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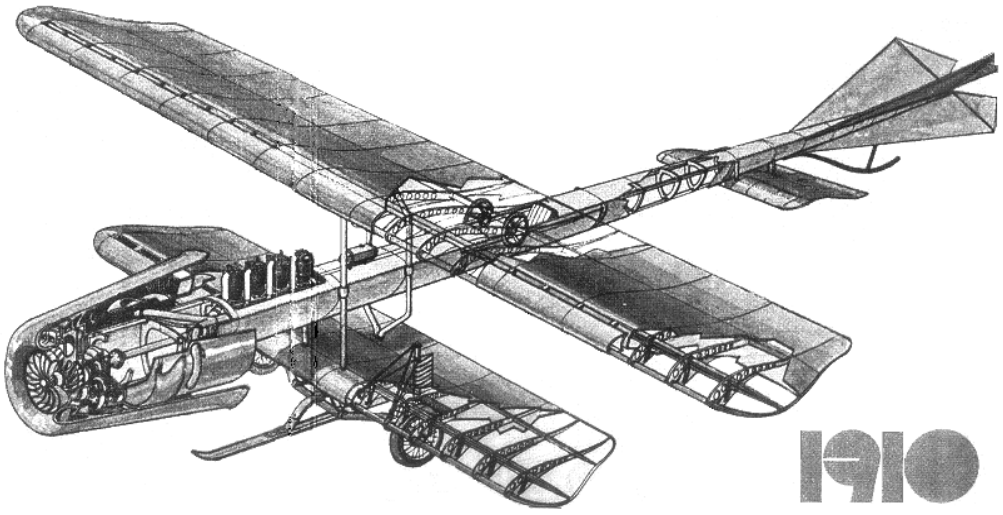

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C O N T E N T S

AN ELECTROMAGNETIC LAUNCH SYSTEM FOR UAVs

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***Abstract**: This paper presents a new design of a launch catapult based on electromagnetic energy for tactical UAVs. This technology is under development to launch projectiles with high velocity but it has theoretically proved the possibility to launch also UAVs. The second part presents a theoretical approach necessary to find the expression of force under certain approximation for E-shaped electromagnetic launch system design. Based on the theoretical results, I have built a physical model in order to examine the behavior of this design under laboratory conditions. After that, I have created a computer model calibrated to reproduce the behavior of the physical model with errors below 1%. I have used an interactive software package based on the finite element method (FEM) to analyze, solve three-dimensional electromagnetic field problems and simulate the E-shaped design's behaviors. The last part of the paper present the results of simulation which prove the possibility of using the E-shape design to launch different masses with a desired speed.*

***Keywords**: UAV, coilgun, induction, Lorentz force, electromagnetic launch system).*

1. INTRODUCTION

Nowadays UAVs have recorded an increased rate of development and so they can now its cover a large spectrum of missions. If we compare UAVs based on dimensions we can see that there are big UAVs used to operate at global level through mini UAVs used inside buildings. The big UAVs are operated almost like a manned aircraft, fact which implies the existence of an airport infrastructure and a runway for take-off and landing. The mini UAVs can be launched by hand. Between these two extremes, there is a category of UAVs used at tactical level which cannot be launched by hand and the cost to build a runway is very high. These UAVs are launched using RATO (rocket assisted take-off) or catapults. These installations are a good solution because:

- the UAVs can be launched without any infrastructure;
- because the fuel is not used for launching the payload weight or the mission time can be increased;
- this approach is environmentally friendly.

The catapult installations use different kinds of energy to accelerate the UAVs like:

- mechanical energy stored in springs or rubber bungee;
- pneumatic/hydraulic energy produced by cylinders and pistons;
- electromechanical energy produced by electrical motors.

All these installations are made by using many parts which increase the complexity and require a lot of maintenance in order to be functional. Also these installations are not part of the automatic loop used to control the UAVs. In order to improve the launch system this should have few moving parts to reduce maintenance costs and should be powered by electric energy in order to be easily integrated into the automatic control loop.

A possible solution can be an electromagnetic launch system like, the railgun or coilgun. These systems were initially developed to accelerate projectiles at very high speeds. Because the guns based on chemical

energy achieved their maximum possibilities the researchers found a new way to increase the projectile speed from 1.5 km/s to 8 km/s. The first direction of research and the most developed is the railgun design. This design consists of two parallel DC powered rails, and a sliding armature between them. This armature is rigidly coupled with the projectile.

The Lorentz force is used to launch projectiles. A good approximation of the force produced by this design is given by the expression (*Railgun*, 2011):

$$F = \frac{\mu_0}{2\pi} I^2 \ln\frac{d}{r} \quad (1)$$

where: μ_0 - magnetic constant $4\pi \times 10^{-7}\ \frac{N}{A^2}$; I - the current through system (A); d - the distance between rails; r - the radius of the rails.

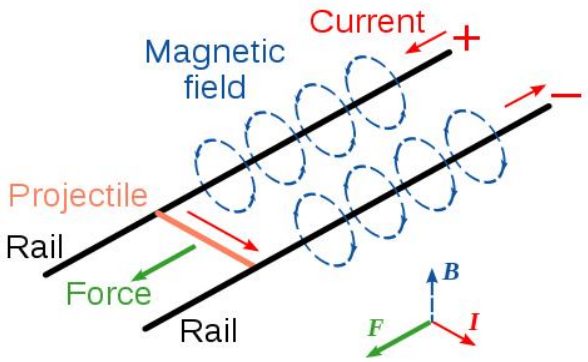

Fig.1 Rail gun design (*Railgun*, 2011)

Because this system is in an advanced stage of development and the results obtained are good, it was used like a possible solution to replace the steam catapults on US carriers. This technology proved that it is capable to accelerate an F18 airplane to the takeoff speed on the same length like the steam catapult.

Despite these achievements the railgun technology has a few drawbacks. The main drawback is the sliding contact between armature and rails. Because of this the rails must be replaced after a certain number of launches. Also because the rail is like a straight conductor a very high current is necessary to produce the desirable magnetic flux density B. As a result the power source should be able to provide a large amount of energy. Taking into consideration these drawbacks this technology is not suitable yet to launch UAVs but it can do it. So in order to use an electromagnetic launch system to launch UAVs another approach should be taken into consideration. This new approach should eliminate the sliding contacts and use less energy. To do this, such a system should be based on induction and magnetic flux density B should be created by a coil.

Based on this observation I have developed a new coilgun. This design is an improvement of an older, well known design like "Thomson Jumping Ring" adapted to launch projectiles. This approach solves most of issues related with the railgun system presented above:

1) The magnetic flux densities B is created by a coil and a magnetic circuit made by soft magnetic materials;

2) The current necessary to produce desirable magnetic flux densities B is less than in the case of the railgun design;

3) The armature is a ring made of aluminum and the UAVs can be attached by ring.

4) The current is induced into the ring so there are not contacts between the armature and coil or magnetic circuits;

5) The Lorentz force produced is only in axial direction and it is possible to use all the available energy to accelerate the ring.

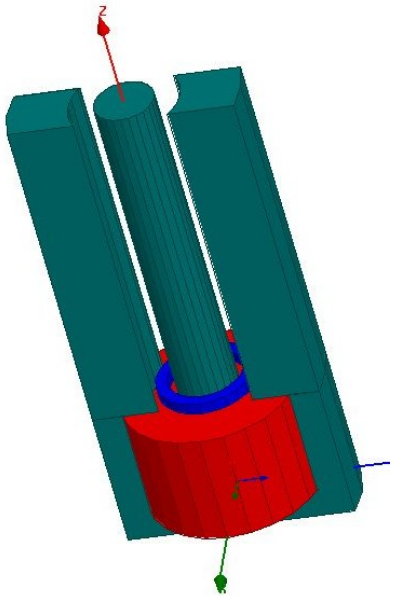

Fig.2 "E-shaped" coilgun design

In Gherman *et al.* (2011:725-729) I have demonstrated the superiority of "E-shaped" design compared with "Thomson Jumping

Ring" design. Despite the fact that this design is still under development, it has demonstrated the possibility to produce enough force to launch an UAV. This paper presents this design and the results obtained under laboratory conditions.

2. THE "E-SHAPED" DESIGN THEORY

This device is based on two fundamental laws: the Faraday law (induction) and Lorentz law (force).

$$\varepsilon = -\frac{d\varphi}{dt} \tag{2}$$

If there is N number of turns in the coil with the same amount of flux flowing through it, hence:

$$\varepsilon = -N\frac{d\varphi}{dt} \tag{3}$$

where: N – number of turns of wire in coil.

Lorentz's force is produced by a current carrying conductor (in this case the ring) present in a uniform magnetic field of flux density B (in this case into the airgap between columns). Dependent upon the direction of the surrounding magnetic field, the force induced is given by (in this case in axial direction repulsive sense):

$$F = i(l X B) \tag{4}$$

where: i – represents the current flow in the conductor; *l* – length of wire, with direction of *l* defined to be in the direction of current flow; B – magnetic field density

The goal is to create an electromagnetic launch system based on the "E-shaped" design which produces a Lorentz force at a maximum possible value under certain condition in order to achieve a specific muzzle velocity necessary to launch different UAVs with different masses.

First, I chose the shape of armature circular because *l* is maximum in the case of a circumscribed circle of a square. Compared with a square it can be written:

$$\frac{\pi r}{2} > r\sqrt{2} \tag{5}$$

where: r - the radius of the circle.

I calculated the dimensions of the magnetic circuits in order to allow the saturation only inside the coil (the saturation cannot be avoided). I calculated the air gap at a minimum possible to allow the movement of the ring without any friction. The dimensions of the "E-shaped" launcher are:

1) coil height H_c=58 mm; inner diameter d_c=40 mm; outer diameter D_c=60 mm; number of turns N=300; winding made of cooper wire.

2) ring height H_r=5 mm; inner diameter d_r=40 mm; outer diameter D_r=50 mm; made of aluminum; mass $m_r = 10 \cdot 10^{-3}$ kg.

3) the coil is powered by a voltage source of 240 V/ 50 Hz.

Because magnetic flux density B is a function of linkage flux Φ_1 and the induced current inside the ring is a function of speed variation of a fraction of linkage flux, mutual coupled flux, $\Phi_M\left(\frac{d\Phi_M}{dt}\right)$ a maximum linkage flux must be created in order to achieve a maximum force.

First, let us consider the device without the ring. The coil is powered by a sinusoidal voltage.

$$U_{1m}\sin(\omega t + \alpha_0) = R_c i_c + N\frac{d\varphi_c}{dt} \tag{6}$$

Where: U_{1m} – maximum value of source voltage; α_c – phase angle; R_c – electrical resistance of coil wire; i_c – intensity of current in coil wire; N – number of turns in coil; φ_c – magnetic flux created by coil.

For the limit case when $R_c = 0$ it can be written:

$$U_{1m}\sin(\omega t + \alpha_0) = N\frac{d\varphi_c}{dt} \tag{7}$$

The solution of (7) is:

$$\varphi_c = -\frac{U_{1m}}{N\omega}\cos(\omega t + \alpha_0) + C \tag{8}$$

If considered at t=0 $\varphi_c = 0$ then:

$$C = \Phi_{cm}\cos\alpha_0 \tag{9}$$

So, the expression of magnetic flux can be written:

$$\varphi_c = -\Phi_{cm}\cos(\omega t + \alpha_0) + \Phi_{cm}\cos\alpha_0 \tag{10}$$

Where the first term from the right side is the ac component and the second term is the dc component. For us the most favorable

situation is at $\alpha_0 = 0^0$ or $\alpha_0 = 180^0$ degrees when:

$$\Phi_c = 2\Phi_{cm} \quad (11)$$

For a given voltage, the maximum magnetic flux is created in transient regime if the electrical resistance of the coil is zero and the coil is fired at 0 or 180 degrees. Under these conditions, the transient regime becomes steady state. Now let us consider the device with the ring in a static position. The coil is powered by the same sinusoidal voltage at 0 degree phase. The following system of equation can be written:

$$R_c i_c - u_1 = -L_c \frac{di_c}{dt} + M\frac{di_r}{dt} \quad (12)$$

$$R_r i_r + 0 = -L_r \frac{di_r}{dt} + M\frac{di_c}{dt} \quad (13)$$

where: L_c – coil inductance; L_r – ring inductance; M – mutual inductance.

In order to find out the expression of ring current, let us assume $R_c = 0$ and $R_r = 0$. The system of equation becomes:

$$u_1 = L_c \frac{di_c}{dt} - M\frac{di_r}{dt} \quad (14)$$

$$L_r \frac{di_r}{dt} = M\frac{di_c}{dt} \quad (15)$$

and

$$\frac{di_r}{dt} = \frac{M}{L_c L_r - M^2} u_1 \quad (16)$$

The induced current in the ring is:

$$i_r = \int di_r = \int \frac{M}{L_c L_r - M^2} U_{1m} \sin \omega t \, dt \quad (17)$$

$$i_r = \frac{M}{L_c L_r - M^2} \frac{U_{1m}}{\omega} \sin\left(\omega t - \frac{\pi}{2}\right) \quad (18)$$

$$i_r = -\frac{M}{L_c L_r - M^2} \frac{U_{1m}}{\omega} \cos \omega t \quad (19)$$

The inductance of the coil (L_c) and the inductance of the ring (L_r) were assumed as constant. In fact, after the coil is fired, the core inside the coil is saturated and both inductances drop rapidly to a constant value. In order to find out the magnetic flux density inside the air gap (B_g), the following assumption should be made:

1) The magnetic flux density inside the air gap is uniformly distributed;

2) No fringe flux at the end of the air gap.

$$R_c i_c - u_1 = -L_c \frac{di_c}{dt} + M\frac{di_r}{dt} \quad (20)$$

Because the $R_c = 0$ assumption it is still valid:

$$u_1 = N\frac{d\varphi_c}{dt} - N\frac{d\varphi_r}{dt} \quad (21)$$

$$u_1 = N\left(\frac{d\varphi_c}{dt} - \frac{d\varphi_r}{dt}\right) \quad (22)$$

$$\frac{d\varphi_c}{dt} - \frac{d\varphi_r}{dt} = \frac{d\varphi_l}{dt} \quad (23)$$

$$u_1 = N\frac{d\varphi_l}{dt} \quad (24)$$

$$\varphi_l = \int d\varphi_l = \int \frac{U_{1m}}{N} \sin \omega t \, dt \quad (25)$$

$$\varphi_l = -\frac{U_{1m}}{N\omega} \sin\left(\omega t - \frac{\pi}{2}\right) \quad (26)$$

$$\varphi_l = -\frac{U_{1m}}{N\omega} \cos \omega t \quad (27)$$

All the magnetic flux lines are split into two by the columns, and the magnetic flux density inside one air gap becomes:

$$\frac{\varphi_l}{2} = B_g A_g \quad (28)$$

$$B_g = \frac{\varphi_l}{2A_g} = \frac{\varphi_l}{2\frac{\pi r}{2} h_E} \quad (29)$$

$$B_g = -\frac{U_{1m}}{N\omega\pi r h_E} \cos \omega t \quad (30)$$

From equations 4, 19, 30 and because the ring has two parts inside air gaps, the total Lorentz force acting on ring is:

$$F = 2F_g \quad (31)$$

$$F = 2\frac{\pi r}{2}\left(-\frac{M}{L_c L_r - M^2}\frac{U_{1m}}{\omega}\cos \omega t\right) \cdot \left(-\frac{U_{1m}}{N\omega\pi r h_E}\cos \omega t\right) \quad (32)$$

$$F = \frac{M}{L_c L_r - M^2}\frac{U^2_{1m}}{N h_E \omega^2}\cos^2 \omega t \quad (33)$$

$$F = \frac{M}{L_c L_r - M^2}\frac{N}{h_E}\Phi^2_{1m}\cos^2 \omega t \quad (34)$$

But the mutual inductance M depends on the distance between the coil and the ring, and the dimensions of the coil and ring. By changing these dimensions, the mutual inductance will change. As a result, mutual inductance M can be expressed as a function of coupling coefficient k where $0 \le k < 1$.

$$M = k\sqrt{L_c L_r} \quad (35)$$

The equation of Lorentz force acting on ring becomes:

$$F = \frac{k\sqrt{L_c L_r}}{L_c L_r - k^2 L_c L_r} \frac{N}{h_E} \Phi_{1m}^2 \cos^2 \omega t \quad (36)$$

$$F = \frac{k}{1 - k^2 l_r} \frac{N}{h_E \sqrt{L_c L_r}} \Phi_{1m}^2 \cos^2 \omega t \quad (37)$$

This expression of force is a good approximation when based on assumptions made.

3. SIMULATION

In order to test the theoretical results, I have used an interactive software package based on the finite element method (FEM) to analyze, solve three-dimensional electro-magnetic field problems and simulate E-shaped design's behaviors. First, I built a physical model with the same dimensions already presented. I conducted a lot of experiments in order to determine the behavior of this device. After that, I created a computer model calibrated to reproduce the behavior of the physical model with errors below 1%.

In this section only the results of the simulation will be presented. The main objective of all simulation was to establish how the maximum speed of ring varies based on the ring's mass and the source voltage. The mass of the ring was considered the mass of the entire ensemble of ring-UAV and the drag forces caused by air friction were not taken into consideration. In order to obtain the maximum force, the coil is fired in all the simulations at 180 degrees. The results of these simulations are presented in the following graphs. First the behavior of the "E-shaped" device was simulated under laboratory conditions like the physical model.

1) The flux linkage and force are simulated under the same conditions like the physical model in laboratory.

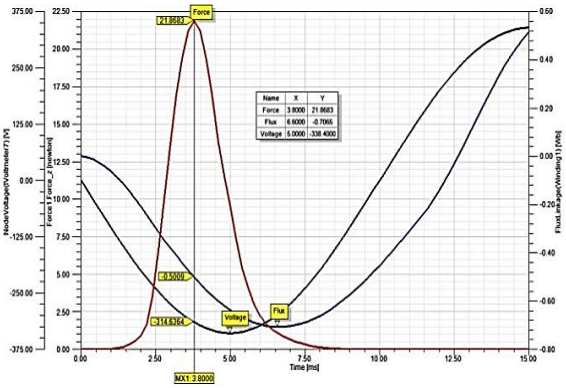

Fig.3 Force and flux linkage under laboratory conditions

The force achieves the maximum value F=21.86 N at 3.8 ms because the ring starts to move and, as a result, the coupling coefficient is decreases in value. Linkage flux lags behind the voltage with 28.8 degrees. The minimum value of the flux is $\Phi_1 = -0.7066$ Wb but the force achieves its maximum at $\Phi_1 = -0.5009$ Wb. Not all the energy is used to create force. If the ring is kept in place for 2.8 more ms, the entire available energy will be used. These data will be used for comparison purposes with further simulation data. By increasing the mass of the ring the force acting on the ring will increase but the speed of ring will decrease.

2) The variation of the Lorentz force when the mass of the ring varies with values from 5 to 100 with step 5 grams and from 100 to 400 with step 100 grams.

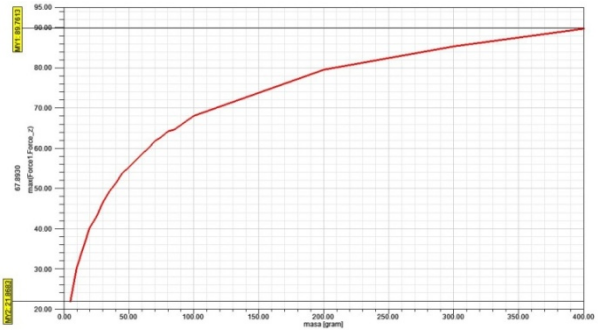

Fig.4 The variation of the maximum value of the Lorentz force [N] for different values of the ring mass

Because the mass of the ring is increased the time when the ring remains into the most favorable position (close to coil) is also increased and as a result the force is increased up to the point where the flux linkage achieves its minimum in our case.

The variation of the ring speed when the mass of the ring varies with values from 5 to 100 with step 5 grams and from 1to 400 with step 100 grams. According to Fig. 5 graph, even if the force is increased, the muzzle speed of the ring decreases. In order to increase the speed of ring, the mass of the ring is kept constant (10 grams) and the RMS value of source voltage is increased with values from 120 to 1200 V with step 120 V.

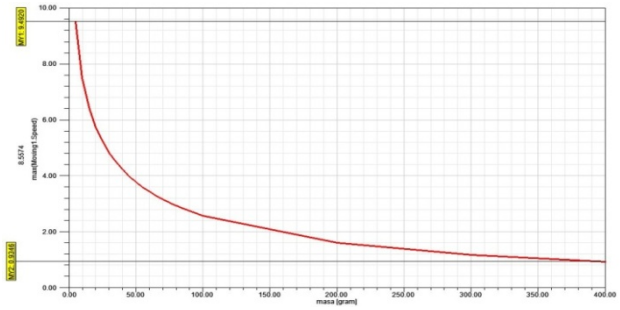

Fig.5 The variation of the maximum value of ring speed [m/s] for different values of ring mass

3) The variation of the ring speed for a variation of source voltage.

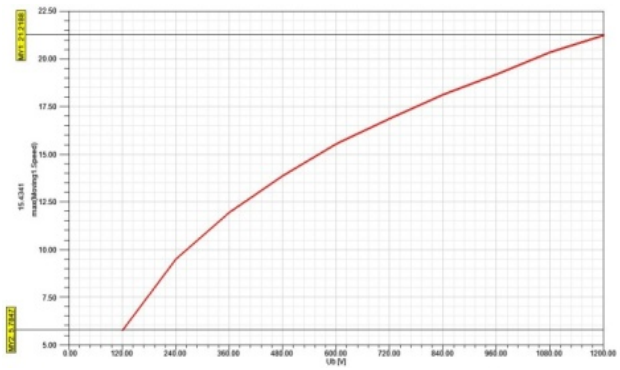

Fig.6 Ring speed variation [m/s] for different RMS values voltage [V]

When the voltage is increased 10 times the speed of the ring is increased only 3.66 times. The reason for this behavior will be clear if we study the variation in time of force with power voltage. The next graph displays this variation.

4) The time variation of force for different RMS values of voltage.

