, eggs, fish and liver. It results under the action of sun rays in deposits in the skin tissue. It is necessary for a better resistance of bones and teeth. Researches in the domain have pointed out the fact that in its absence, calcium cannot be assimilated.

✓ Calcium: is found in milk, cheese, sardines, dry fish, green vegetables. The balanced presence of calcium in the body has a positive effect on contractions and contractions of the muscular system, also on the resistance of teeth and bones. The lack of these substances leads to bone fragility;

✓ Iron: found in liver, green vegetables, beans, bread. This element participates in the realization of the synthesis of hemoglobin from the erythrocytes. Its insufficiency causes dizziness and anemia;

✓ Iodine: is present in cultivated vegetables near salt lakes and seas, sea fruit. It helps the hormones that control the speed of the consumption of energy substances. The off balance of this element has consequences on the thyroid gland;

✓ Water: met in the blood, fluids, in the extremely large number of cells. It is lost through sweat and urine. Hydration during training but also after is a necessity.

6. CONCLUSIONS

Taking in consideration everything mentioned above, I consider that through a scientific optimization of exercises and of structures of exercises with a regular practice, adapted to personal variables and to high performance standards, we can agree with the Romanian writer Ioan Slavici who said that "Physical education is the art of realization of the human being".

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