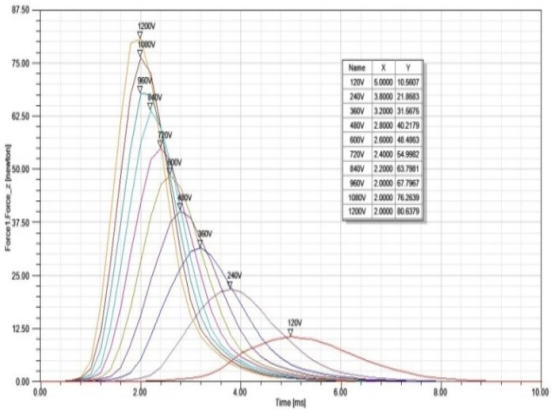

Fig.7 Force acting on the ring function of time

When the voltage value is increased 10 times, the force value is increased 7.63 times. The moment of time when the force achieves its maximum decrease, from 5 ms to 2 ms, and this means that not all the available energy is used. If the power voltage increases more and more, the device will be less efficient despite the fact that the force will increase. In order to find out the maximum value of the force for a certain available energy, we should keep the ring static.

5) The force variation for different RMS values of voltage when the ring is kept static.

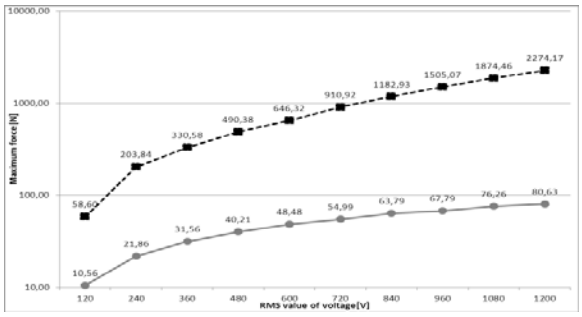

Fig.8 The maximum force acting on the ring

If we manage to keep the ring in initial position until the linkage flux achieves its minimum, then the force acting on the ring will be a maximum value and, as a result, the speed will be at maximum value. Fig. 8 displays a comparison between the maximum force acting on the ring when the ring can move freely (gray chart) and the maximum

force acting on the ring, when the ring is static (black chart). The vertical axis is logarithmic base 10. But maybe even under these conditions the force is not strong enough to launch an UAV. The force value can be increased by reducing the electrical resistance of the coil and ring. In the theory section of this paper the equation of force was calculated when $R_c = 0$ and $R_r = 0$. The next graph displays the results of a simulation with $R_c = 0$ and $R_r = 0$ when the ring is kept static in order to find the maximum value of force for a certain value of power voltage (in this case RMS 240V). The variation of force with $R_c = 0$ and $R_r = 0$ for U_1=240V.

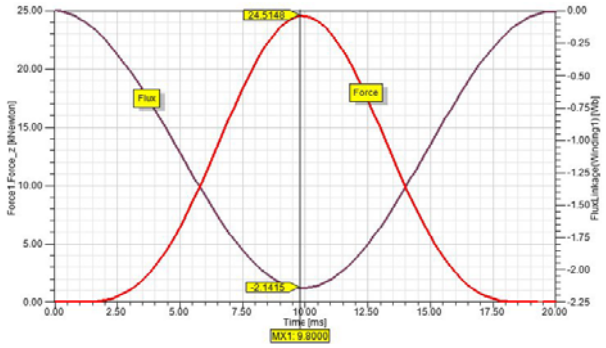

Fig.9 Force and flux linkage when $R_c = 0$ and $R_r = 0$

A tremendous increase in the force value is obtained under these conditions. Also, the flux lags behind the voltage with approximately $\pi/2$ radians according to theory. If the electrical resistance of the coil and ring is reduced to zero, which is technically possible, the maximum force generated can be F=24.5148 kN. So, instead of increasing the voltage, a more efficient way is to reduce the electrical resistance of the coil and ring.

3. CONCLUSIONS

The "E-shaped" design is capable to generate a force strong enough to launch a UAV. Also, the force can be adapted based on the UAV mass and launch speed, and as a result one catapult can be used for different UAVs. An electrical source of power is already available to power other equipment for communication and control link and can be used to power this catapult. This kind of catapult can be integrated into automatic control loop. The dimensions of this catapult are less than those of the catapult currently used. Further research should be made although the electromagnetic launch systems have proved their capability to accelerate projectiles at high speeds.

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SOME REMARKS ON LUPAŞ OPERATORS OF SECOND KIND

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Abstract: *In this paper we give a probabilistic interpretation of Lupaş operators of the second kind and a quantitative estimation of theirs.*

Keywords: *Gamma type operators, Rathore operators, Szasz-Mirakjan operators, Lupaş operator of the second kind, probabilistic interpretation.*

1. INTRODUCTION

The operators of gamma type were studied by many authors (Lupaş, 1967, 1995a, 1995b; Muller, 1967; Rathore, 1973; Miheşan, 2003). In this paper, we consider Rathore operators (1973) which are gamma type operators and are defined by

$$\begin{cases} R_t(f;x) = E\left[f\left(\frac{U_{t\,x}}{t}\right)\right] = \frac{1}{\Gamma(t\,x)}\int_0^\infty e^{-u}u^{t\,x-1}f\left(\frac{u}{t}\right)du, \\ R_t(f;0) = f(0) \end{cases} \quad t>0,\ x>0 \tag{1}$$

These operators were given for $t=n,\ n\in N$ but they are well- defined for $t>0$, if f is a real measurable function on $[0,\infty)$ for which, the mean value of the random variable $\left|f\left(\frac{U_{t\,x}}{t}\right)\right|$ exists, i.e. $E\left[\left|f\left(\frac{U_{t\,x}}{t}\right)\right|\right]<\infty$, where $\{U_{t\,x}: t\geq 0,\ x\geq 0\}$ is a gamma stochastic process with probability density :

$$\rho_{t\,x}(u) = \begin{cases} \frac{u^{t\,x-1}e^{-u}}{\Gamma(tx)}, & t>0,\ x>0,\ u>0 \\ 0, & t=0,\ x=0,\ u=0 \end{cases} \tag{2}$$

If $U_{t\,x}$ has the probability density $\rho_{t\,x}(u)$ then $V_{t\,x}=\frac{U_{t\,x}}{t}$ has the probability density (Feller, 1966:53)

$$g_{t\,x}(u) = t\rho_{t\,x}(tu) = \frac{t}{\Gamma(t\,x)}e^{-t\,u}(t\,u)^{t\,x-1}, \quad t>0,\ x>0 \tag{3}$$

Indeed, by a change of variable, we have for Rathore operators the representation

$$\begin{cases} R_t(f;x) = E\left[f\left(V_{t\,x}\right)\right] = \frac{1}{\Gamma(t\,x)}\int_0^\infty e^{-t\,u}(t\,u)^{t\,x-1}f(u)du \\ R_t(f;0) = f(0) \end{cases} \tag{4}$$

It is known that, these operators are linear positive operators which preserve the linear functions:

$$\begin{cases} R_t(e_0;x) = e_0(x) = 1 \\ R_t(e_1;x) = e_1(x) = x,\ x\geq 0,\ t>0,\ e_i(x)=x^i,\ i=0,1,2 \\ R_t(e_2;x) = e_2(x) = x^2+\frac{x}{t} \end{cases} \tag{5}$$

and have the same properties as Szasz-Mirakjan operators

$$S_t(f;x) = E\left[f\left(\frac{N_{t\,x}}{t}\right)\right] = e^{-t\,x}\sum_{k=0}^{\infty}\frac{(t\,x)^k}{k!}f\left(\frac{k}{t}\right), \quad x\geq 0,\ t>0 \tag{6}$$

On these operators (6), $\{N_{t\,x}: t\geq 0,\ x\geq 0\}$ is a standard Poisson stochastic process, independent of the gamma process (2) but defined on the same probability space as former and for which $E\left[f\left(\frac{N_{t\,x}}{t}\right)\right]$ represent

the mean value of random variable $\left[f\left(\frac{N_{t\,x}}{t} \right) \right]$.

Now, we consider the Lupaş operators of second kind [4] which are linear and positive operators and preserve the linear functions defined as

$$L_t(f;x) = \begin{cases} 2^{-t\,x} \sum_{k=0}^{\infty} \frac{(t\,x)_k}{2^k\,k!} f\left(\frac{k}{t}\right), & x>0,\ t>0 \\ f(0), & x=0 \end{cases} \quad (7)$$

$f \in C_B[0,\infty)$,

where

$(t\,x)_k = (t\,x)(t\,x+1)(t\,x+2)\ldots(t\,x+k-1)$, $k \in N$, is the k – order rising factorial power of tx,. Some approximation properties of these operators were given in Lupaş, 1995, Agratini, 2000.

Using a gamma first kind transformation (Miheşan, 2003:49-54)

$$\Gamma_p^a(f;x) = \frac{1}{\Gamma(p)} \int_0^{\infty} e^{-t} t^{p-1} f\left(x\left(\frac{t}{p}\right)^a \right) dt, \quad a \in R,\ p>0,\ x>0$$

, is easy to see that, for $a=1$ together with Miheşan (2003:49-54, th.2.4.), Lupas operators can be represented as a combination between Rathore operators (1) and Szasz-Mirakjan operators (6)

$$L_t(f;x) = R_t(S_t)(f;x) \quad (8)$$

With this representation we have

$$L_t(e_i;x) = e_i(x) = x^i,\ i=\overline{0,1}$$

$$L_t(e_2;x) = x^2 + \frac{2x}{t},\ x \geq 0,\ t>0$$

Remark.

$$\begin{cases} L_{r\,t}\left(f(t\,u);\frac{x}{t}\right) = L_r(f;x) \\ L_r\left(f\left(\frac{u}{t}\right);t\,x\right) = L_{r\,t}(f;x) \end{cases}$$

$r>0,\ t>0,\ u>0,\ x \geq 0$.

2. PROBABILISTIC INTERPRETATION OF LUPAŞ OPERATORS OF THE SECOND KIND

In view that, for the kernel of Lupaş operators we obtain randomizing the parameters of Poisson distribution according to gamma distribution (Feller, 1966:52-53) for $t>0,\ x>0$ with (3), that:

$$p_{t,k}(x) = P\left(N_{V_{t\,x}} = k\right) =$$

$$= \frac{t}{\Gamma(t\,x)} \int_0^{\infty} e^{-t\,u} \frac{(t\,u)^k}{k!} e^{-t\,u} (t\,u)^{t\,x-1} du =$$

$$= \frac{t}{k!\Gamma(t\,x)} \int_0^{\infty} e^{-2t\,u} (t\,u)^k (t\,u)^{t\,x-1} du =$$

$$= \frac{t}{k!\Gamma(t\,x)} \int_0^{\infty} e^{-\theta} \frac{\theta^{t\,x+k-1}}{2^{t\,x+k}} d\theta = \frac{\Gamma(t\,x+k)}{k!2^{t\,x+k}\Gamma(t\,x)} =$$

$$= \binom{t\,x+k+1}{k} \frac{1}{2^{t\,x+k}}$$

So the operator $L_t(f;x) = E\left[f\left(\frac{N_{V_{t\,x}}}{t} \right) \right]$ is the mean value of the random variable $f\left(\frac{N_{V_{t\,x}}}{t} \right)$, for any measurable function f for which $E\left[\left| f\left(\frac{N_{V_{t\,x}}}{t} \right) \right| \right] < \infty$.

An interesting result, which was obtained by De la Cal & Carcamo (2007:1106-1115) for the operators of Bernstein – type which preserves the affine functions, namely "centered Bernstein-type operators", can be used for these Lupaş operators of the second kind :

Theorem 2.1. (De la Cal & Carcamo, 2007:1106-1115). If $L_1 = L_2 \circ L_3$, where L_1, L_2, L_3 are centered Bernstein-type operators $\begin{array}{l} (Lf(x) = E[f(Y_x)],\ x \in I \subset R, \\ Le_1(x) = E[Y_x] = x) \end{array}$ on the same interval I and if $\mathcal{L}_{cx}$ is the set of all convex functions in the domain of the three operators, then $L_1 f \geq L_2 f,\ f \in \mathcal{L}_{cx}$. If in addition L_3 preserves convexity, then $L_1 f \geq L_2 f \vee L_3 f,\ f \in \mathcal{L}_{cx}$ where $f \vee g$ denotes the maximum of f and g.

Indeed, using the representation (7) for Lupaş operators of the second kind, we have

for $t > 0$, $L_t f \geq R_t f$, $f \in \mathcal{L}_{cx}[0, \infty)$ and $L_t f \geq R_t f \vee S_t f$, $f \in \mathcal{L}_{cx}[0, \infty)$, where S_t are Szasz-Mirakjan operators (6), R_t are Rathore operators (1) and L_t are Lupaş operators of the second kind (7).

An estimation of the difference $|L_t(f;x) - R_t(f;x)|$ is given next.

3. A QUANTITATIVE ESTIMATION

Theorem 3.1. If $f \in C_B[0,\infty)$, then for every $x \in [0, \infty)$ and $t > 0$ we have

$$|L_t(f;x) - R_t(f;x)| \leq \left(1 + \delta^{-2}\frac{x}{t}\right)\varpi_f(\delta).$$

Proof. Using an estimation of Shisha & Mond (1968) with the modulus of continuity of f relative to Szasz-Mirakjan operators (6) $|S_t(f;x) - f(x)| \leq \left(1 + \delta^{-2}\frac{x}{t}\right)\varpi_f(\delta)$, we have with (8) that

$$|L_t(f;x) - R_t(f;x)| = |R_t(S_t(f;x)) - R_t(f;x)| \leq$$

$$\leq \frac{1}{\Gamma(tx)}\int_0^\infty e^{-\theta}\theta^{tx-1}\left|S_t f\left(\frac{\theta}{t}\right) - f\left(\frac{\theta}{t}\right)\right|d\theta \leq$$

$$\leq \frac{1}{\Gamma(tx)}\int_0^\infty e^{-\theta}\theta^{tx-1}\left(1 + \delta^{-2}\frac{\theta}{t^2}\right)\varpi_f(\delta)d\theta \leq$$

$$\leq \left(1 + \delta^{-2}\frac{\theta}{t^2}\right)\varpi_f(\delta)$$

So, we obtain the same estimation for the difference

$$|L_t(f;x) - R_t(f;x)| = |R_t(S_t(f;x)) - R_t(f;x)|$$

as for the difference $|S_t(f;x) - f(x)|$.

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MODELING THE RELIABILITY OF C4ISR SYSTEMS HARDWARE/SOFTWARE COMPONENTS USING AN IMPROVED MARKOV MODEL

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***Abstract**: An important problem for C4ISR systems is choosing the right reliability modeling method. Because C4ISR system's components are redundant and configurable, both at the level of functional entities and inside them, the resulting reliability models are complex. The redundancy adds supplementary complexity elements associated with the response capability of hardware and software to the failure events. A complicated issue is to choose the right degree of detail. Too many details could result in loosing the existing hardware and software interdependencies of the redundant structures within the model. In this paper I am proposing an enhanced theoretical calculus method of the reliability indicators based on an improved Markov model, and its application to the reliability modeling of C4ISR systems hardware/software components. A detailed application of the enhanced method is presented in paragraph 3. The reliability modeling of C4ISR systems' components may use status diagrams recommended for redundant hardware/software structures. Nevertheless, this solution could be hard to be applied, considering the C4ISR system's complexity, its number of possible states, and the large number of redundant elements and parameters of interest. Therefore I approach the study by adapting the status diagrams representation, through a combination of system's status tables with transitions states graphs, using also the matrix representation of fluency graphs.*

***Keywords**: hardware/software systems, reliability analysis, dynamic models, Markov model.*

1. INTRODUCTION

C4ISR systems are basically computerized networks that include sensors, communication nodes and command centers, each of it performing special / essential tasks for good functioning of the entire system. From a reliability point of view it represents a serial reliability structure made of independent components, each with its own functional restore capabilities - ultimately a system with multiple recovery capacity.

Each of the system's components could have a more or less complex redundant structure, but we should consider it as a whole. Consequently the system could be considered a minimal serial structure with multiple recovery capacity. The considerations regarding the reliability modeling of combined hardware/software systems had as a starting point the Rome Laboratory's *"System and Software Reliability Assurance Notebook"* (Lakey & Neufelder, 1997). The document offers a methodology for the reliability assurance study of systems composed both from hardware and software elements, designed for estimation and prediction of its reliability. The methodology concentrates on software configuration reliability prediction and estimation methods and on the techniques used to correlate hardware and software reliability metrics with system's general parameters. The reliability model proposed by Rome Laboratory consists of state transition diagrams that partially respond to the issues related with the complexity of a C4ISR system and its components. Even if the model contains restrictive hypotheses, the reliability

indicators of the system's components calculus can utilize a large scope of methods. Consequently, in the first part of the paper I am proposing an enhanced theoretical calculus method of the reliability indicators based on an improved Markov model, while in the second part I apply it to the reliability modeling of C4ISR systems hardware/software components.

A complicated issue was to choose the right degree of detail. Too many details could result in loosing the existing hardware and software interdependencies of the redundant structures within the model. Because the C4ISR system's components are redundant and configurable, both at the level of functional entities and inside them, the resulting reliability models are complex. The redundancy adds supplementary complexity elements associated with the response capability of hardware and software to the failure events. For the reliability modeling of C4ISR systems' components I used one of the general methods applicable to complex redundant structures, based on hardware, software and hardware/software elements - the Markov processes method. A detailed application of the enhanced method will be presented in paragraph 3. The reliability modeling of C4ISR systems' components may use the status diagrams recommended for redundant hardware/software structures.

Nevertheless, this solution could be hard to be applied, considering the C4ISR system's complexity, its number of possible states, the large number of redundant elements and parameters of interest (for only two identical elements and five parameters of interest it results 32 possible states). Therefore I approach the study by adapting the status diagrams representation proposed by Rome Laboratory, through a combination of system's status tables with transitions states graphs, using also the matrix representation of fluency graphs.

2. MODELING THE SYSTEM'S COMPONENTS RELIABILITY USING AN IMPROVED MARKOV METHOD

The reliability modeling process of system's components through Markov processes method uses a dynamic system model (Ghi□ă & Ionescu, 1996:55-56). These dynamic models follow the temporal evolution of the system's state and are defined using characteristic states. A system's state represents synthetic information regarding the condition of its elements and could have only two possible values: an operational state or a failure state. Assuming n is the number of elements of the system and X the set of system's states $X = \{x_i ; i = 1,2,..., N\}$, in which $N \le 2^n$, it results that X is a finite set with elements defined as $x_i = (x_{i1}, x_{i2}, ..., x_{in})$ and $x_{ik} = 0$ when element k is in an operational state and $x_{ik} = 1$ when element k is in a failure state, $k = 1,2,...,n$ for state x_i.

Due to the failure and recovery of component elements, the current state of the system at t moment, noted $\upsilon(t), t \in T = [0, \infty]$ is a random process. Mathematically speaking, this process has the following characteristics: evolves in a continuum time; has a finite set of states X and has a poissonian character (in a very short time interval it could be distinguished maximum one change of state).

The subset $S \subset X$ represents the set of failure states and the complementary subset $\overline{S} = X - S$ represents the set of operational states. The model allows to determine the time duration when the process $\upsilon(t)$ will remain in S or $\overline{S}$. A random process with the above mentioned characteristics could be modeled as a graph $G = (X, \Lambda)$, where X represents the nodes set (identified with the states set) and Λ represents the set of arches that connect the nodes.

Each poissonian process can be associated with a graph following certain rules (Lakey & Neufelder, 1997): the nodes identify the states; nodes are connected one to each other through arches if there is a possibility to move from one state to other in a single step; on arches is specified the reliability or maintainability parameter that determines the transition, λ_i for failures and μ_i for recoveries.

The resulting graph is named States Transition Graph. The Markov processes

method is based on a dynamic model that follows the evolution in time of the current system's state $\upsilon(t)$. On each moment t, $\upsilon(t)$ is a random discrete variable. Let's note $p_k(t) = P(\upsilon(t) = x_k)$. The probabilities $p_k(t)$ are absolute probabilities with fundamental properties:

$$1)\ \mathrm{p_k(t) \geq 0}$$
$$2)\ \sum_{k=1}^{N} \mathrm{p_k(t) = 1} \quad (1)$$

Poissonian processes theory shows that those absolute probabilities are solutions for a differential equation system that could be determined by applying Venttel rule to the state transition graph.

Derivative $p_k^{'}(t)$ is equal with the algebraic sum of the products between the starting nodes' probabilities and the corresponding transition intensities of the arches leaving those nodes, calculated for all incoming and outgoing arches belonging to node x_k. In the sum, the terms entering x_k are positive $(+)$, while the exiting ones are negative $(-)$.

Let's note Λ_k^{+} the set of arches entering node k, Λ_k^{-} the set of arches exiting node k and λ_{ij} the transition intensity of the arch that exit node i and enter node j. The following equations system results:

$$\mathrm{p_k^{'}(t) = \sum_{\lambda_{jk} \in \Lambda_k^{+}} p_j(t)\lambda_{jk} - \sum_{\lambda_{kj} \in \Lambda_k^{-}} p_k(t)\lambda_{kj},\ k = 1, 2, ..., N} \quad (2)$$

The system of equation is integrated for the initial condition (1):

$$\mathrm{p_1(0) = 1}$$
$$\mathrm{p_k(0) = 0,\ k \neq 1.}$$

where $x_1 = (0,0,...,0)$ is the state in which all elements are operational.

The main reliability indicator of a system calculated through this method is the probability function $P(t)$. Having $\bar{S} \subset X$ - the set of failure states and S - the set of operational states, it results:

$$\mathrm{P(t) = \sum_{k \in \bar{S}} p_k(t)} \quad (3)$$

In order to calculate this probability it is necessary to eliminate from the state transitions graph all the transitions from $\bar{S}$ to S. If the graph maintains his structure complete, through the same relation we can obtain the system's availability coefficient $K_D(t)$ or $D(t)$. It should be mentioned that when we apply the method to C4ISR systems, the following indicators must be calculated:

$$\mathrm{F_{def(i)}(t) = 1 - P(t)} \quad (4)$$

and

$$\mathrm{T_{def(i)} = \int_0^{\infty} P(t)dt.} \quad (5)$$

The advantage of the method is the transformation of system's reliability calculus to standard mathematical problems. It applies both irreparable and repairable systems, when failure and restore follow an exponential distribution law. The method implies a great volume of calculations which exponentially increases with the system's states number.

Applying the method to C4ISR systems needs data regarding the software failure rates (operating systems of applicative software) and hardware failure rates. The operating systems' failure rates could be obtained from the manufacturers, usually as number of failures in a specific time interval.

Those failure rates are calculated taking in consideration the time of the system, because the operating system is active when the computer is on and ready for processing. To obtain the compatibility with hardware failure rates the measuring unit of the obtained failure rates must be numbers of failures per hour.

Regarding the failures of reusable software code, that information could be obtained from the applications in which the software was used before. The information is relevant only if the operational profile of the previous designed application is approximately the same with the current application and in this case the historical data regarding failure rates could be used.

In comparison with Rome Laboratory's approach, reliability analysis with dynamic models has *several advantages*, such as:

- systematize the states transition graph, because the arches connect only the states that differ one from each other with a single defect;
- offers a systematization surplus, the status diagrams (states number) are organized tacking in consideration the number of existing system's failures;
- offers the possibility to represent the states transition graph using fluency graphs methods (incident / adjacent matrix) and
- offers a complete methodology for the calculus of reliability indicators.

3. IMPLEMENTATION OF THE RELIABILITY MODELING METHOD TO C4ISR SYSTEMS HARDWARE/ SOFTWARE COMPONENTS. CASE STUDY

The objective of the paragraph is to detail the implementation of the improved Markov methodology presented before to the reliability modeling of C4ISR systems. For this purpose we will use the reliability model of a simple redundant structure. Figure 1 depicts the simplified state diagram of a hardware/software structure with two identical elements (at least one must be in an operational state). To model the system's states, I took into account five parameters: status of the basic hardware platform (operational or faulty); status of the basic software (operational or faulty); status of the backup hardware platform; status of the backup software and status of the operation's recovery.

System's operation recovery may be successful or fail. Success is defined by: the structure switched on backup equipments, as a result of a basic hardware or software failure; a failure to the backup equipment has been detected, and it has been repaired.

Because there are five parameters of interest, each with two possible states, it results a total of 32 states. Nevertheless, in practice, some of the states could not exist (e.g. software could not be operational on a faulty hardware platform) and others are functionally equivalent.

The following notations were used: # - state number; T - type (success or failure); A - basic hardware; B - basic software; C - backup hardware; D - backup software; E – recovery, where A, B, C, D values are O = operational; F = failure; - = not applicable; E values are S= successful recovery or failure on backup equipment detected; F - unsuccessful recovery or latent failure on backup equipment.

The structure described has a total number of states equal with 10, as shown in table 1.

Table 1. Description of system's states

State no.	State type	Explanations
0	Success	Complete operational structure
1	Success	A software failure was detected in the backup equipment that was repaired
2	Success	The system is operational, with a latent software failure in the backup equipments
3	Success	The system is operational, with a detected hardware failure in the backup equipments
4	Success	The system is operational, with a latent hardware failure in the backup equipments
5	Failure	Failure on basic software, switching on backup hardware and software equipments failed; an intervention is necessary for system's recovery on either of hardware platforms
6	Failure	Failure on basic hardware and the recovery process failed; it occurred an incorrect detection, isolation or incomplete recovery; a manual intervention is required for system's recovery on backup equipments
7	Failure	Software failures occurred on both basic and backup equipments
8	Failure	Basic hardware and backup software failed; recovery is not possible without a manual intervention
9	Failure	Both hardware equipments failed

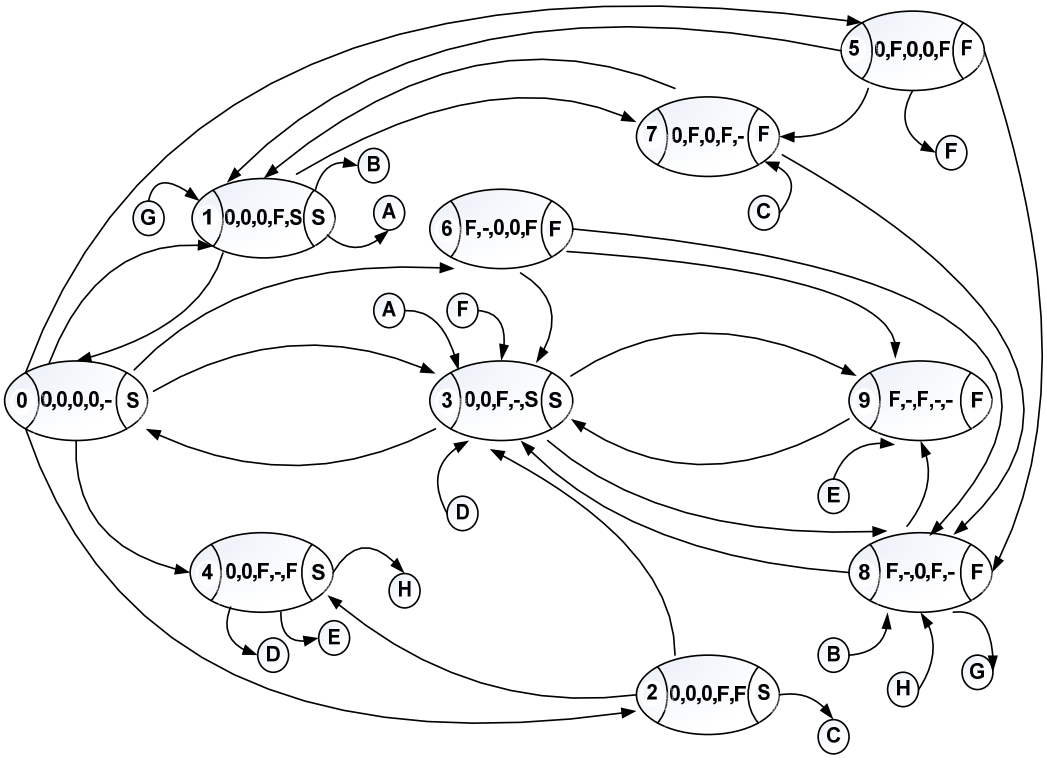

Fig.1. The simplified state diagram

Transitions from one state to another take place due to hardware (software) failures or as a consequence of recovery process. Usage of state diagrams that model hardware and software failures permit a precise redundant systems' reliability estimation.

Comparing these two approaches, it result some *observations*, such as:

1. The methodology for modeling the system's components reliability using an improved Markov method (presented in paragraph 2) is a applicable to every type of system (hardware, software or hardware/software) and allow the calculus of reliability indicators relevant for C4ISR systems (e.g. ($P(t)$ or $D(t)$, respectively D_S). The main problem related with its implementation is determined by the state transition graph's implementation manner and especially by the states' transition rates.

2. The states diagram presenting manner (figure 1) is similar with the states representation manner from paragraph 1, completed with specific aspects regarding the recovery of hardware/software system's components. Moreover, it introduces also state diagram systematization, presenting a list of states' transition rates (table 3).

3. The implementation of the reliability modeling method is conditioned by the knowledge of numeric values of probabilities such as C_{dSW}, C_{dHW}, C_{iSW}, C_{iHW}, C_{rSW} and C_{rHW} that must be inferred analytically and/or statistically,

where:

- *Fault detection coverage* (C_d) - is the probability of detecting a fault given that a fault has occurred;
- *Fault isolation coverage* (C_i) - is the probability that a fault will be correctly isolated to the recoverable interface (level at which redundancy is available) given that a fault has occurred and been detected and
- *Fault recovery coverage* (C_r) - is the probability that the redundant structure will recover system services given that a fault has occurred, been detected, and correctly isolated.

To facilitate the implementation, it results three new architectural products, specific to the C4ISR system's Reliability Vision (Vasilescu, 2010:198-200), as follows: **RV-6** -

Description of states (table 2); **RV-7** - *The matrix of states' transition rates* (table 3); **RV-8** - *The list of states' transition rates* (table 4).

Table 2 derives from the simplified state diagram (fig.1).

Table 2. Description of states

Composition Index	A	B	C	D	E	Meaning
0	O	O	O	O	-	S
1	O	O	O	F	S	S
2	O	O	O	F	F	S
3	O	O	F	-	S	S
4	O	O	F	-	F	S
5	O	F	O	O	F	F
6	F	-	O	O	F	F
7	O	F	O	F	-	F
8	F	O	O	F	-	F
9	F	-	F	-	-	F

Through the table we divide the states in S and F, their index starting with working states (S) - state $(O, O, O, O, -)$, continuing step by step with every change of state generated by its corresponding elements. In this representation, all failure states (F) are shown in the lower part of the table.

Table 3. The matrix of states' transition rates

Index	0	1	2	3	4
0		(0, 1)	(0, 2)	(0, 3)	(0, 4)
1	(1, 0)			(1, 3)	
2				(2, 3)	(2, 4)
3	(3, 0)				
4				(4, 3)	
5		(5, 1)		(5, 3)	
6				(6, 3)	
7		(7, 1)			
8		(8, 1)		(8, 3)	
9				(9, 3)	

Index	5	6	7	8	9
0	(0, 5)	(0, 6)			
1			(1, 7)	(1, 8)	
2			(2, 7)	(2, 8)	
3				(3, 8)	(3, 9)
4				(4, 8)	(4, 9)
5			(5, 7)	(5, 8)	
6				(6, 8)	(6, 9)
7				(7, 8)	
8					(8, 9)
9					

In this matrix (Λ), the lines contain states' transition rates corresponding to outgoing arches form the node and columns contain states' transition rates corresponding to incoming arches form the node (essential information for the associated differential equation system).

Table 4. The list of states' transition rates.

Code	Content
(0, 1)	$\lambda_{SW} * C_{dSW} + \lambda_S * C_{dSW} * C_{iSW} * C_{rSW}$
(0, 2)	$\lambda_{SW}(1 - C_{dSW})$
(0, 3)	$\lambda_{HW} * C_{dHW} + \lambda_H * C_{dHW} * C_{iHW} * C_{rHW}$
(0, 4)	$\lambda_{HW}(1 - C_{dHW})$
(0, 5)	$\lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})$
(0, 6)	$\lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})$
(1, 0)	
(1, 3)	λ_{HW}
(1, 7)	λ_{SW}
(1, 8)	λ_{HW}
(2, 3)	$\lambda_{HW} * C_{dHW}$
(2, 4)	$\lambda_{HW}(1 - C_{dHW})$
(2, 7)	λ_{SW}
(2, 8)	λ_{HW}
(3, 0)	μ_{HW}
(3, 8)	λ_{SW}
(3, 9)	λ_{HW}
(4, 3)	$\lambda_{HW} * C_{dHW}$
(4, 8)	λ_{SW}
(4, 9)	λ_{HW}
(5, 1)	$(Tr_{SW})^{-1}$
(5, 3)	λ_{HW}

Code	Content
(5, 7)	λ_{SW}
(5, 8)	λ_{HW}
(6, 3)	$(Tr_{HW})^{-1}$
(6, 8)	λ_{SW}
(6, 9)	λ_{HW}
(7, 1)	μ_{SW}
(7, 8)	$2\lambda_{HW}$
(8, 1)	μ_{HW}
(8, 3)	μ_{SW}
(8, 9)	λ_{HW}

We also observe that the matrix (Λ) has a cellular format (marked in table 3)

$$\Lambda = \begin{pmatrix} \Lambda_{11} & \Lambda_{12} \\ \Lambda_{21} & \Lambda_{22} \end{pmatrix}, \quad (6)$$

in which Λ_{11} contains transition rates between working states (S), Λ_{12} contains transition rates from working states (S) to failure states (F), Λ_{21} contains transition rates from failure states (F) to working states (S), Λ_{22} contains transition rates between failure states (F). To calculate the availability (D) we use the matrix

$$\Lambda_D = \Lambda \quad (7)$$

and to calculate the reliability (P) we use the matrix

$$\Lambda = \begin{pmatrix} \Lambda_{11} & \Lambda_{12} \\ 0 & \Lambda_{22} \end{pmatrix} \quad (8)$$

in which 0 is the null identical matrix, when the determination methodology of the differential equation system associated with the model is implemented.

It is remarkable that this approach significantly orders (systematizes) the deduction of the differential equation system associated with the model (Gupta, 2011; Lai *et al.*, 2002). Thus to calculate the availability (D) it result the following systems of equations:

$$\begin{cases} p_0' = -[(0,1)+(0,2)+(0,3)+(0,4)+(0,5)+(0,6)]p_0 + (1,0)p_1 + (3,0)p_3 \\ p_1' = (0,1)p_0 - [(1,0)+(1,3)+(1,7)+(1,8)]p_1 + (5,1)p_5 + (7,1)p_7 + (8,1)p_8 \\ p_2' = (0,2)p_0 - [(2,4)+(2,3)+(2,7)]p_2 \\ p_3' = (0,3)p_0 + (1,3)p_1 + (2,3)p_2 - [(3,0)+(3,8)+(3,9)]p_3 + (4,3)p_4 + (5,3)p_5 + (6,3)p_6 + (8,3)p_8 + (9,3)p_9 \\ p_4' = (0,4)p_0 + (2,4)p_2 - [(4,3)+(4,8)+(4,9)]p_4 \\ p_5' = (0,5)p_0 - [(5,1)+(5,3)+(5,7)+(5,8)]p_5 \\ p_6' = (0,6)p_0 - [(6,3)+(6,8)+(6,9)]p_6 \\ p_7' = (1,7)p_1 + (2,7)p_2 + (5,7)p_5 - [(7,1)+(7,8)]p_7 \\ p_8' = (1,8)p_1 + (2,8)p_2 + (3,8)p_3 + (4,8)p_4 + (5,8)p_5 + (6,8)p_6 + (7,8)p_7 - [(8,1)+(8,3)+(8,9)]p_8 \\ p_9' = (3,9)p_3 + (4,9)p_4 + (6,9)p_6 + (8,9)p_8 - (9,3)p_9 \end{cases} \quad (9)$$

while to calculate the reliability (P) it result the following systems of equations:

$$\begin{cases} p_0' = -[(0,1)+(0,2)+(0,3)+(0,4)+(0,5)+(0,6)]p_0 + (1,0)p_1 + (3,0)p_3 \\ p_1' = (0,1)p_0 - [(1,0)+(1,3)+(1,7)+(1,8)]p_1 \\ p_2' = (0,2)p_0 - [(2,4)+(2,3)+(2,7)]p_2 \\ p_3' = (0,3)p_0 + (1,3)p_1 + (2,3)p_2 - [(3,0)+(3,8)+(3,9)]p_3 + (4,3)p_4 \\ p_4' = (0,4)p_0 + (2,4)p_2 - [(4,3)+(4,8)+(4,9)]p_4 \\ p_5' = (0,5)p_0 - [(5,7)+(5,8)]p_5 \\ p_6' = (0,6)p_0 - [(6,8)+(6,9)]p_6 \\ p_7' = (1,7)p_1 + (2,7)p_2 + (5,7)p_5 - (7,8)p_7 \\ p_8' = (1,8)p_1 + (2,8)p_2 + (3,8)p_3 + (4,8)p_4 + (5,8)p_5 + (6,8)p_6 + (7,8)p_7 - (8,9)p_8 \\ p_9' = (3,9)p_3 + (4,9)p_4 + (6,9)p_6 + (8,9)p_8 \end{cases} \quad (10)$$

Replacing the states' transition rates from table 4 in formula (9), it results the system:

$$\begin{cases} p_0' = -(\lambda_{SW} * C_{dSW} + \lambda_{SW} * C_{dSW} * C_{iSW} * C_{rSW})p_0 - \lambda_{SW}(1 - C_{dSW})p_0 - \\ \quad - (\lambda_{HW} * C_{dHW} + \lambda_{HW} * C_{dHW} * C_{iHW} * C_{rHW})p_0 - \lambda_{HW}(1 - C_{dHW})p_0 - \\ \quad - \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 + \mu_{SW}p_1 + \mu_{HW}p_3 \\ p_1' = (\lambda_{SW} * C_{dSW} + \lambda_S * C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\mu_{SW} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_1 + \\ \quad + (Tr_{SW})^{-1} p_5 + \mu_{SW}p_7 + \mu_{HW}p_8 \\ p_2' = \lambda_{SW}(1 - C_{dSW})p_0 - [\lambda_{HW}(1 - C_{dHW}) + \lambda_{HW} * C_{dHW} + \lambda_{SW}]p_2 \\ p_3' = (\lambda_{HW} * C_{dHW} + \lambda_H * C_{dHW} * C_{iHW} * C_{rHW})p_0 + \lambda_{HW}p_1 + (\lambda_{HW} * C_{dHW})p_2 - \\ \quad - [\mu_{HW} + \lambda_{SW} + \lambda_{HW}]p_3 + (\lambda_{HW} * C_{dHW})p_4 + \lambda_{HW}p_5 + (Tr_{HW})^{-1} p_6 + \mu_{SW}p_8 + \mu_{HW}p_9 \\ p_4' = \lambda_{HW}(1 - C_{dHW})p_0 + \lambda_{HW}(1 - C_{dHW})p_2 - [\lambda_{HW} * C_{dHW} + \lambda_{SW} + \lambda_{HW}]p_4 \\ p_5' = \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - [(Tr_{SW})^{-1} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_5 \\ p_6' = \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 - [(Tr_{HW})^{-1} + \lambda_{SW} + \lambda_{HW}]p_6 \\ p_7' = \lambda_{SW}p_1 + \lambda_{SW}p_2 + \lambda_{SW}p_5 - [\mu_{SW} + 2\lambda_{HW}]p_7 \\ p_8' = \lambda_{HW}p_1 + \lambda_{HW}p_2 + \lambda_{SW}p_3 + \lambda_{SW}p_4 + \lambda_{HW}p_5 + \lambda_{SW}p_6 + 2\lambda_{HW}p_7 - [\mu_{HW} + \mu_{SW} + \lambda_{HW}]p_8 \\ p_9' = \lambda_{HW}p_3 + \lambda_{HW}p_4 + \lambda_{HW}p_6 + \lambda_{HW}p_8 - \mu_{HW}p_9 \end{cases} \quad (11)$$

that could be represented in canonical format as:

$$\begin{cases} p_0' = -2(\lambda_{SW} + \lambda_{HW})p_0 + \mu_{SW}p_1 + \mu_{HW}p_3 \\ p_1' = (\lambda_{SW} * C_{dSW} + \lambda_S * C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\mu_{SW} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_1 + (Tr_{SW})^{-1} p_5 + \mu_{SW}p_7 + \mu_{HW}p_8 \\ p_2' = \lambda_{SW}(1 - C_{dSW})p_0 - [\lambda_{HW}(1 - C_{dHW}) + \lambda_{HW} * C_{dHW} + \lambda_{SW}]p_2 \\ p_3' = (\lambda_{HW} * C_{dHW} + \lambda_H * C_{dHW} * C_{iHW} * C_{rHW})p_0 + \lambda_{HW}p_1 + (\lambda_{HW} * C_{dHW})p_2 - \\ \quad - [\mu_{HW} + \lambda_{SW} + \lambda_{HW}]p_3 + (\lambda_{HW} * C_{dHW})p_4 + \lambda_{HW}p_5 + (Tr_{HW})^{-1} p_6 + \mu_{SW}p_8 + \mu_{HW}p_9 \\ p_4' = \lambda_{HW}(1 - C_{dHW})p_0 + \lambda_{HW}(1 - C_{dHW})p_2 - [\lambda_{HW} * C_{dHW} + \lambda_{SW} + \lambda_{HW}]p_4 \\ p_5' = \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - [(Tr_{SW})^{-1} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_5 \\ p_6' = \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 - [(Tr_{HW})^{-1} + \lambda_{SW} + \lambda_{HW}]p_6 \\ p_7' = \lambda_{SW}p_1 + \lambda_{SW}p_2 + \lambda_{SW}p_5 - [\mu_{SW} + 2\lambda_{HW}]p_7 \\ p_8' = \lambda_{HW}p_1 + \lambda_{HW}p_2 + \lambda_{SW}p_3 + \lambda_{SW}p_4 + \lambda_{HW}p_5 + \lambda_{SW}p_6 + 2\lambda_{HW}p_7 - [\mu_{HW} + \mu_{SW} + \lambda_{HW}]p_8 \\ p_9' = \lambda_{HW}p_3 + \lambda_{HW}p_4 + \lambda_{HW}p_6 + \lambda_{HW}p_8 - \mu_{HW}p_9 \end{cases} \quad (12)$$

Also, replacing the states' transition rates from table 4 in formula (10), it results:

$$\begin{cases} p_0' = -(\lambda_{SW} * C_{dSW} + \lambda_{SW} * C_{dSW} * C_{iSW} * C_{rSW})p_0 - \lambda_{SW}(1 - C_{dSW})p_0 - \\ \quad - (\lambda_{HW} * C_{dHW} + \lambda_{HW} * C_{dHW} * C_{iHW} * C_{rHW})p_0 - \lambda_{HW}(1 - C_{dHW})p_0 - \\ \quad - \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 + \mu_{SW}p_1 + \mu_{HW}p_3 \\ p_1' = (\lambda_{SW} * C_{dSW} + \lambda_{SW} * C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\mu_{SW} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_1 \\ p_2' = \lambda_{SW}(1 - C_{dSW})p_0 - [\lambda_{HW}(1 - C_{dHW}) + \lambda_{HW} * C_{dHW} + \lambda_{SW}]p_2 \\ p_3' = (\lambda_{HW} * C_{dHW} + \lambda_{HW} * C_{dHW} * C_{iHW} * C_{rHW})p_0 + \lambda_{HW}p_1 + (\lambda_{HW} * C_{dHW})p_2 - \\ \quad - [\mu_{HW} + \lambda_{SW} + \lambda_{HW}]p_3 + (\lambda_{HW} * C_{dHW})p_4 \\ p_4' = \lambda_{HW}(1 - C_{dHW})p_0 + \lambda_{HW}(1 - C_{dHW})p_2 - [\lambda_{HW} * C_{dHW} + \lambda_{SW} + \lambda_{HW}]p_4 \\ p_5' = \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\lambda_{SW} + \lambda_{HW}]p_5 \\ p_6' = \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 - [\lambda_{SW} + \lambda_{HW}]p_6 \\ p_7' = \lambda_{SW}p_1 + \lambda_{SW}p_2 + \lambda_{SW}p_5 - 2\lambda_{HW}p_7 \\ p_8' = \lambda_{HW}p_1 + \lambda_{HW}p_2 + \lambda_{SW}p_3 + \lambda_{SW}p_4 + \lambda_{HW}p_5 + \lambda_{SW}p_6 + 2\lambda_{HW}p_7 - \lambda_{HW}p_8 \\ p_9' = \lambda_{HW}p_3 + \lambda_{HW}p_4 + \lambda_{HW}p_6 + \lambda_{HW}p_8 \end{cases} \quad (13)$$

The system can be reduced to:

$$\begin{cases} p_0' = -2(\lambda_{SW} + \lambda_{HW})p_0 + \mu_{SW}p_1 + \mu_{HW}p_3 \\ p_1' = (\lambda_{SW} * C_{dSW} + \lambda_{SW} * C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\mu_{SW} + \lambda_{HW} + \lambda_{SW} + \lambda_{HW}]p_1 \\ p_2' = \lambda_{SW}(1 - C_{dSW})p_0 - [\lambda_{HW}(1 - C_{dHW}) + \lambda_{HW} * C_{dHW} + \lambda_{SW}]p_2 \\ p_3' = (\lambda_{HW} * C_{dHW} + \lambda_{HW} * C_{dHW} * C_{iHW} * C_{rHW})p_0 + \lambda_{HW}p_1 + (\lambda_{HW} * C_{dHW})p_2 - \\ \quad - [\mu_{HW} + \lambda_{SW} + \lambda_{HW}]p_3 + (\lambda_{HW} * C_{dHW})p_4 \\ p_4' = \lambda_{HW}(1 - C_{dHW})p_0 + \lambda_{HW}(1 - C_{dHW})p_2 - [\lambda_{HW} * C_{dHW} + \lambda_{SW} + \lambda_{HW}]p_4 \\ p_5' = \lambda_{SW}(1 - C_{dSW} * C_{iSW} * C_{rSW})p_0 - [\lambda_{SW} + \lambda_{HW}]p_5 \\ p_6' = \lambda_{HW}(1 - C_{dHW} * C_{iHW} * C_{rHW})p_0 - [\lambda_{SW} + \lambda_{HW}]p_6 \\ p_7' = \lambda_{SW}p_1 + \lambda_{SW}p_2 + \lambda_{SW}p_5 - 2\lambda_{HW}p_7 \\ p_8' = \lambda_{HW}p_1 + \lambda_{HW}p_2 + \lambda_{SW}p_3 + \lambda_{SW}p_4 + \lambda_{HW}p_5 + \lambda_{SW}p_6 + 2\lambda_{HW}p_7 - \lambda_{HW}p_8 \\ p_9' = \lambda_{HW}p_3 + \lambda_{HW}p_4 + \lambda_{HW}p_6 + \lambda_{HW}p_8 \end{cases} \quad (14)$$

A specification has to be made: to solve the equations systems (12) and (14) - which are differential equations systems in Cauchy canonical format - specialized software is required (e.g. MathLab or MathCad).

When data regarding software and hardware failure rates and probabilities C_{dSW}, C_{dHW}, C_{iSW}, C_{iHW}, C_{rSW}, C_{rHW} are known or it had been inferred analytically and/or statistically, the calculus could go further to determine the equations systems' solutions, for the initial condition $p_0(0) = 0;\ p_k(0) = 0; k > 1$.

Once calculated the differential equations systems' solutions, the reliability indicators of the system (availability (D) and working probability $P(t)$) are determined using the formulas from paragraph 2.

Also the following indicators are determined using the value of the system's failure probability:

$$F_{def(i)}(t) = 1 - P(t) \quad (15)$$

respectively

$$T_{def(i)} = \int_0^{\infty} P(t)dt\,. \quad (16)$$

3. CONCLUSIONS

The findings proposed in this paper give a methodological framework to the field of reliability modeling of C4ISR systems hardware/software components. In summary, the goal of this paper is to propose certain contribution, such as:

(1) *Elaboration of an improved Markov model regarding the reliability of C4ISR system's components* (paragraph 2) that augments the Markov model proposed by Rome Laboratory's methodology for hardware/software reliability modeling with information offered by general reliability theory in respect with Markov processes method. Synthesizing (based on the model) of new architectural products, specific to C4ISR system's Reliability Vision;

(2) *The implementation of the proposed Markov model for a representative case study* - modeling the reliability of a simple redundant hardware/software system, using a combination of system's states tables with states transition graphs and a matrix representation of fluency graphs.

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EMERGING ASPECTS IN THE PROCESS OF MODERNIZING INTEGRATED AIRSPACE SYSTEM

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***Abstract**: This article describes an optimization model of the Surface-To-Air Missile System as a technical integrated system. The theoretical model of optimization describes the basic relationships between the Life Cycle Cost of the system and the frequency of upgrades related to the moral decay, in time. 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.*

***Keywords**: LITS (Large Integrated Technical System); SAMS (Surface-to-Air Missile System); LCC (Life Cycle Cost); Cb(t) (unit acquisition cost related to the operating time) Cm(t) (Cumulative cost for preventive maintenance during the operating time); Cr(t) (Average unit cost for Repairs).*

1. INTRODUCTION

Numerous specialists in the scientific field of missiles have approached major topics related to missiles (regarded as typical examples of bodies with variable mass) such as: improvement of missiles' flight performance and of their dynamic stability, or, possibilities of minimizing guidance errors and of optimizing modernization processes.

The twentieth century has been regarded as a complex temporal space characterized by continuous quantitative increase and qualitative change, both of these coordinates contributing to the ongoing process. In this context, intuition is not sufficient in appreciating the complexity of a technical integrated system, therefore, although it is very difficult to do so, a clarification of theoretical background is mandatory. The complexity S of the system consisting of sub-systems or complexity elements S_i, i=1,2,3……,n will further be determined based on the relation:

$$S= \sum S_i K_i \quad (1)$$

where K_i represents the number of type *i* elements in the system. The first large technical systems were designed following the anti-air defense. By a careful analysis of the guidance systems of surface-to-air from the perspective of automated systems, we can highlight the requirements imposed on them and their functioning principles, in tight connection with gathering data related to movement parameters of air targets.

Figure 1 shows a simplified scheme of a missile system in a tight functional connection with its constituent elements; the final aim of it being the optimization of one of the efficiency criteria or more. The experience in designing and exploiting of modern airspace integrated systems proves a greater and greater technical and technological complexity, holding financial implications. This endeavor requires a long time up to its accomplishment – from 2 to 5 years -, in accordance with the system's complexity. To determine more precisely the connections between elements of a technical system, we must define the following: S1-matrix of connections between input and output; S2-matrix connections between elements of input and output of the system; S3-matrix connecting the input vector of the system with the output vector out of the totality of elements; S4-matrix connecting the input vector of the totality of elements in the system with the output vector of the system.

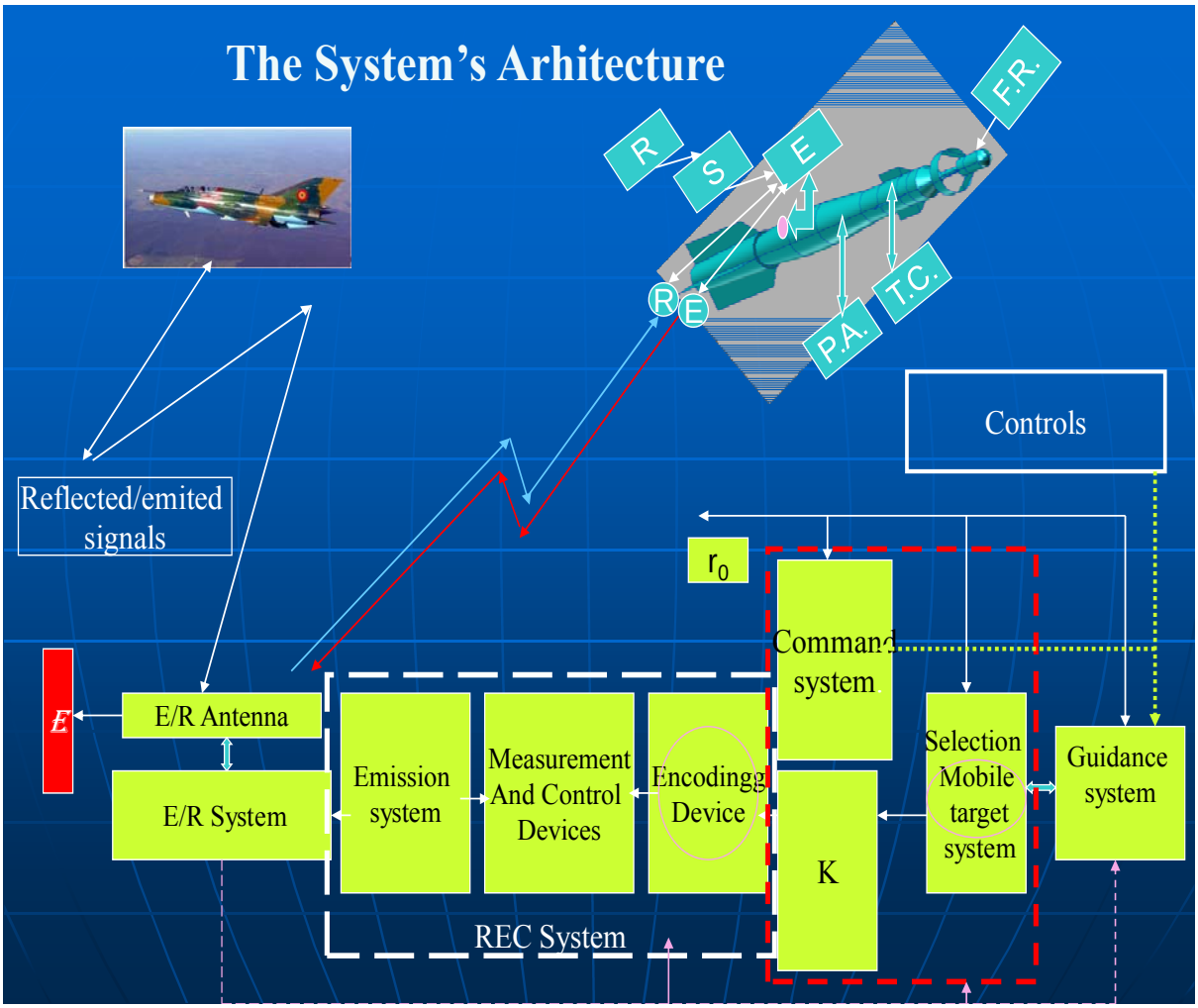

Fig. 1. Architecture of an airspace integrated system

Connections between the four vectors of the system and of the totality of elements, as well as the four matrixes of connection are shown in Figure 2:

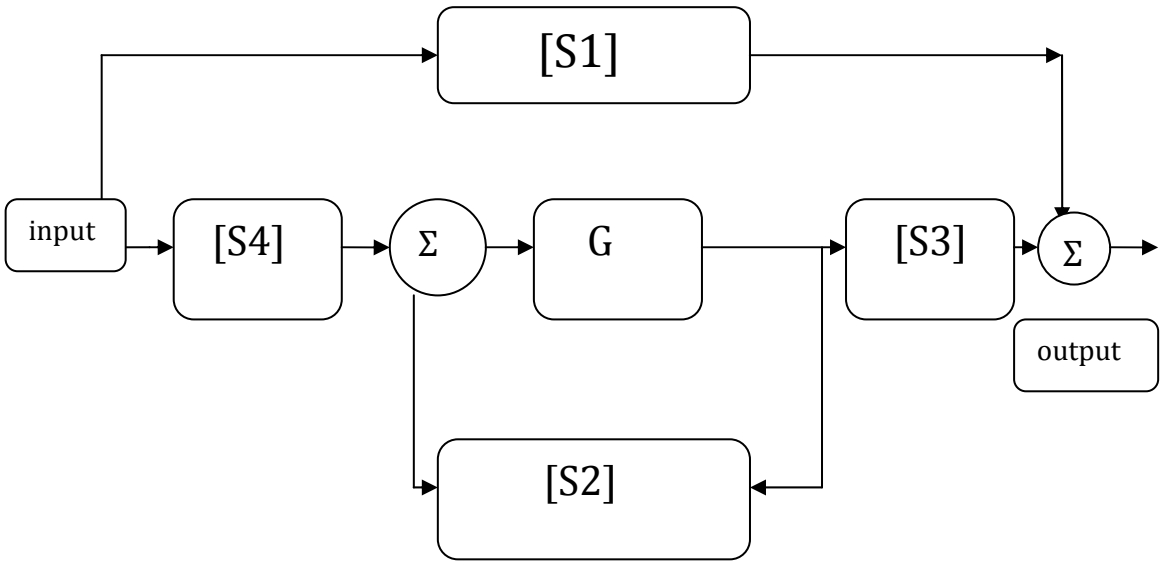

Fig. 2. Structural scheme of a large technical system's interconnections between the elements listed above

Under the circumstances of the current economic crisis, it is more and more obvious that an extension of the exploitation time, correlated with the sub-systems' modernization is absolutely necessary.

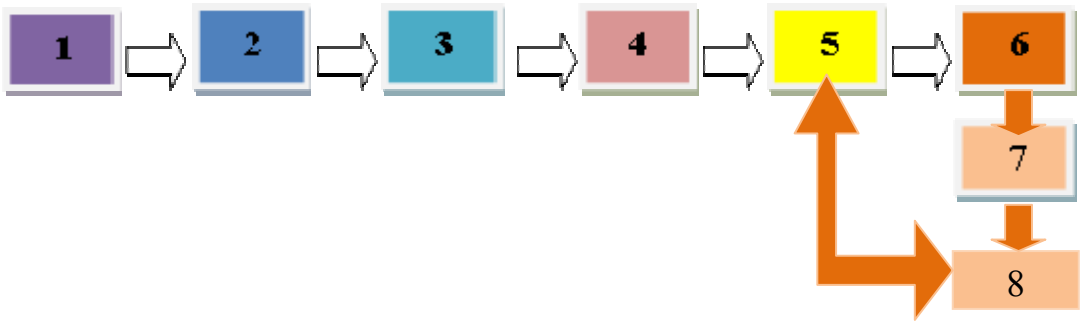

Fig. 3 Structural scheme of extension of the exploitation time.

Legend:
1 – General concept;
2 – Analysis of the system;
3 – Design;
4 – Achievement;
5 – Exploitation;
6 – Extension of resource under exploitation;
7 – Revitalization;
8 - Modernization

Maximum efficiency *(E)*, under the modern battlefield conditions, is defined as the sum between the totality of targets intended to be destroyed ($\sum_{i=1}^{n} n_i$) and the percentage of targets' destruction (θ_i), in relation with the number of launched missiles ($\sum_{j=1}^{n} i_j$) multiplied with the number of launching ramps (M).

$$E = \frac{\sum_{i=1}^{n} n_i + \theta_i}{\sum_{j=1}^{n} i_j \cdot M}, \qquad (2)$$

where $\theta_i = \frac{\sum_{k=1}^{n} p_k}{N}$, and $\sum_{k=1}^{n} p_k$ represents the sum of hits per target, N - number of targets;

Within the large integrated systems, efficiency focuses on such a variant of structure and functioning, able to assure the mission's accomplishment, at minimal costs. The general perception of the efficiency criterion consists of a minimization of costs:

$$\min C = \min M [\sum C_i] \; E > E_{dat} \qquad (3)$$

where:

C – represents the minimal cost minimal;

C_i – represents the cost of part *i* of the system made up of I elements;

E_{dat} – represents the value of imposed efficiency.

The specialized literature also offers a reverse form of the efficiency criterion. In this case, obtaining a maximum effect is sought, under the conditions where expenses represent limiting factors.

Accordingly:

$$M[\sum C_i] < M_{dat} \qquad (4)$$

where M_{dat} stands for the average value of expenses.

Lately, the surface-to-air missile systems have been subjected to a series of modernization that mainly aimed at:

- Improving identification characteristics of radar stations, especially in case of interference with signals reflected from fixed targets;
- Introducing the TV video capture for air targets detection, in correlation with reducing the amount of time necessary for missiles preparation;

- Improving protection sub-systems against jamming.

Given these modernizations, the system is able to accomplish its mission; yet, it is greatly subjected to obsolescence, as shown in Figure 4:

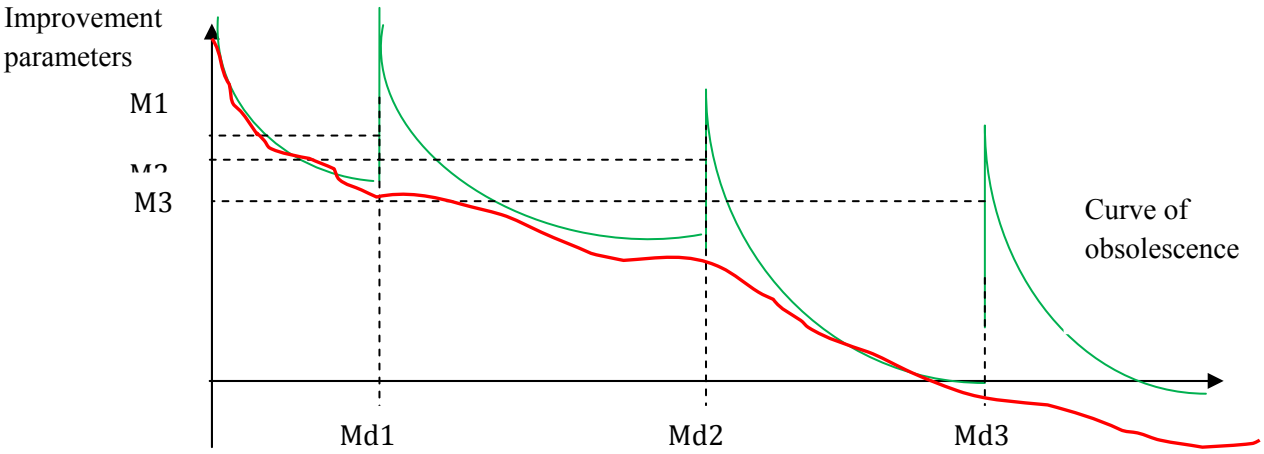

Fig. 4 Dependence of modernizations, in relation with time and obsolescence

Exploitation expenses need to take into account the exploitation period of time and they include the operating, servicing, maintenance, transportation and preservation personnel. The quantitative assessment of operating costs, in relation with the economic efficiency is possible using the standardized coefficient K_{ec}- representing the increasing of accumulations throughout one year, in relation with the amount of accumulations at the beginning of one calendar year:

$$K_{ec} = C_i\text{-}C_{i-1} / C_{i-1} \quad (5)$$

The qualitative assessment of exploitation expenses makes use of the standardized coefficient for economic efficiency, K_{ec} - representing the increase of accumulations throughout one year, in relation with the amount of accumulations at the beginning of one calendar year:

$$K_{ec} = C_i\text{-}C_i\text{-}1/C_i\text{-}1 \quad (6)$$

C_i,C_i-1-stand for expenses at the end of the years i and i-1. Expenses related to different periods of time throughout the exploitation process need updating to the same time reference, as shown by the relation:

$$C_i=C_i^n\ (1+K_{ec})^i \quad (7)$$

C_i^n- expenses at the beginning of the period

In practice, it is possible for the system to have exhausted its given resource, still, it continues to hold an operational capacity. Optimization involves a proper selection of the means used for this purpose, together with a good selection of the utilization strategy. Generally speaking, this issue may be referred to as follows: total expenses needed for assuring the system's functioning, C, represents a function that depends on functioning and recovery characteristics, $x_1,\ldots x_n$, on characteristics reflecting the quality of control, $y_{1,\ldots}y_n$, and characteristics related to control strategies, $z_1,\ldots z_n$. Since the operation is aimed at being executed at the lowest cost as possible, cost C needs to be minimized:

$$C = \min C(x_1,\ldots,x_n, y_1,\ldots y_n, z_1,\ldots z_k) \quad (7)$$

under the following limiting conditions:

$$G_1(x_1,\ldots,x_n, y_1,\ldots y_m, z_{1,\ldots,}z_k), [<,=,>]G_i^{(o)} \quad (8)$$

$$G_2(x_1,\ldots x_n, y_1,\ldots y_m, z_{1,\ldots,}z_k), [<,=,>]G_2^{(o)} \quad (9)$$

$$G_s(x_1,\ldots x_n, y_1,\ldots y_m, z_{1\ ,\ldots,}z_k), [<,=,>]G_s^{(o)} \quad (10)$$

Where $C(x_1,\ldots x_n,,z_k)$ represent the total amount of expenses used for exploiting the system. $G_1,G_2\ ,G_s\ ,\ldots$, exploiting criteria of the system. $G_i^{(o)}$ $G_2^{(0)}$ $,\ldots,G_s^{(0)}$ given values for these criteria.

The system exploitation is appreciated by means of general criteria such as: coefficient of operational status; likelihood of interruption-free operation. Related to the optimal resulting or given value of control authenticity, the following particular problems

of optimization may appear: finding the optimal set of the system's parameters that need to be controlled, so that the system to be able to accomplish the totality of operations regarding minimal material and financial consumptions; establishing the optimal accuracy for the functioning elements composing the system. It is well known that the high fidelity of a measurement apparatus increases the system's cost. The technical maintenance quality is appreciated by the operational preparation coefficient, for accomplishing tasks at any time. The operational preparation coefficient (under the desired regular distribution) is given by the relation:

$$K_{op} = \lim \int P(t)dt \quad (11)$$

For the static exploitation process:

$$K_{op}=M[t_f]/M[t_f]+M[t_n] \quad (12)$$

a relation where $M[t_f]$ is the average value (the mathematical expectation) of the functioning interval of the item, without any disturbances, while $M[t_n]$ is the average value of the time interval in which the item is deficient or it is between two consecutive operational moods.

2. ASPECTS REGARDING AN OPTIMIZATION DESIGN IN RELATION WITH THE LIFE CYCLE CONST OF A MISSILE SYSTEM

The major condition of the presented optimization model is for it to display a proper curve distribution Cc(t). Another important condition for optimization lies in the existence of a minimal local point, sufficiently powerful O (T_{opt}, Cc_{min}), which will ease the identification of this point, although the technical-economic data are not complete.

2.1 The average acquisition cost of one unit of the sub-system.

The relation Cb(t), expresses the dependence of the average acquisition price for one unit of the sub-system, in relation with its operation timing. It is defined by the relation: Cb(t)= Cb/t. The graphic representation of this relation is an equilateral hyperbola. It is noticeable how its value decreases at the same time with the extension of the exploitation time.

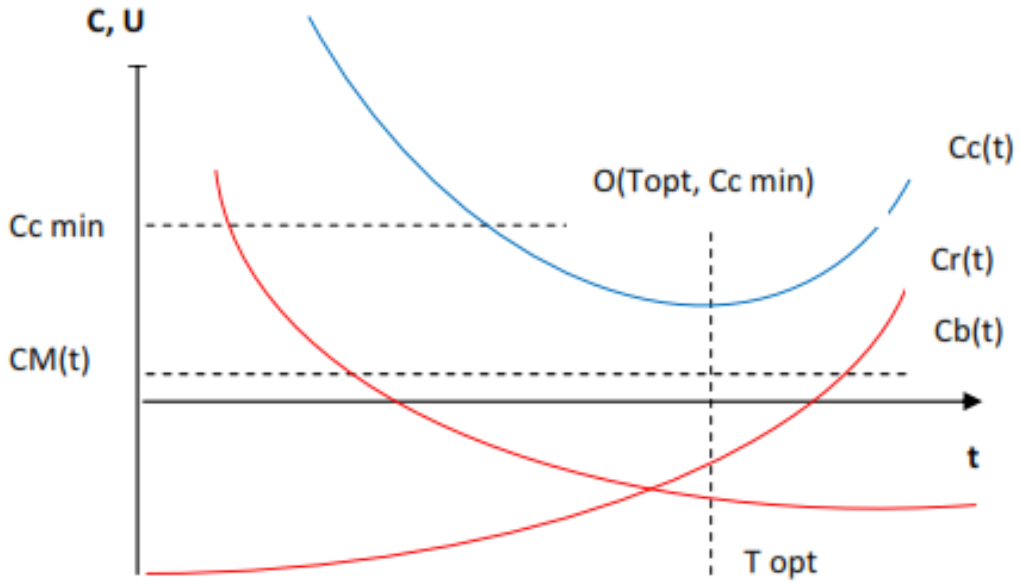

Fig. 5 Dependence of the average acquisition price for one unit of the sub-system

2.2 The average cost for preventive maintenance.

The relation Cm(t), expresses the dependence of the average cost for preventive maintenance of each unit, related to its operational time: Cm(t)=Cm(t)/t, where Cm(t) represents the sum of costs necessary for achieving preventive maintenance of sub-systems throughout their operational time. By extension, individual actions of preventive maintenance do not vary too much; therefore, Cm may be considered to be constant.

2.3 The average cost for repairing one unit of the sub-system.

The graphic representation of the relation Cr(t), shown in Fig. 5, displays the intersection and the gradual increase of operational value timings, throughout the study.

3. CONCLUSIONS

We can argue that keeping the anti-air missile system in a good functioning state is possible only by upgrading it. Consequently, the following steps are required:

- digitalization of calculus systems;
- replacement of emission-reception system by a phased antennas net, which could lead to the system compacting;
- replacement of liquid fuel, which necessitates increased maintenance;
- compacted module-built construction of the research systems and of the systems with increased mobility guidance.

The use of a new concept of optimization of the missile system would eventually lead to an increase in probability of air targets destruction ad to a complex prefigured tactical situation, in this era of economic crisis.

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FLYING WING AERODYNAMIC ANALYSIS

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***Abstract**: Integrating innovative solutions in the construction of the UAV is one of the research trends in the field having direct influence on the performance of unmanned airborne systems. The aerodynamic concepts applied to the UAV disregard the human component – the overload factor limit, but are still dependent on performance (aerodynamic coefficients of buoyancy - C_z and of the drag - C_x) as well as on the breaking boundaries of the UAV structures.*

***Keywords**: flying wing, vortex lattice method, morphing concept, longitudinal stability , lateral stability.*

1. INTRODUCTION

UAV field is constantly expanding both in terms of constructive solutions and the missions they may fulfill. If, in the beginning, the use of UAVs was solely military, they now have a wide use in civilian areas. The main motivation for using this type of aircraft is the low cost of construction and operation compared to manned aircraft. The creation of aerodynamic forces which sustain the aircraft during flight is influenced by the physical properties of the surrounding air mass. Therefore, we can say that specialists successfully apply the same concepts, principles and methods used in aeronautical manned aircraft. The field of fluid movement uses UAV-related concepts such as gravity and its effects, air viscosity and aircraft influence at different flight speeds, the speed of sound in various fluid media (gas, liquid), types of fluid flow on a solid surface (laminar, vortex) and its effects (separation of air fillets, boundary layer), the effects on the flow on wings with DHS (great-sustentation devices - flaps, leading edge flap), aerodynamic profile, airfoil, finite span wing and their polar diagrams, rotary wing and blade element (helicopters, auto-gyros), aircraft progression along the trajectory (takeoff, ascension, gliding, landing, stunt flying), balance, loading, stability, maneuverability (Russell, 1996). The evolution of unmanned aircraft included the development of air vectors of the flying wing type (tailless) due to low production and operating costs and to the ease of use. Aeronautics imposed three sets of flying wings in terms of achieving stability: straight wings (plank), arrow wings (swept) and parafoil wing. Flying wings are operational in several types of robotic aerial systems (UAS Yearbook, 2011) which successfully perform data acquisition missions both for civilian use and in military operations (see fig.1).

Fig.1 Robotic aerial systems - Flying wing type. a. EADS, Germany (plank) b. EagleScan, USA (swept) c. Snowgoose, Canada (parafoil)

2. FLYING WING ANALYSIS

The analyzed wing is the bilongeron wing (with tubular fiberglass longerons) with plywood ribs at recess and at extreme profile. It is made of EPS (Expanded Polystyrene) presenting the security features listed in Table 2. The wing consists of two half-planes that

are mounted together in a dihedral angle of 0^0. We propose to analyze a bearing area (fig. 2) having the Clark YH profile and the input data specified in Table 1.

Table 1 Flying wing data

Span	*2b*	2000 mm	*Aspect ratio*	λ	8,00
Main chord	c_0	350 mm	*Weight*	*G*	0,50 kg
Medium aerod. chord	*MAC*	263.33 mm	*Surface*	*S*	0,50 m^2

Table 2 EPS data

Data	EPS 15	EPS 20
Density (kg/m^3)	15	20
Elasticity modulus (N/mm^2)	4	4,7
Breaking strain (N/mm^2)	0,24	0,27
Stretch rezistance (N/mm^2)	0,19	0,27

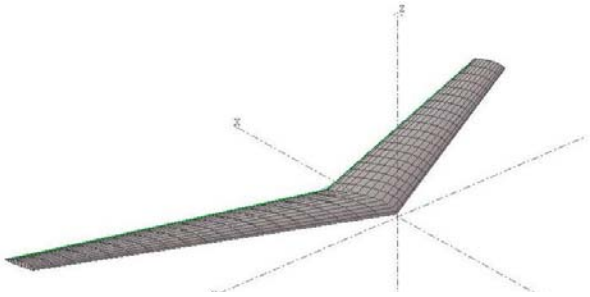

Fig.2. Flying wing for analysis

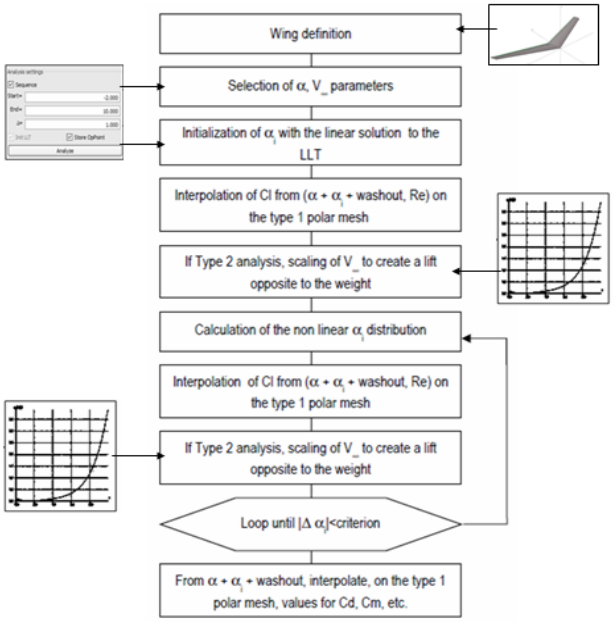

Fig.3 Representation of the polar diagram (*Guidelines for XFLR5*, 2011)

Methodology and analysis tools. XFLR5 is software that enables 2D and 3D aerodynamic analysis of bodies and bearing areas, separately or jointly. The software makes analysis for small Reynolds numbers. The latest version has implemented five applications: a direct 2D analysis and design, a 3D analysis and design (wing, fuselage, aircraft), two ways to design and compare 2D, design a 2D QDES and MDES. According to XFLR5 manual (*Guidelines for XFLR5*, 2011), the steps in fig.3 should be taken into account when developing polar diagrams appropriate to the input data.

Fig.3 shows the analyzed wing based on the characteristics in Table 1 and its bearing, drag, and induced resistance diagram in accordance with figures 4, 5 and 6 through VLM method (vortex lattice method) that involves a certain degree of accuracy of the analysis.

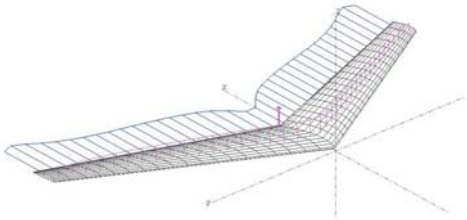

Fig.4 Lifting and drag diagram (72 km/h and 5^0 incidence)

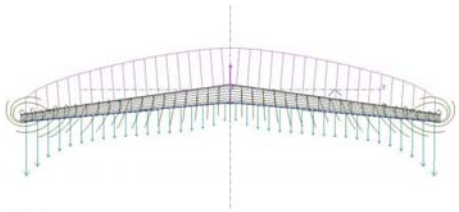

Fig.5 Lifting anf induce drag diagram (72 km /h and 12^0 incidence)

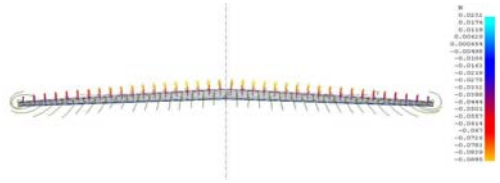

Fig. 6 Wing forces and induce drag (36 km/h and 5^0 incidence)

Table 3 shows the values obtained depending on the angle of incidence for the proposed wing.

Table 3. The coefficients depending on the angle of incidence

Data points = 21

alpha	CL	ICd	PCd	TCd	CY	Cn	Rn	Yn	IYn	QInf	XCP
-4.000	-0.200234	0.001678	0.000000	0.001678	0.000000	-0.019935	-0.000000	-0.000000	-0.000000	20.0000	0.3581
-4.000	-0.119836	0.000641	0.000000	0.000641	0.000000	-0.018868	-0.000000	-0.000000	-0.000000	20.0000	0.3649
-3.000	-0.039935	0.000068	0.000000	0.000068	0.000000	-0.017798	-0.000000	-0.000000	-0.000000	20.0000	0.3907
-2.000	0.040718	0.000072	0.000000	0.000072	0.000000	-0.016838	-0.000000	-0.000000	-0.000000	20.0000	0.3878
-1.000	0.123770	0.000606	0.000000	0.000606	0.000000	-0.015897	-0.000000	-0.000000	-0.000000	20.0000	0.3624
0.000	0.204770	0.001488	0.000000	0.001488	0.000000	-0.014838	-0.000000	-0.000000	-0.000000	20.0000	0.3613
1.000	0.286668	0.003224	0.000000	0.003224	0.000000	-0.013741	-0.000000	-0.000000	-0.000000	20.0000	0.3607
2.000	0.366404	0.005808	0.000000	0.005808	0.000000	-0.012648	-0.000000	-0.000000	-0.000000	20.0000	0.3604
3.000	0.448898	0.007898	0.000000	0.007898	0.000000	-0.011560	-0.000000	-0.000000	-0.000000	20.0000	0.3602
4.000	0.527210	0.010990	0.000000	0.010990	0.000000	-0.010439	-0.000000	-0.000000	-0.000000	20.0000	0.3601
5.000	0.607176	0.014577	0.000000	0.014577	0.000000	-0.009306	-0.000000	-0.000000	-0.000000	20.0000	0.3599
6.000	0.686780	0.018647	0.000000	0.018647	0.000000	-0.008161	-0.000000	-0.000000	-0.000000	20.0000	0.3598
7.000	0.765977	0.023191	0.000000	0.023191	0.000000	-0.007008	-0.000000	-0.000000	-0.000000	20.0000	0.3598
8.000	0.844716	0.028196	0.000000	0.028196	0.000000	-0.005847	-0.000000	-0.000000	-0.000000	20.0000	0.3597
9.000	0.922945	0.033647	0.000000	0.033647	0.000000	-0.004679	-0.000000	-0.000000	-0.000000	20.0000	0.3596
10.000	1.000629	0.039530	0.000000	0.039530	0.000000	-0.003506	-0.000000	-0.000000	-0.000000	20.0000	0.3596
11.000	1.077729	0.045828	0.000000	0.045828	0.000000	-0.002329	-0.000000	-0.000000	-0.000000	20.0000	0.3595
12.000	1.154146	0.052523	0.000000	0.052523	0.000000	-0.001150	-0.000000	-0.000000	-0.000000	20.0000	0.3595
13.000	1.229885	0.059596	0.000000	0.059596	0.000000	0.000030	-0.000000	-0.000000	-0.000000	20.0000	0.3594
14.000	1.304902	0.067026	0.000000	0.067026	0.000000	0.001209	-0.000000	-0.000000	-0.000000	20.0000	0.3594
15.000	1.379140	0.074792	0.000000	0.074792	0.000000	0.002385	-0.000000	0.000000	0.000000	20.0000	0.3593

Figure 6 shows the bearing coefficient variation all along the chord for an angle of incidence of 5^0 and a speed of 20 m / s while Figure 7 and 8 shows the variation of the induced angle as well as of the pressure centre line at 5^0 incidence.

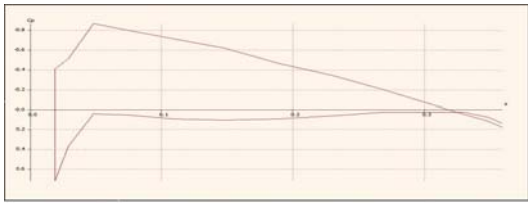

Fig. 7. Lifting coefficient variation along the chord

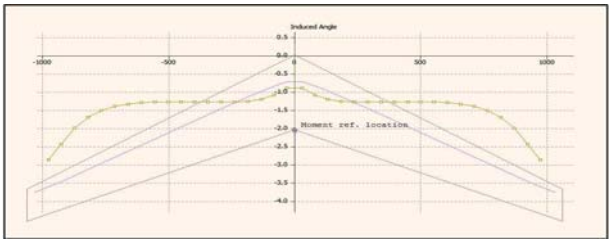

Fig. 8. Induced angle and pressure centre line

3. DINAMIC STABILISATION ANALYSIS

Lateral normal- modes. In most cases, the equation of the lateral linear system (1) admits a negative real root, relatively high in mode (an a-periodic mode with high damping) and a small real root, negative or positive (a slow damped or ascending a-periodic mode) and a pair of complex conjugate roots with negative real part (oscillator short-term mode) - Figure 9. The rapid a-periodic mode plays the most important part in the deviation of the rolling p angular velocity or of the side angle φ with the name rapid convergent depreciation of roll. The slow a-periodic mode (the spiral mode) is the most important in the law of angle variation of lateral inclination and φ of azimuth ψ, the aircraft describing a spiral in the horizontal plane. The oscillator mode characterizes the skidding angle β and the angular velocities p and r (Grigore, 1987).

$$A \cdot \lambda^5 + B \cdot \lambda^4 + C \cdot \lambda^3 + D \cdot \lambda^2 + E \cdot \lambda = 0 \qquad (1)$$

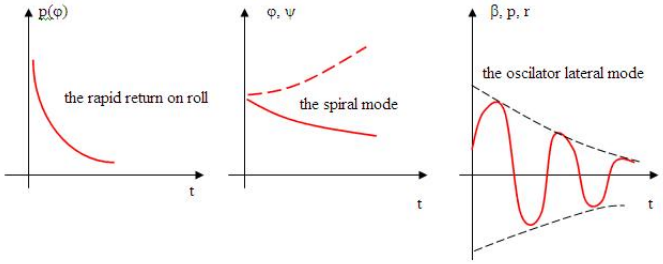

Fig. 9. Lateral normal-mode graphics

3D analysis and asymetrical calculations. Calculation case. The stability analysis follows the following steps in figure 10.

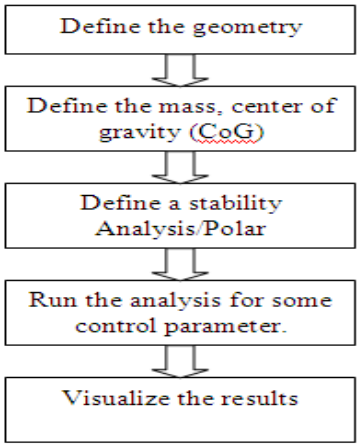

Figure 10. Steps of the stability analysis

Control and stability analysis actually means evaluating the response time of an aircraft to the disturbances of a flight of constant equilibrium. These disturbances may

occur due to environmental factors or to the control area. The following mathematical representation is possible by means of simplifying conditions: Neumann boundary conditions are used.

Position of the weight centre	Inertia instances
CoG_x= 350.5690 mm CoG_y= 0.0000 mm CoG_z= 13.5961 mm	Ibxx= 1.051e+05 kg.mm² Ibyy= 1.255e+04 kg.mm² Ibzz= 1.176e+05 kg.mm² Ibxz= 255.5 kg.mm²

Problem solving (software calculation steps)

Calculation for control position -2.00
Creating the influence matrix...
Performing LU Matrix decomposition...
Solving LU system...
Searching for zero-moment angle... Alpha=13.65005°
Creating source strengths...
Calculating doublet strength...ut
Calculating speed to balance the weight...
VInf = 3.68013m/s
Calculating the stability derivatives
No active control - skipping control derivatives

Longitudinal derivatives	*Lateral derivatives*
Xu= -0.12674	Yv= -0.0028088
Cxu= -0.11245	CYb= -0.0024922
Xw= 0.91477	Yp= 0.29526
Cxa= 0.81166	CYp= 0.26198
Zu= -2.6693	Yr= -0.075793
Czu= -0.0032135	CYr= -0.06725
Zw= -4.5007	Lv= -0.36153
CLa= 3.9934	Clb= -0.16039
Zq= -0.47264	Lp= -1.0156
CLq= 3.1851	Clp= -0.45055
Mu= 1.1185e-09	Lr= 0.70044
Cmu= 3.7686e-09	Clr= 0.31074
Mw= 0.021324	Nv= 0.087976
Cma= 0.071848	Cnb= 0.03903
Mq= -0.095688	Np= -0.42611
Cmq= -2.4487	Cnp= -0.18904
Neutral Point position= 345.83119mm	Nr= 0.0063622 Cnr= 0.0028225

State matrix

Longitudinal state matrix	Lateral state matrix
-0.2534 1.8295 0 -9.81 -5.3385 -9.001 2.734 0 8.911e-08 1.69-7.623 0 0 0 1 0	-0.0056 0.590 -3.83 9.81 -3.442 -9.526 6.631 0 0.8296 -3.425 -0.095 0 0 1 0 0

Control matrix

Longitudinal control matrix	Lateral control matrix
0 0 0 0	0 0 0 0

Initial conditions

$$\varphi = 0 \qquad u_0 = 5\frac{m}{s} \qquad w_0 = 5\frac{m}{s} \qquad q_0 = 1^0 s$$

Figures 11 and 12 exemplify the graphs representing variations in speed *d* along axes x and z as well as the variations in time of the speed along axis z and of the rotation around axis x.

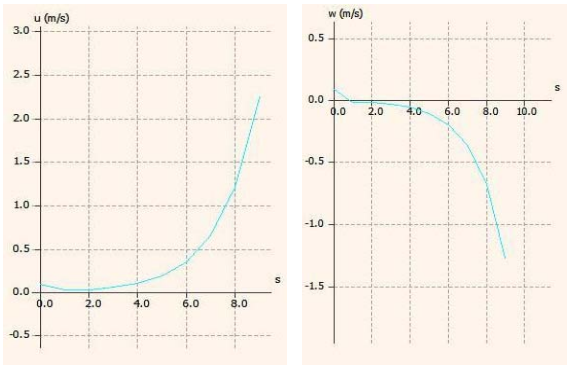

Fig. 11. Variations in time of the speeds along axes x and z (longitudinal stability)

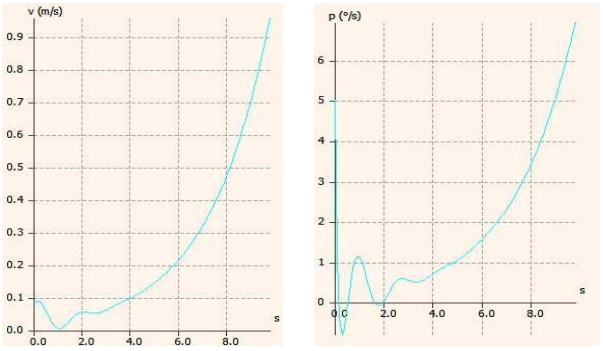

Fig. 12. Variations in time of the speed along axis z and of the rotation around axis x

The display of the results regarding speed variation in time and rotation angle variation in relation to axis x, in case of longitudinal stability, according to figure 13.

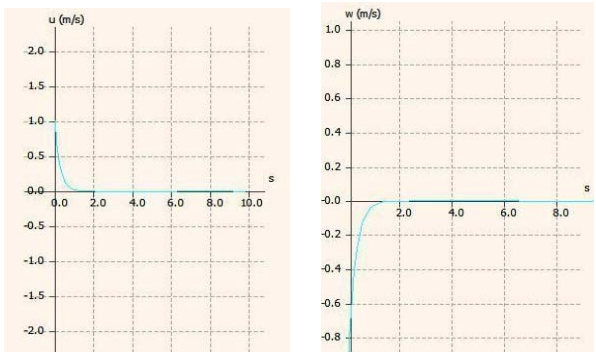

Fig. 13. Speed variations in time and rotation angle variation in relation to axis x

The display of the results regarding speed variation in time and rotation angle variation in relation to axis x, in case of lateral stability, according to figure 14.

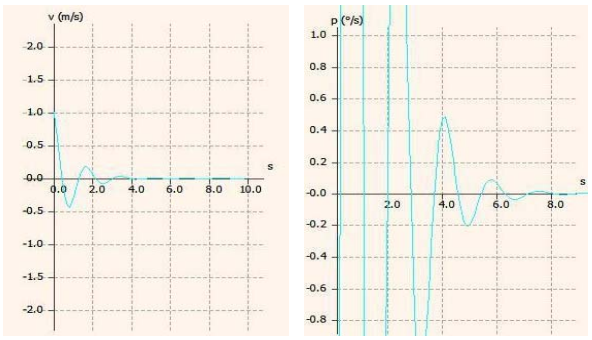

Fig. 14. Speed variations in time and rotation angle variation in relation to axis x

4. CONCLUSIONS

In conclusion, during disturbed lateral movement, the aircraft moves in a neutral way in relation to one of the degrees of freedom of this movement because the equation (4) has at least one null solution. No aircraft flying in a in a straight and uniform manner will maintain a constant azimuth direction after a disturbance; it will tend towards a new direction of flight depending on the size of the disturbance. Disturbed lateral movement of an aircraft with blocked controls presents the following features: *the idle mode,* which is a constant deviation after each lateral disturbance of the azimuth angle ψ; *the fast a-periodic mode*, which is a rapid depreciation lateral tilt; *the spiral-mode*, which is a slow a-periodic motion (easy to control), *the lateral oscillator mode (Dutch roll),* which is a rapid oscillatory motion and it must be a stable and rapidly amortized mode.

Using inertial sensors to measure the characteristics of the response to flight maneuvers along with the qualitative analysis of the performance lead to an overall improvement of the flying wing aerodynamics.

5. ACKNOWLEDGMENT

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TRANSMISSION LINES ANALYSIS USING CASCADES T FILTERS

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***Abstract**: This paper proposes a method of determining the characteristic impedance and the equation of propagation in transmission lines, by equivalence of the line segment with an elementary T filter. We obtain thus the equivalence between a cascaded T filters network and a transmission line arbitrarily chosen. The mathematical model used is based on string theory.*

***Keywords**: transmission line, T filter, characteristic impedance, wave propagation.*

1. INTRODUCTION

A transmission line segment can be represented - considering its functionality, as an infinity of elementary T filters networks connected in series (fig. 1), forming a cascaded network with Z_e equivalent impedance (Morariu *et al*., 2009:23).

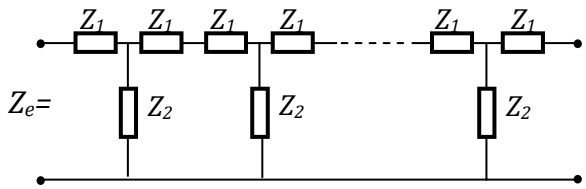

Fig. 1. The network of cascaded T filters

In the sense of the consideration cited, the transmission line can be rated as having equivalent structure from Figure 2.

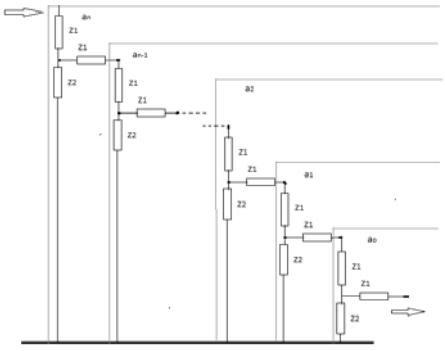

Fig. 2 The equivalent structure of the transmission line

2. CHARACTERISTIC IMPEDANCE OF THE TRANSMISSION LINE

Impedance in different points of the structure is determined to be equivalent:

$$a_0 = Z_1 + Z_2 \quad (1)$$

$$a_1 = Z_1 + Z_2 \| (Z_1 + a_0) \quad (2)$$

$$a_1 = Z_1 + Z_2 \| (Z_1 + a_1) \quad (3)$$

$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$$a_1 = Z_1 + Z_2 \| (Z_1 + a_{n-1}) \quad (4)$$

where a_n is a recursive string.

If $n \to \infty$, it follows that $\lim a_n = \lim a_{n-1}$ and $\lim a_n = l$. So,

$$l = Z_1 + Z_2 \| (Z_1 + l) \quad (5)$$

$$l = Z_1 + \frac{Z_2 (Z_1 + l)}{Z_2 + Z_1 + l} \quad (6)$$

$$l^2 = Z_1^2 + 2Z_1 Z_2 \quad (7)$$

$$l = \sqrt{Z_1^2 + 2Z_1 Z_2} \quad (8)$$

The elementary network (Morariu *et al*., 2009:23) consists of components R, L, G and C (fig. 3).

Substituting in (8) equivalent parameters of fig. 3 results:

$$l = \sqrt{Z_1^2 + 2Z_1Z_2} = \\ = \sqrt{\frac{1}{4}(R + j\omega L)^2 + \frac{R + j\omega L}{G + j\omega C}} \quad (9)$$

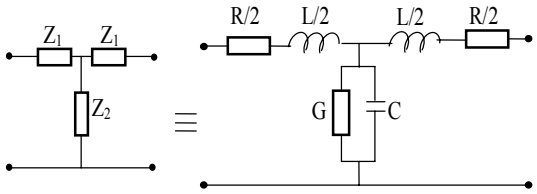

Fig. 3. The elementary network

The parameters R, L, G and C of the transmission line are uniformly distributed, resulting in that:

$$R=\Delta l R_L;\ L=\Delta l L_L;\ G=\Delta l G_L;\ C=\Delta l C_L \quad (10)$$

where Δl is the length of the line segment and R_L, L_L, G_L and C_L are called line parameters and they have punctual value in line.

Relation (8) becomes:

$$l = \sqrt{\frac{\Delta l^2}{4}(R_L + j\omega L_L)^2 + \frac{R_L + j\omega L_L}{G_L + j\omega C_L}} \quad (11)$$

$$l = Z_e \quad (12)$$

When $\Delta l \to 0$, it follows that:

$$Z_e = \sqrt{\frac{R_L + j\omega L_L}{G_L + j\omega C_L}} \quad (13)$$

In microwave domain when ω is very large compared to R_L and G_L, it results in:

$$\lim_{\substack{\Delta l \to 0 \\ \omega \to \omega_{sup}}} Z_e = \\ = \lim_{\substack{\Delta l \to 0 \\ \omega \to \omega_{sup}}} \sqrt{\frac{\Delta l^2}{4}(R_L + j\omega L_L)^2 + \frac{\frac{R_L}{j\omega} + L_L}{\frac{G_L}{j\omega} + C_L}} \\ = \sqrt{\frac{L_L}{C_L}} \quad (14)$$

So,

$$Z_0 = \sqrt{\frac{L_L}{C_L}} \quad (15)$$

where Z_0 is the characteristic impedance of the line.

3. THR WAVE PROPAGATION PATTERN

To highlight the phenomenon of the propagation of the voltage or current wave in a line segment, we consider a succession of two elementary networks (Morariu *et al*., 2009:25) of filters in a portion of the line segment, as shown in fig. 4.

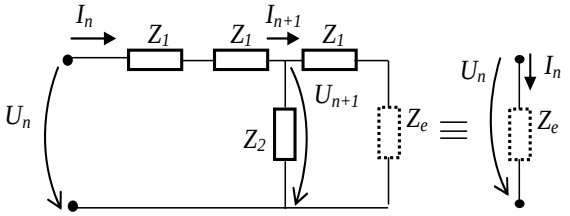

Fig. 4. Sequence of elementary networks

With representation in fig. 4, we establish the following relations:

$$U_n - U_{n+1} = I_n \cdot 2Z_1 \quad (16)$$

$$I_n = \frac{U_n}{Z_e} \quad (17)$$

$$U_n - U_{n+1} = U_n \frac{2Z_1}{Z_e} \quad (18)$$

Respectively

$$\frac{U_n - U_{n+1}}{U_n} = \frac{2Z_1}{Z_e} \quad (19)$$

Relation (19) defines the phenomenon of the voltage wave propagation in a transmission line.

Substituting Z_1, respectively Z_e with electrical parameters R, L, G and C we obtain:

$$\frac{U_n - U_{n+1}}{U_n} = \frac{R + j\omega L}{\sqrt{\frac{1}{4}(R + j\omega L)^2 + \frac{R + j\omega L}{G + j\omega C}}} \quad (20)$$

Replacing the line parameters in equation (20) it results:

$$\frac{U_n - U_{n+1}}{U_n} = \\ = \frac{\Delta l(R_L + j\omega L_L)}{\sqrt{\frac{\Delta l^2}{4}(R_L + j\omega L_L)^2 + \frac{R_L + j\omega L_L}{G_L + j\omega C_L}}} \quad (21)$$

Given that $R_L + j\omega L_L$ has a finite value and $\Delta l^2/4$ tends to zero faster than Δl, we can neglect the influence of the expression $\frac{\Delta l^2}{4}(R_L + j\omega L_L)^2$ without changing the physical effect of the expression (21). Thus, we obtain:

$$\frac{U_n - U_{n+1}}{U_n} = \\ = \sqrt{\Delta l(R_L + j\omega L_L)(G_L + j\omega C_L)} \quad (22)$$

If variable l is associated with coordinate z from space (x, y, z) and $U_n - U_{n+1} = \Delta U_n$ the resulting formula is:

$$\frac{\Delta U_n}{U_n} = \Delta z\sqrt{(R_L + j\omega L_L)(G_L + j\omega C_L)} \quad (23)$$

As the index n is taken arbitrarily may be neglected, resulting in the expression:

$$\frac{\Delta U}{U} = \Delta z\sqrt{(R_L + j\omega L_L)(G_L + j\omega C_L)} \quad (24)$$

But ΔU and Δz is simultaneously at value of 0, and we can write:

$$\frac{dU}{U} = \Delta z\sqrt{(R_L + j\omega L_L)(G_L + j\omega C_L)} \quad (25)$$

Noting with

$$\gamma = \sqrt{(R_L + j\omega L_L)(G_L + j\omega C_L)} \quad (26)$$

we get the relation:

$$\frac{dU}{dz} = U\gamma \quad (27)$$

This relationship describes the overall distribution of the propagation phenomenon along a line and has the solution $U(z) = U_s e^{\gamma z}$, where U_s is the voltage at the load.

Derived, the result is

$$\frac{d^2U}{dz^2} = \frac{dU}{dz}\gamma = U\gamma^2 \quad (28)$$

This relation is a differential equation that describes the dynamics of the propagation phenomenon along transmission lines. Solving equation (28) shall be obtained voltage wave solutions that emphasize the simultaneity of the direct and inverse wave, known relationship of the propagation phenomenon.

$$U = Ae^{\gamma z} + Be^{-\gamma z} \quad (29)$$

Using equation (16) and the relation

$$Z_1 = \frac{1}{2}(R + j\omega L) \quad (30)$$

is determined following expression:

$$U_n - U_{n+1} = \Delta U_n = I_n(R + j\omega L) \quad (31)$$

But

$$(R_L + j\omega L_L)\Delta l = R + j\omega L \quad (32)$$

and $$\frac{\Delta U_n}{\Delta l} = I_n(R_L + j\omega L_L) \quad (33)$$

If l=z, using a Cartesian coordinates system (x, y, z), and any n, then:

$$\frac{\Delta U}{\Delta z} = I(R_L + j\omega L_L) \quad (34)$$

When $n\to\infty$ and $\Delta z\to 0$, the result is:

$$\frac{dU}{dz} = I(R_L + j\omega L_L) \quad (35)$$

Using relations number (26), (27) and (35) we obtain:

$$U\gamma = I(R_L + j\omega L_L) \quad (36)$$

and

$$U\sqrt{\frac{(G_L + j\omega C_L)}{(R_L + j\omega L_L)}} = I \quad (37)$$

For current waves following relations are established in accordance with the drawing of fig. 4:

$$I_n - I_{n+1} = \frac{U_{n+1}}{Z_2} = U_{n+1}Y_2 \quad (38)$$

$$I_n - I_{n+1} = U_{n+1}(G + j\omega C) \quad (39)$$

$$\frac{I_n - I_{n+1}}{\Delta l} = U_{n+1}\frac{(G + j\omega C)}{\Delta l} \quad (40)$$

$$\leftarrow (10) \rightarrow$$

$$\frac{I_n - I_{n+1}}{\Delta l} = \frac{\Delta I_n}{\Delta l} = U_{n+1}(G_L + j\omega C_L) \quad (41)$$

For l=z, using a Cartesian coordinates system (x, y, z), $n\rightarrow\infty$ and $\Delta z\rightarrow 0$, we get the relation:

$$\frac{dI}{dz} = U(G_L + j\omega C_L) \quad (42)$$

Taking into consideration the relation (27), it follows

$$\frac{d^2I}{dz^2} = \frac{dU}{dz}(G_L + j\omega C_L) \quad (43)$$

and

$$\frac{d^2I}{dz^2} = I\gamma^2 \quad (44)$$

The solution of the equation (44) expresses a second current wave propagation mod along over the line and is:

$$I = De^{\gamma z} + Ee^{-\gamma z} \quad (45)$$

It highlights current incident wave $De^{\gamma z}$ and reflected current wave $Ee^{-\gamma z}$.

3. CONCLUSIONS

The determination model presented uses recursive string theory applied to a transmission line structure. T-symmetric filters are assimilated to the punctual elements off the line. The propagation pattern obtained is very close to physical phenomena, allowing a complete understanding of the propagation in transmission lines.

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SOCIAL ARCHIVING AND THE ROLE OF NEW MEDIA IN SCIENTIFIC DISSEMINATION: A VIEWPOINT

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Abstract: *Science is of course very far from the art, nonetheless there are some aspects of science which can be compared to art. For instance, there is elitic art that prefers that art is for art only. On the other side, there is pop art, which relates smoothly to industrialism. And there is also avant garde art, which asserts that all things can be thought of as art (like mirror, glass, broken window etc). Similarly, in science some researchers believe that it is the best way to keep the 'ordinary people' out of the traditional scientific communication (for example, arxiv.org declares that it is exclusively scientific channels for scientists only), while on the other side people sometimes also wants to know what happens behind the wall of scientific labs.*

Keywords*: social archiving, science, new media.*

1. INTRODUCTION: THE ROLE OF NEW MEDIA

Enter the social media. Various forms of electronic communication and publication have entered in recent years, which sometimes are dubbed as 'new media' (TCSC, 2009; NFAIS, 2009; *ePharma Summit*, 2009). This includes, for instance, blogging, youtube, facebook, online directory, blog directory etc. Let's consider a simple example: a decade ago, a new paper in a remote journal will take some months to be noticed by scientists (in particular via notification by the scientist himself/herself). But today, at the same day the paper appears in electronic journals, there is high likelihood that it will be disseminated simultaneously in numerous forms of new media channels, like Google, blogging directories and other indexing services.

The problem is that some scientists feel that a number of scientific works get plenty of publication coverage in this new media, while at the same time an equally 'worthy' paper get less publication coverage. In other words, does it mean that nowadays popularity in new media had replaced what we called before as 'scientific value' of paper. Of course in this regards, one can reply that there are systematic indexing system which introduces.

2. GRADE OF SCIENTIFIZATION

In order to clarify the situation, we offer an simplified analysis based on the asynchronous/ synchronous communication and also 'grade of scientifization', which is a new notion. This grade is defined simply to enable us to rank the channel of communication, which are 'more' serious and which are less serious, at least from scientific viewpoint. By synchronous here we mean as method of communication which takes effect immediately (like telephone), see Table 1..

Implication of Table 1 would mean that perhaps scientific communication can accept or agree with the fast-growing social media to disseminate scientific works, if only we limits its role as 'Grade C', i.e. not to regard them as 'very serious' scientific channel. Furthermore, perhaps we can introduce a new word here 'social archiving', in order to reflect both the method of 'social network' as the essence of new media, and the scientific archiving.

Table 1. Grade of Scientific Communication

Type/Grade	Grade A	Grade B	Grade C
Asynchronous	Peer-reviewed Journals, Proceedings	Scientific Books, Scientific Magazines	Popular Science Books/Magazines, Online Forums
Synchronous	Scientific Conferences	Lectures, Public Seminars, Preprint Services, Indexing	Blogs, Online Directories, Videos, Emails, Other New Media

3. HOW TO MAKE SOCIAL ARCHIVE USEFUL

Scientists improve their work not only by thinking by themselves, but also by receiving comments and suggestions from their peers. Such a method of review has been established in traditional scientific communication, called as 'peer reviewing'. But there are other forms of 'input' that scientists can receive from their 'outer world', for instance what indexing system now begin to call as 'impact factor', whatever the bias it may introduce.

Another type of input, although not so 'serious' is of course from the public itself, those people which are enthusiastic on the science, either by email, blog posting, etc. Another way is perhaps to introduce some 'rating review' in those blogging, just like amazon.com enables potential book readers to see what others say. In this regards the administrator may enable the comment/rating review be sent to the scientists in order for them to see how their papers may get better response.

Of course, a scientist can always choose either to take care of the 'new media' response, or just get rid of them, and focus on more serious review by his/her peers. Nonetheless, a balanced view may be better, in this regards the 'periodic table of the social media elements' can be considered too (PTSME, 2009).

4. CONCLUDING REMARKS

The new media has begun to embrace the communication sphere of modern society, or perhaps better, a postmodern society. Therefore new ways to interact with the common people shall be considered by the scientific societies. After all, science moves on not only by making continuous progress in its own, but also because of its interaction with the public sphere...

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REQUIREMENTS OF DICURSIVE RATIONALITY IN REGARD TO THE DISCOURSE OF Ph.D. THESES IN SOCIAL SCIENCES

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Abstract: *One's meta-discursive focus on one's own discourse is a natural thing to do once the research interest lies in the field of social sciences. The projected discourse does not regard only the mere organization of a scientific text round the dense nuclei of assigned significations composing it, but also a set of limitations resulting from the particularities of the text's production context and its reception. Due to the fact that the intended scientific text, belonging to a specialized production and performance background, characterized by norms concerning the manner of writing and defending a doctoral thesis, cannot be analyzed within intended textualization standards of any scientific content, the analysis of the text production is highly recommended as well. As a result, projection through discursive approaches, namely, through discourse analysis, offers the possibility of a discursive organization of the dynamic relation text – context, in order for it to meet specific requirements, with regard not only to the scientific content, but also to the circumstances of the text's production and reception, including adjacent constraint, the communicative competence implying at least the semantic, socio-linguistic and semiotic-linguistic dimensions, organized round the discursive competence (Charaudeau, 2001, 2002), respectively, the correct definition of the discursive framework and the appropriate identification of discursive strategies.*

Keywords*: discourse, meta-discursive approach, scientific discourse, doctoral thesis, requirements of discursive rationality.*

1. INTRODUCTION. DEFINING DISCOURSE AS A VARIABLE

Doctoral theses represents a particular type of academic discourse mainly because of the social conventions marking all the components of this speech situation, from the socially assigned statuses characterizing both speaker and hearers to the specific setting needed for the final act of defending the thesis. A proper definition of discourse as a variable notion should take into account both text and context by investigating these two dimensions not in an additive manner but from a broader point of view, as interdependent components. This has also been a constant shift in the domain of pragmatics and discourse studies in the last decades. According to van Dijk (1998:3), discourse analysis should focus on production and performance equally: '*In sum, discourse studies are about talk and text in context*'. A similar point of view is advanced, for example, by Maingueneau (2007:48), for whom every discourse is contextualized and may even change its own context during its enunciation.

The preparation and the defense of a Ph.D. thesis require a special focus on the textual dimension of the discourse and also on the context, which will be defined in this study as '*the total social setting in which the speech event takes place*' (Mey, 2001:30). In the case of doctoral theses, the context is pre-established or conventionalized and for this reason we have chosen to use a definition able

to integrate both dimensions, but at the same time which enables the researcher to address especially the role of the 'text'. H.G. Widdowson' studies seemed particularly relevant to us, because of the interest for the role of the text in the configuration of the discourse. In his critics' opinion, one of the main dichotomies discussed by him is the text/discourse dichotomy, where '*text is re-conceived as the starting point or alternatively the trace of discourse*' (Cook, Seidhofer, 2001:11). For Widdowson, the difference between text and discourse includes the notion of intended meaning: '(…) *the term discourse is taken here to refer both to what a text producer meant by a text and what a text means to the receiver*' (Widdowson, 2007:6).

In Eco's terms (1996:25), the intended discourse implies an emphasis on two of the three possible interpretive intentions: *intentio auctoris*, viewing the interpretation of the message as research and *intentio lectoris*, where interpretation connotes imposition. What remains left – or at least partially left – aside is interpretation as investigation, *intentio operis*, since the doctoral thesis implies research work for the text production and the evaluating reading done by the members of the doctoral scientific board. However, this does not necessarily mean that an academic or a scientific text cannot constitute a work in itself or that it does not speak by itself, regardless what the author intends to convey.

Focusing on features as the organization, production and performance of the discourse, various definitions of this variable have been in use in the field of discourse studies. Defining the variable 'discourse' from Widdowson's perspective may lead us to a broader frame of definitions, notwithstanding the fuzzy perspective (van Dijk, 1998:1), which approaches discourse by referring to other terms that are conceptually very close to it: language, communication, interaction, society, culture. Teun A. van Dijk (1998:2) distinguishes between three major levels which cannot be overlooked by a valid definition of discourse:

> *Even after this first approximation to the concept of discourse, we already have encountered its three main dimensions: (a) language use, (b) the communication of beliefs (cognition), and (c) interaction in social situations.*

which shows that by using Widdowson's definition and focusing strictly on the text, the research is positioned at the first level, the one of language sciences.

Our discussion of doctoral theses as a particular form of scientific discourse is mainly aimed to summarize literature in the field of discourse studies and to draw attention to the fact that research is still needed especially regarding the possible variations in academic / doctoral discourse, due to cultural or institutional features and also to the particularities of the scientific field. The following two sections are focused on the doctoral discourse in relationship with its context while the other ones bring into discussion mainly the textual dimension, by enlisting and describing three major requirements needed for the achievement of discursive rationality.

2. THE DOCTORAL THESIS AS A DISURSIVE GENRE

A proper procedure for the analysis of a discourse needs to take into account discursive typologies and strategies and, by means of them, discourse forms and functions.

The discursive or the 'situational' genre as stated in Charaudeau (2002:312), which is to be understood in direct connection to more general communication domains or situations (for instance advertising, politics, media, science a.s.o.) represents a special type of meta-discourse which sums up variants deriving from the communication 'subcontracts', also called 'subgenres', and also specific formal restrictions at the level of sub-subgenres. Because of the topic discussed and of the constraints regarding the speech situation and contract, the text of a Ph.D. thesis belongs to the category of scientific discourse. Oriented scientific discourse (OSD) is a written form of discourse in the field of communication sciences, needing a multidisciplinary approach within the frame of

social sciences. As a subgenre, OSD refers to the construction and performance of a highly specialized scientific text, implying distinctive organizational features and at least two subgenres: the monograph, characteristic for humanities, theology and law and the compilation of secondary literature, characteristic for medicine, technology and natural sciences (Gustavii, 2008:91). What seems to be agreed upon is that there is no unique set of rules which can be valid across all disciplines in order to control the production of a Ph.D. thesis. Following the tradition of subgenre hybridization, the discursive production is not meant to draw clear-cut boundaries, as long as a thesis structure may vary '*from institution to institution and even from professor to professor in the same department of the same institution*' (Day, Gastel *apud* Gustavii, 2008:91). It seems more appropriate therefore to talk about the conventions deriving from the speech situation, conventions which may be either general or particular. In the first case, it is common knowledge that a thesis may be subject to certain constraints, which are similar for many scientific disciplines. For instance there are general conventions ruling the textual structure of a Ph.D. thesis, which must include an introduction, conclusions and the full list of references. Other kinds of general conventions are close to the requirements of the Gricean cooperative principle: the originality of the scientific content, the good understanding of the literature discussed, the accuracy of quotations, the clear presentation of the objectives, of the methodology used and of the outcomes, the explanation of the scientific relevance of the study, all these features may be viewed as corresponding to the maxims of quantity, quality, relevance and manner in the domain of scientific written and oral discourse. In regard to the particular conventions, these may derive from the research topic (for example, a thorough presentation of the corpus is needed if the thesis is based on corpus research) or from distinctive traits of the public or from the speech situation.

	SCIENTIFIC DISCOURSE		
	specialized	*for teaching purposes*	*for popularization*
Discursive focalization	explanatory argumentative	defining descriptive	descriptive
Semiotiv non-verbal codes	symbolic	iconic + symbolic	iconic
Reference	epistemological		
Referentia-lization operations	concepts, hypotheses, theories, models	denomination, definition, categorization, exemplification	denomination, description, explanation
Rhetorical operation	graphic and general linguistic metaphor	idiolect linguistic metaphor	
Speech acts	argumentation (+ polemic)	denomination, argumentation (- polemic)	assertion, definition

Fig.1. Subgenres of scientific discourse (*apud* Rovenţa-Frumuşani, 2005:192)

At a general level, OSD presupposes a low degree of affective involvement from the part of the speaker / writer, manifested through the use of a neutral tone, a reduced number of subjectivity markers, the use of the scientific register. As a basic general rule, epistemic stance is privileged instead of affective stance but totally unbiased communication will always remain an ideal and expressions of stance are unavoidable even in academic discourse. Nevertheless, recent studies have shown that the use of subjectivity markers may vary according to the academic field (e.g. Charles *apud* Hunston 2007) which confirms the idea that distinct scientific domains create their own registers.

For a more precise description of the traits of OSD, we have used a representation of the subgenres of scientific discourse according to a set of discursiveness markers (see Fig.1). Following this representation, the Ph.D. thesis belongs to the subgenre of specialized discourse, implying as discursive focalization an explanatory / argumentative one, with epistemological references, by making use of concepts, hypotheses, theories and models as referentialization operations and argumentative speech acts. The polemic character of a doctoral thesis may constitute in itself a subject for further research and it can be stated only by an investigation which pays attention to the national, local or institutional culture.

According to the typology advanced by van Dijk (2003:73), the discourse of the doctoral thesis in social sciences is meant to fulfill the individual goals of the speaker/ writer and it is based on specific, highly abstract knowledge. Its reference is not formed by obvious reality but it places itself in contrast to the sciences which rely on information derived only from observation (Saussure 2004:147).

3. THE SPEAKER'S UNSTABLE BALANCING

An investigation of the doctoral thesis discourse within the limits of discursive pragmatics brings into discussion the specific dynamism of the speaker – hearer relationship and the socially assigned status of all interactants in this communication process. Research methods involving frames analysis or critical discourse analysis might not provide very useful tools for this particular speech situation. One method takes into account the manner of constructing the interpretation, placing emphasis on the idea of the sociocultural context, while the other one values more the ways of discourse production and dissemination leading to social change.

The enunciation, from the point of view of discursive pragmatics, is seen as a way of constructing a reality and implies the establishment of a dynamic relationship between the interactants. In this relationship, the speaker engages in the truthfulness of the message conveyed by marking his/her status throughout the discourse. But the speaker's status itself may be called a 'semi-legitimate' one, a trait which leads to the act of unstable balancing between two positions. First, the speaker positions him/herself as an expert, whose discourse is meant to prove his/her authority in the scientific field. Second, the speaker's social status is that of a doctoral student and thus a candidate or simply a person being evaluated. In this case, the relationship with the hearers is asymmetrical and, by means of the discourse produced and performed, the speaker is in search of a support from the examiners for consolidating his/her identity. Paul Thomson (2005:32) highlights this unstable kind of balance between the speaker's positions and provides a possible answer to this dilemma of the discursive positioning of the doctoral student as a speaker towards the examiners as hearers:

> *Doctoral candidates are in a peculiar position of being both experts, as well as examinees. It is important therefore both to assume a tone of authority, and, at the same time, establish that the writer is entitled to adopt a tone of authority. Claims must be backed up to evidence, and a comprehensive understanding of thinking, approaches and knowledge in their chosen fields of specialisation must be demonstrated, in order to persuade the most immediate readers (the examiners) that the thesis is worthy of the award of a doctorate*.

The speaker's need to find a balance for his/her double status is a result of the multiple publics or types of hearers to whom the message or the thesis is supposed to be conveyed. The most immediate type of public, a 'primary' public, is composed of the members of the scientific board who take the decision of awarding or not the title. As Thompson points out, in this case the speech act is mainly persuasive but also it has a performative component (or at least it will lead to another performative act, the change in the speaker's status). A 'secondary' public is represented by the scientists, researchers forming the academic community, at various levels, from the local level of the institution awarding the title to the national or international level. The relationship to the primary public is clearly asymmetrical, while it is desirable that the relationship with the more general public should maintain a higher degree of symmetry.

A consequence of the oscillation in the power relations at work in this frame is also a specific way of directing the public in the act of reading, a way of signaling the intention which organizes the text. The specific trait of this reading guidance derives from the fact that the message conveyed is supposed to undergo a specific form of evaluation. As following, the speaker 1) presents the original content in relationship to the sources used (signals the intertextuality in particular ways by clearly pointing out which parts of the message are original and what is quoted, lists the models which have been used etc.); 2) provides a hierarchization of the scientific content, an internal evaluation of the message; 3) realizes a complex form of argumentation, having to justify his/her decisions regarding the research conducted, the chosen topic, the methods, the references used or the current of thought the thesis belongs to, but also to bring valid arguments for the outcomes of the study.

Intertextuality is a feature of academic works, not merely unavoidable, but even highly necessary. However, a characteristic of the doctoral thesis discourse remains the need for clearly setting the limits between the original discourse, assumed by the speaker, and the previous discourses or quoted sources (Jakobs 2003:895). Regarding the speaker-hearer relationship, this engagement is realized by indicating the utterances considered important, by using various strategies of ranking the scientific content, by indicating the degree of certainty through the use of epistemic markers a.s.o.

4. DISCURSIVE TYPES AND STRATEGIES

As a type of discursive organization, the intended projection focuses on the expository genre which '*focuses attention upon a present time and place coincident with the convergence of reader and text*' (Beale, 1987:37) delimiting itself from the narrative and dramatic genres, unlikely to be used in scientific discourse. It is possible to determine the discursive strategies regarding the research topic and the specific discourse aspects starting from the conditions proposed by Charaudeau (2002:313) regarding the constraints, the goals (taking into account the distinction between the goal of the scientific research in itself and that of the discourse which is ultimately of a persuasive kind, i.e. to persuade the examiners that the candidate deserves the Ph.D. title), the speaker's positioning in regard to the hearer and his/her managing to fulfill his/her intention of identifying and surpassing the risks connected to the other interactants. Even if the discursive strategies might not be consciously used by the speaker, it is necessary that they should be carefully planned in the case of the final and broader project which includes not only the written text of the thesis but also the conversation taking place between the candidate and the examiners. The scientific text imposes the strategies necessary for its self-legitimization through the author's attempt to ratify him/herself by invoking expert sources: '*strategy of legitimization consists especially of recalling or reinforcing a position of authority*' (Charaudeau, 2002:314). The presentation of the research results, of the scientific essays written during the doctoral years and of the thesis as the final product of year-long research means a different kind of performance and therefore

certain strategies should be taken into account in order to realize the hearers' 'captatio benevolentiae'.

A more detailed investigation from the meta-discursive perspective should pay attention to the requirements of discursive rationality intended for the preparation and the defense of the thesis as these stages of the research process involve specific discursive requirements. These requirements can be studied alongside with the general 'impositions' of the discursive organization: cohesion/ coherence, informativity and relevance, which require a high level of discursive competence from the part of the hearer.

5. INTENDED COHESION AND COHERENCE

The textual cohesion refers to the syntactic unity of the text and is accomplished by marking the connection in a series of linguistic units: repetition of the same item in different sentences, the use of logical connectors, the use of segmentation markers, the unity of the pronouns (pronominal deictics), the unity of the verbal system a.s.o. Briefly, „*the identification of connections that are linguistically signalled like those between a pronoun and a previous noun phrase, enables us to recognize the* cohesion *of a text*" (Widdowson, 2007:45). In turn, coherence implies the unity at the level of the signified, the unity of meaning of a series of utterances which must refer to the same linguistic reality. Coherence is based on the idea of an addition to the meaning of each sentence taken separately and also on the idea of sustaining the global communicative intention (the illocutionary act). As Reboul and Moeschler (2010:153) put it, the coherence of a discourse is accomplished when every local informative intention (characteristic for every isolated utterance) supports the global informative intention (characteristic for the whole discourse).

The context of the production and presentation of a Ph.D. thesis requires a correlation between the text and the speech situation, which means to respect the rules for the production of an academic text, to include a correct discussion of the topic or to respect the limits of the scientific field. The illocutionary aspect of this speech act represents the force of the scientific statements included in the text and the speaker's intention to persuade the hearers regarding the scientific value of the text (of the research), the importance of the topic and his/her epistemic authority which has been acquired during the research period.

6. THE DEGREE OF INFORMATIVITY

Another essential requirement of the discursive rationality refers to informativity. For the Ph.D. thesis, the informativity of the OSD focuses on how to reach the desired degree of comprehension which should be assessed in relationship to the main public or publics, especially the evaluatory board of scientists in this case. The realization of informativity includes its own form of balancing two contrasting communicative goals. One of this goals is the unavoidable appeal to 'shared knowledge' (Sperber, Cummins, 2007:4) which functions as a prerequisite for all types of communication in its broadest sense. Without a common background shared by all participants it would be impossible for the message to be understood. At the same time, the informativity of the scientific discourse is accomplished by setting as an explicit objective the extension of the hearer's cognitive field. This neccessity of enlarging the hearer's knowledge starting from common, well established facts and notions, the act of balancing between the old and the new represents the requirement which is most representative for a doctoral thesis.

7. RELEVANCE/PERTINENCE OF CONTENTS

The ultimate major requirement of the intended discursive rationality is the one concerning relevance or pertinence of contents. Continuing Searle's studies on speech acts rationality, Herbert Paul Grice (1975) has included the maxim of relevance

among his conversational maxims. Grice underlines the necessity of correlating intervention with the conversation topic, without adding any generalizing, useless propositions, without deforming the "cognitive scale", the locutor being asked to agree with the context, with the time of the performance and with the purpose of the communication, and thus, the scientific discourse becomes strict with regard to meeting these imperative requirements. Charaudeau (2002:304) considers the principle of relevance as being a fundamental one and brings up the necessity of relating the discursive content with the Gricean principle of relevance:

> *The* content *(propos) is that which echoes the relevancy principle, together with the idea that each situation belongs to a thematic domain, however general it might be*'.

The relevance of the research topic, from the angle of the study field resides in an analysis, from communicative perspective, of the appearance and development of sign systems under the historical evolution of cultural patterns within the linguistic community. Related to the cognitive rhetoric limitations and to the particular case of scientific discourse, *"we consider as pertinent any proposition that, placed next to shared knowledge, brings about new consequences"* (Sălăvăstru, 1997:622), that is, it offers the possibility of engaging creative and innovative dimension into the research process. By this positioning, with regard to the scientific text, pertinence and the informativity become inter-conditioned. Therefore, in order to avoid surpassing the limits of the reference cognitive area, informativity (inside shared knowledge) meets the requirement of integrality, which implies that the scientific information be integrated within the already existent knowledge (the common encyclopedic horizon of the audience), without abandoning the requirement of progressive informing, which, in turn, involves, in the cognitive rhetoric perspective, not only the "cognitive addition", by surpassing the limits of the common cognitive area, but also the new information, transmitted within the limits of shared knowledge. Nevertheless, Sperber and Cummings (2007:5) argue that this type of rhetoric should not be thoroughly restrictive; pertinence being perceived as one of the functions of shared knowledge:

> *(...) any proposition of which some but not all of the entailments are part of shared knowledge is relevant. The wide field of relevance comprises all propositions that are relevant in this sense. It can thus be described as the potential complement of shared knowledge, and any modification in shared knowledge will bring about a modification in its complement. (...) This definition of relevance is clearly too broad. Shared knowledge, at any given moment, is not a homogeneous whole. Relevance is a function of shared knowledge and thus of memory*.

Pertinence and informativity are interrelated aspects having various consequences but they are mainly related to the process of production and not to the defense of the text.

8. CONCLUSIONS

Perspectiva The meta-discursive perspective related to one's own intended discourse may be a useful exercise in the minute designing of scientific contents and in considering the adjacent requirements of discursive rationality. A fore-positioning in the discursive field, by defining the "discourse" variable in the sight of the act's particularity and of the intended content, by indentifying the type of discourse , the enunciator's position, the adequate methods and strategies, is useful in the ultimate attempt of building discourse. Thus, an organization of the text and an achievement of discursive constraints take place in an anticipated manner. Yet, the construct design is incomplete in the absence of a projection similar to a simulation of accomplishment manner of discursive rationality requirements: coherence and cohesion, informativity and relevance/ pertinence. Bringing up the possibility of designing a doctoral thesis in relation with the above mentioned variables and indicators

should not be confused for a meta-discursive and self-reflexive steadiness inside the project, but it should stand for prefiguring an endeavor that is about to be undertaken.

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YOUR BODY REVEALS YOU

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Abstract*: Detecting deception is one of the most important skills for professionals to use in the field of their profession. These skills are capable of being improved over time in direct proportion to experience by scanning essays on the subject and having a lot of practice. Reading body language cues is a practical study that can be applied in every minute of daily life. We can catch a lot of useful tips by examining the people around us like our family and our friends in the business, park, bus stop or a restaurant.*

Keywords*: nonverbal communication, body language, lie detection, stress detection.*

THE MOMENT THAT THE HOMICIDE CASE IS SOLVED

A sudden phone call informed of a homicide to the police. The Police Chief and his staff went to the crime scene in order to investigate the case. In the open field, there was a common fountain which has a small pool for the cattle to drink water. In this pool, filled up with water, there was the corpse of a woman who was half naked. In her possessions, there was nothing else but a soaked mobile phone to learn her identity. With the help of a cellular repairer, the phone is started again. The identity of the woman and the last person whom she spoke with was learned. The Police decided to go to the suspect's house.

In homicide cases, the importance of fast action is undisputed, because while time is passing by, the suspect can spoil the evidence and make up a fake alibi. For this reason, the same afternoon, the police force raided his house with permission from the prosecutor. The suspect was at the house with his family. When he encountered the police, he behaved very cool when the staff started to search the house, the police chief took the suspect to the police car to conduct a private interview. The suspect seemed very relaxed and was answering the questions in a calm manner. The police chief mentioned the name of the woman without mentioning the homicide, "Do you know Fatma Turna?" When the suspect heard the name, in a moment, his looks has changed. His mouth went dry and he tried to say that he didn't know a woman with this name. Because of the dryness in his mouth, he couldn't even answer properly. After approximately ten seconds, he returned to his calm manner. A whole day long, he was interrogated. At the end of his custody, although it had been proven that he committed homicide with the help of the evidence and witnesses, he never confessed. But the "momentary" expression was enough for the police officers to be sure they were on the right track.

The suspect had known why the police came for sure and he had prepared himself for this. But, hearing the name of the murdered woman caused some involuntary behaviors in his body which were easily observed.

1. NONVERBAL BEHAVIORS AND NONVERBAL COMMUNICATION

Nonverbal behaviors, with its narrow meaning, refer to the behaviors other than talking (Mehrabian, 2007:1). In this concept; facial expressions, gestures, postures, positions and foot / leg movements can be included. It is commonly known as body language and there are many books which are written by practitioners about it. When it is used in the broad sense of the non-verbal movements, the body language concept is not enough; the concept of nonverbal forms of communication is more correct. Because in this field; body language (kinesics),

proximity and use of space (proxemics), tactile (haptic), environmental factors (eg, architectural style, odor, color, temperature, lighting, noise, and traces of the previous movement), physical properties (general attractiveness, breath odor, length, weight, and hair-tan), paralanguage (voice pitch, loudness, speaking rate, intensity, silent pauses, speech mixed with sounds, speech disorders), artificial items (perfumes, clothes, lipstick, glasses, tattoos) should be included (Knapp & Hall, 1978).

The pioneering work of non-verbal communication belongs to Charles Darwin. In his distinguished book, "Expressions of emotions in man and animals", he tried to establish the common facial expressions of humans and animals. In his book, Darwin stated that these expressions are innate and universal. Since then, thousands of studies have emerged in the most interesting and mysterious field of communication science, but in this issue, there is at least one further topic to be investigated.

2. NONVERBAL LEAKAGE

Darwin stated that "Based on the habitual movements that are associated with certain situations can be partially controlled. The muscles that can be controlled at least in this case exposes the most credible statements, and we accept them descriptive" (Darwin, 1965). With this statement; he means that the movements which the sender (source) can't control, will tell to the receiver the truth.

Freud, in a manner that is more poetic, *"He that has eyes to see and ears to hear may convince himself that no mortal can keep a secret. If his lips are silent, he chatters with his fingertips; betrayal oozes out of him at every pore"* (Freud, 1959:94) referred to the same subject.

As is proved by the above scientific judgments, during a dialogue when we don't tell the truth, our bodies will often betray us. Because, we cannot control our non-verbal behavior as much as we control our verbal behavior (Pennycook, 1985:264). Mimic is related with our emotional world and is open to our routing attempts. However, the deliberate use of facial muscles might cause the emergence of opposing signals, for example, can cause a false smile. This smile is not a symmetrical one like a genuine smile. We try to give a friendly and respectful greeting, but a number of muscles that signal contempt emerge. Mostly we want to look relaxed during communication, and want to control our facial expressions and gestures, but a nervous foot shake may reveal us (Schober, 1996:39).

Voluntary or involuntary movements are executed by our brain. The human brain can be examined in three parts: reptile brain, the mammalian brain (limbic system) and the human brain (neocortex) (MacLean, 1952). The limbic system is the reason for the body's spontaneous movements for our survival; the emotions of fear, disgust, tension always emerge in this part. If our heart beats speed up and our breathing frequency increases when we hear the footsteps behind us, while walking down a deserted street at night; it is the result of the limbic system. This part of the body is the honest one because we don't have any dominance over it. It means, while the neocortex refutes a crime that we committed; the limbic system expresses the truth to the counterpart by giving signals like sweating, motion freezing, dry mouth, etc. (Navarro, 2008:25).

In connection with this matter, channel capacity should be mentioned. Channel capacity refers to the amount of information that a communication tool can transfer per unit of time (Cherry, 1966:178). According to Ekman and Friesen, the body parts with the lowest channel capacity, provide the most cues on deception (Ekman, Friesen, 1969). Our faces, comparing to our hands and our hands comparing to our feet can transfer more data per unit time. In that case, our legs reveal more cues to deception than our hands and hands give out more than face.

Everyone, who communicates knows that his/her facial expression is being read permanently and for this reason he/she tries to dominate these expressions. In this case, the signals which emerge as far as possible from our faces reflect the actual state of mind. The relationship of the face and foot movements, is

as follows: "*Being away from our heads, we forget to control our feet while we are in a excited conversation or while we are trying to make up a lie. So, the feet are the most realistic limb of our body. Whatever facial expression; unconscious movement of our feet exposes the real mood of ours*." (Schober, 1996:39).

Former FBI agent and body language expert Joe Navarro, proves the same argument by expressing that the most honest part of the body is the feet and legs (Navarro, 2008:63). Navarro, in his book, contrary to the common manner, recommends to read the signs of body language upward, starting from the feet (Navarro, 2008:63).

Albert Mehrabian, after the experiments he conducted on "nonverbal leakage" or a general sense "lying signs", has reached the following conclusions:

- When people lie, a greater amount of negative feelings are expressed by nonverbal behavior.
- Facial expressions, are less effective in revealing the lie, because our control on the face is stronger.
- A happy facial expression incompatible with the social environment, can be a deceptive act to soothe the other person.
- Over-stressed or introvert people smile less when lying, so they are less likely to conceal the cues to lie.
- People are likely to limit their talking time while lying. People who lie or are stressed, slip of the tongue and speech disorders like stuttering increase.
- While lying, affirmative nodding and foot/leg movements are reduced.
- Volume level, shows self-confidence and dominance. People who lied or are stressed decrease the volume level.
- Swinging movement while sitting and increasing the foot/leg movements, shows the comfort level of the person (Mehrabian, 2007:98). But fidgeting can be sign of stress.

The responses of the body while lying are caused by differences in reality and rhetoric. Those skilled at lying are the ones who can make himself believe the fiction he/she designed in the mind at the beginning. When fiction is believed, or the liar is able to convince himself/herself, the body naturally will not give any signal to the other party.

3. THE MOST COMMON BEHAVIORS OF LIE AND STRESS

Closing Mouth: Brain instructs to suppress the lies unconsciously. While closing the mouth in children is an obvious sign, more subtle closings occur with age, more and more fingers lightly cover up is encountered. Sometimes there can be people who gently hold their hands in their mouth in the form of coughing.

Touching Nose: "Smell and Taste Treatment and Research Foundation" in Chicago has identified that, chemicals called *catecholamine* release in a person who lies and the tissues of the nose filled with more blood. As a result of the experiments made with special cameras, showed that lying people's nose grew slightly which cannot be seen visually and this is named "Pinocchio Effect". We cannot see the nose growing with eyes, but we can see the effect of the increase in blood circulation in the form of the person gently touching his nose.

Scratching Nose: In contrast to lightly touching the nose, people who lie can scratch their nose in a more prominent way.

Scratching Eyes: This can be done by people who do not want to scratch their noses. This is the brain's effort to prevent the lie or to hinder seeing the thing which the person does not want to be seen.

Scratching Neck: In general, it is seen in the form of scratching the side of the neck by the index finger. It may indicate instability and uncertainty.

Collar Adjusting: In the event of stress or telling a lie, sweating increases due to the increase of blood circulation. This is the main reason of the collar detraction. (Pease, 2006:148).

4. RESEARCH RESULTS CONCERNING LIE DETECTION RATES

Even There are many studies concerning judicial and law enforcement personnel's lie

detection rates in the world. Through this research, the accuracy of detecting the verbal or non-verbal signs of lies by the expert or supposed to be expert is aimed. In most research, the accuracy of lie detection is stated to be close to chance. (DePaulo, 1994, 1998; DePaulo *et al.*, 1985; Zuckerman *et al.*, 1985).

In the meta analyses of the 37 researches' results which were conducted to detect the cues of deception, accuracy rate is between 45% and 60% and the average accuracy is 57%. It actually shows that people are not good at lie detection. (Vrij, 2000). Another research showed that the professional lie detectors could not catch the high accuracy rates of lie detection comparing with the ordinary volunteers from the university students. (DePaulo *et al.*, 1986; Ekman *et al.*, 1991; Ekman *et al.*, 1999; Köhnken, 1987; Vrij, 1993; Vrij *et al.*, 1997; Vrij *et al*., 2001). Ekman & Sullivan have stated that only American secret service personnel could get better results than the university students. (Ekman *et al.*, 1991).

Two methods are used for the detection of lying through interviews and interrogations: **Direct evaluation** (Is this person lying?) and **Indirect evaluation** (Did this person get in too much trouble to respond?). In direct evaluation, the observer focuses on the signs of lies and tries to evaluate the signs according to this. In indirect evaluation, a person focuses on psychological assessments for the results rather than signs of lying. In direct evaluation, the question "Is this person lying?" leads us to result but in indirect evaluation, the reply is taken by the question "Does the speaker really like the person that he mentioned". (Vrij *et al.*, 2001). All of the research shows that only indirect evaluations have more accuracy and accuracy rates of these kinds of evaluations are more than chance. (Anderson, DePaulo 1999; DePaulo, Jordan *et al*., 1982).

Another study has been conducted to detect deception cues according to the style of interrogating (Vrij *et al*., 2007). In this research the techniques of

(i) **incriminating interrogation** and

(ii) **information collecting interrogation** were evaluated.

In incriminating interrogation, law-enforcement officers directly divert incriminating types of questions against the suspects. (For example, "Your responses suggest that you're hiding something"). In information collecting interrogation, they ask the suspects open-ended questions in order to make them to explain the whole story. (For example, "What did you do between 3 pm and 4 pm?", "You told me that you were at the gym last night, who else was there with you?"). As it can be easily seen in incriminating interrogation short answers are taken from the suspect (for example "I am not hiding anything") whereas more long answers are taken in information collecting interrogation. As the words are the verbal cues, it is indisputable that detecting the signs of lie is more possible in longer answers. As a result of the research, information collecting interrogation, exposes more verbal signs of lying rather than incriminating interrogation. Also incriminating conversation could not expose any clues of verbal signs (Vrij *et al.*, 2007).

Some of the results obtained from the results of the research are as follows:

- If law enforcement personnel cannot confirm what the suspect told, they prefer to read nonverbal signs: rather than verbal statements during the interview.
- Assessing a person as telling a lie, only makes sense when performed by professionals. Even in this case, all of the assessments will not be correct. (Ekman *et al.*, 1999).
- When a law-enforcement personnel interviews with the suspect through incriminating interrogation, if he thinks that he "knows" or is "sure" the suspect is "guilty"; he/she does not change this prejudice and he tends to put pressure on the suspect to confess. This can cause an innocent suspect to take the responsibility of a crime. (Kassin, 2005).

Professional lie detectors, such as law-enforcement personnel do not easily think that the suspect is telling the truth (Vrij *et al.*, 2005). Furthermore sometimes they tend to be prejudiced toward the suspect as guilty. While the law-enforcement staff is getting more experienced and having more training in lie

detection; they tend to be a prejudiced that the suspect is guilty (Meissner *et al.*, 2002).

5. CONCLUSION

Matters that I mentioned above may be the cues which can be used for detecting the signs of lying. However, the following should also be noted that these kinds of cues can be caused by tension or discomfort of the other part at that time. For example, if a person is frequently scratching his nose, this may be just because of flu. Detecting deception is a demanding effort. Many experiments which had been carried out on students and law-enforcement personnel showed that the accuracy of detecting the cues of lie is almost equal to chance rate. Unfortunately, the misunderstood behaviors which were mostly thought to be the indicators of deceit were generally caused by the stress and pressure. (Ekman, 1991:187). Judicial officials should imagine the stress of the suspect who is accused of murder in the court hall, approach the suspect without prejudice and try to make assessments within this framework.

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INTERCULTURAL MANAGEMENT – A CHALLENGE OF THE CONTEMPORARY WORLD

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Abstract*: Intercultural management has entered the specialized literature in response to the new configuration of the contemporary world. The terminological explosion multi-, pluri-, inter-, trans-culturality reflects the evolution of cultural phenomena in the context of globalization, which is in tight connection with the new ways of organizing the economic activity. Cultural globalization, perceived as an attack toward individual and group identity, has spread within the social field as diverse forms of social pathology aiming at the very human condition. The consistence of intercultural management and its purpose are given by the intercultural education, as a formative measure, as a new perspective on education or as an attitude and as a mood.*

Keywords*: multiculturality, interculturality, cultural pluralism.*

1. FROM MULTICULTURALISM TO INTERCULTURALITY

Multicultural, pluricultural, transcultural, intercultural – are terms whose common root is 'culture', a concept that has come to public attention since the latter half of the eighteenth century, on the background of an autonomization of the cultural field that gradually makes its identity clear. Later on, throughout the nineteenth century and the beginning of the twentieth century, we witness the stage of cultural codification; thus, culture had become both a national and ethnical symbol. During the twentieth century the process continues through the institutionalization of culture that has turned into a defining element for shaping individual and group identity. Moreover, culture progressively changes into a factor of economic development and instrument of globalization. The order of the above mentioned terms (multi-, pluri- and inter-culturality) is not randomly selected, it reflects, in fact, the evolution of historic and social realities in the world.

Multiculturality is intrinsic for history and humankind's evolution, given the fact that, in time, human communities have developed conceptions, traditions, own rituals and beliefs, according to their particular life experiences. Therefore, it is natural for the term to be associated with collectivities' and groups' characteristics, it reflecting a mosaic of cultures that cannot be reducible ones to the others, despite their common features – cultures that coexisted in the same space and time without necessarily knowing about one another. These cultural entities live their moments by usually avoiding contaminations (Rey, 1999).

Following the same pattern, **pluriculturalism** sustains the specificity of each culture that develops its own perspective of the world and holds its own value system. *Multicultural* (multi = many) and *pluricultural* (pluri = many more) are terms that accomplish a static description of societies that, in effect, are pluri- and multi-cultural because they reunite individuals and groups belonging to different cultures. Consequently, their common trait is their static dimension,

their replicating the atom-like character of cultural diversities. Through a multi-cultural approach, interactions are not excluded; yet, they are implicit to the concept (Rey, 1999).

Apart from any theory, a society functions as a net of reciprocal conditionings that cannot be ignored. Fathali M. Moghaddamm (1993, *apud* Chelcea, 2002:191) makes distinction between the collective multiculturalism and the individual multiculturalism. Should collective multiculturalism stand for "*equal treatment of cultural traditions of the group", then, the individual multiculturalism reflects the "right of each person to be respected as an independent cultural unity within the group*".

This distinction highlights the social reality's complexity and the weaknesses of the multicultural approach, which, considering cultures' juxtapositioning as being sufficient, it can become a source for segregation and discrimination (see apartheid).

The concept that manages to reveal, in an adequate manner, the contemporary world's realities is that of interculturality, which, by the very prefix *inter-* suggests interaction, the exchange and the ultra-dynamic character of the society we live in. through its interactionist, dynamic connotation, the concept let us think of exchanges, reciprocity and dialogue, demands and realities that are omnipresent in the present world.

Nevertheless, the use of the English term 'multicultural' is better known than the word 'intercultural'. In the twentieth century, the Anglo-Saxon world developed a "multicultural" movement under the pressure of socio-economic changes, although the risk for this movement to bring about marginalization forms could be foreseen. On the other side, the use of the term 'intercultural' does not always imply its interactionist dimension, even though the prefix *inter-* explicitly underlines the 'interdependences' and evokes the cultural diversity and the necessity of dialogue. The terminological evolution presented above highlights the mandatory and operational character of the intercultural approach and the necessity of abandonment of mono-cultural, egocentric or ethnocentric processes.

The interest in achieving knowledge and psycho-sociological research has moved from mono- and intra-cultural studies toward pluri- and multi-cultural ones, reaching its highest peak through the study of interculturality focused on "studying norms' differentiation in relation with cultural specificities of the areas they belong to" and their correlation with cultural phenomena generated by social changes and the connection of local cultural entities with universal cultural unities (Zaiț, 2002:80).

Blain Flowers and Frank Richardson (1996) underline the necessity to study the behaviors of people on all continents, the obligation of respecting diversity and that of elimination social discrimination. The aim of all these interests is to obtain a favorable combination of elements characteristic to each culture, and their finality should be the accomplishment of this evolution through cultural adjustment. This is what Jürgen Bolten (2011:25-38) calls the "synergistic meaning of the interculturality's influence".

Another derived term and very frequently used by the specialized literature is **transculturality**, which observes relations among various national cultures. In relation with it, interculturality keeps going on analyzing feed-backs and the cultural synergy phenomenon.

This is why, intercultural diagnosis involves more than identifying different cultures' specificity; it aims at making use of it for the purpose of reaching specific common goals.

2. INTERCULTURAL MANAGEMENT – EXIGENCES AND SOLUTIONS

In the era of globalization and informational culture, cultural diversity and the intensification of contacts and intercultural exchanges represents a reality that we can ignore and which necessitates an adequate approach. Intercultural management as a field discipline of general management came to life in order to satisfy these needs. It represents the science and art of managing issues that cause cultural differences and changes (family,

school, church etc.) so as to turn them into adjustment factors to the challenges of the current world. The contact actions, those of engagement and participation are indispensable for the contemporary human condition.

If economic globalization has already created numerous functioning mechanisms, cultural globalization, which goes along with it, induces a multitude of attitudes and behaviors, different manners of acceptance or rejection that need to be managed very wisely. The internationalization of economic life, the new forms of organization of production activities bring about the creation of specific transcultural spaces, within which intercultural learning becomes indispensable. This is how we explain the expansion of the economic management science over the interculturality process.

Alain Touraine (1996, *apud* Cuco & Cozma, 2001:25) appreciates that interculturalism has been imposed within the current social sciences due to the fact that the "political republican model of the West faces a decline" and it is now in dissolution. The dissolution of old universal reference points makes room for the installation of the economic domination and for the creation of consumerism. As a result, the "development of technology, of markets and of the new type of consumption has destroyed the capacity of political mediation between the natural order and the cultures' diversity.

The contemporary civilization comes to life at the junction of rationalization and production globalization, of the new forms of exchanges and of cultural diversity. In this context, economic competition remains dependent on the manner in which the social actors understand how to relate to one another, to dialogue or to communicate in an authentic way.

Another challenge for the intercultural management is the topic of identity. Paradoxically, at first sight, we witness a break of the cultural spaces, under the globalization impact. These spaces turn into "community fortresses", able to defend and preserve their identity more easily. The peril of uniformization and of losing identity, as a hidden and perverse effect of globalization, determines that the evolution toward globalization (world's informational culture) to be joined by a "cultural heterochrony" (Demorgon, *apud* Zaiț, 2002:82). This phenomenon consists of forming some cultural micro-environments, real forts built for the purpose of saving identity.

Access to universality presupposes preservation of identity. On the background of authentic communities' disintegration, of fluidization of identities, which become fluctuating, on the background of augmentation of the feeling of insecurity, the topic of ego-alter, or, we-they relations, liberty-security, unity-diversity becomes very sensitive and difficult to accomplish. Analyses and pluri- and interdisciplinary studies that have been achieved so far reveal the complexity of these issues and the impossibility of finding unique and definite solutions. It is sure thing that the epoch of utopias has been forgotten and the dream of radically annihilating human poverty and suffering has been abandoned. Their place has been taken by social justice and the equal distribution of chances under the motto of respecting and admitting the human rights.

Nonetheless, beyond their seduction force, such desiderates often lead to excesses and sideslips that are hard to ignore. In this respect, Cornelius Castoriadis (1997, *apud* Bauman, 2001:60-61) equally rejects the universal fundamentalism, generator of cultural crusades and oppressive homogenization, and the "multicultural" policies, lying at the basis of the arrogant indifference and of disengagement.

There can be identified numerous critical voices related to these seducing slogan that do nothing else but to conceal the real intentions and action principles. For example, the recognition of "cultural pluralism" is perceived as a "new form of indifference toward difference" (Bauman, 2001). Russell Jacoby considers multiculturalism to be an "ideology of the ideology's end" because "the educated elites of our time have nothing to say related to the preferred form of the human

condition", therefore these elites take refuge in multiculturalism, thus concealing their inabilities and lack of courage for solving these problems (Jacoby, *apud* Bauman, 2001:92). The very right to be different has been subjected to various interpretations and lead to controversies. On the one side, we find the seekers of the best forms of humanity (selective and qualitative approach); on the other side, we observe that the multi-cultural program claims that each difference is worth being preserved for the simple fact that it is something different. It is certain that at the junction of these viewpoints there is the individual/ citizen, who is subjected to a double pressure: anti-community pressures, holding assimilationist effects, and community pressures, which annihilate the individual's right to choose (Habermas, 2000).

Under such circumstances and many others that have not been mentioned here, we can formulate a conclusion, according to which intercultural management faces some complex issues that can be solved only in a multidisciplinary manner while activating all the factors involved. Any superficial, reductionist approach will lead to harmful effects, able to amplify the contemporary society's pathologies.

3. INTERCULTURAL EDUCATION – WAY FOR REDISCOVERING THE CULTURAL UNITY OF HUMANITY

Education, generally speaking, and intercultural education, especially, represents one of the important factors considered by the intercultural management. For the latter not to be just some simplistic theory, there must be some people to bring it to actuality, and these people need specific education.

Intercultural education is a formative process, imposed by the existence of the human being in a dynamic and polymorphic world, whose adjustment is conditioned by the openness toward multiple values, toward diversity. Under the circumstances of the democratic society, intercultural education is an ideological option aiming at training citizens for their orientation and adjustment to cultural mutation and diversity. According to *Standards for the Accreditation of Teacher Education*, intercultural education has been approached as training for social, political and economic realities with which people of the contemporary world are confronted. These realities hold a double dimension: national and international. Intercultural education stands for an intervention aimed at helping institutions and individuals to be more aware of the human condition, of the individual cultural identity and the cultural pluralism of their society [8]. It needs to be perceived as a new attitude, a mood, an openness toward cultural pluralism having the background of an own unaltered identity.

The first actions of intercultural education appeared in 1920, in the U.S.A, as a solution to discriminatory practices manifested in relation with groups of immigrants. Barely in the mid twentieth century was the term mentioned and it started to develop in Europe. Before this, the European education used to focus on cultural assimilation. Although policies of non-discrimination were promoted, the right of preserving one's own culture was ignored. For the Eastern Europe, the term started to be used only after the fall of totalitarian regimes.

According to differences of approach, between the European and the American spaces, two concepts started to be used:

1. *Multicultural education*: this term was first mentioned within the Organization for Economic Co-operation and Development (**OECD**), following the English model;

2. *Intercultural education*: a term used in documents belonging to the United Nations Educational, Scientific, and Cultural Organization (**UNESCO)** and the European Council.

Although, these two terms hold similar spheres of significance, their differences consist of the very use of the prefixes *multi-* and *inter-*. Multicultural education aims at measures able to facilitate the co-existence of pluri-ethnical and pluri-cultural groups. Similarly, intercultural education focuses on cooperation and common action. The prefix *inter-* signifies "interaction, exchange,

reciprocity and objective solidarity. The terms 'pluricultural' and 'intercultural', identical in their meanings, signify situational descriptions: our societies are either pluri- or inter-cultural. Nevertheless, the option for interculturality signifies the process and the interaction" (Rey, 1999:197). The ultimate goal of intercultural education is to promote equality of chances to education, which presupposes "facilitating the meeting with the Other" (Cucoş, 2002:133).

Although initially intercultural education aimed only at solving the immigrants' problems, this approach has proved insufficient under the circumstances of globalization and creation of a unitary European space. The population's mobility, the intensification of contacts and cultural exchanges, the confrontation of cultural codes that coexist within the European space impose a reconsideration of educational policies.

Transferring our approach to the sphere of military education, we can argue that intercultural education is a must for forming future military personnel. The military organization's transformations, under the pressure of social mutations, together with the new configuration of military missions and international theaters of operations call for this formative dimension for the benefit of the future officers.

In a world devoured by conflicts, tensions and conflicts among different human groups, intercultural education, seen as education for a better understanding and solidarity among people, becomes a survival topic.

Unfortunately, the attempts that have been made so far still remain timid and formal due to insufficient knowledge related to international legislation and of the actions accomplished by the European Council, UNESCO and CSCE.

In conclusion, in order for the intercultural management not to remain a sterile concept, just like many others, it needs to be sustained by education, the only tool capable of forming characters and changing mentalities.

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A COMPARATIVE ANALYSIS OF SECURITY AND INTELLIGENCE ACADEMIC STUDIES IN THE WESTERN AREA AND ROMANIA[1]

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***Abstract**: The increasing of public appetite for understanding intelligence issues determined the delivery of many "bachelor" or "master" academic studies around the world. Despite an exponential increase in the number of such educational programs, experts agree that the Anglo-American space is, qualitatively and quantitatively, the best represented. As a member of the European Union and NATO, Romania has to take on such standards for comparison, but also to understand the common points and differences that divide those areas both in conceptual and pragmatic approach. For this reason I will present and analyze comparatively security and intelligence studies identified in the US, Great Britain and Romania.*

***Keywords**: education, intelligence culture, security studies, intelligence studies*

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1. INTRODUCTION

The international sociopolitical developments of the recent years have led to the reconfiguration of the interest of regular people for intelligence and to the occurrence of a new paradigm specific for this field. Also, the increasing of public appetite for intelligence studies determined the opening of many "bachelor" or "master" programs around the world. Despite an exponential increase in the number of such educational programs, experts agree that Anglo-American area is, qualitatively and quantitatively, the best represented. As a member of the European Union and NATO, Romania had to assume such comparison standards, but also to understand what are the conceptual and pragmatic commonalities and differences. For this reason I will present and analyze security and intelligence studies identified in the United States, United Kingdom and Romania.

2. UNITED STATES OF AMERICA

The exponential institution for the American paradigm of "smart nation" is American Military University a leading provider of security education in the United States. The provided programs are diverse (bachelor and master degree or certificates of competence in different areas). All its courses are 100% integrated on an online platform, which is fueled by the country's major universities and all the information are derived exclusively from open sources. This institution is educate people in areas such as: *Undergraduate certificate intelligence analysis*; *Graduate Certificate in Intelligence Analysis*; *Bachelor of Arts in Intelligence Studies*; *Master of Arts in Intelligence Studies*[2]; *Graduate Certificate in Intelligence Studies*[3]; *Associate of Arts in Counter Terrorism Studies*[4]; *Homeland Security Online Degrees & Certificates*[5]; *International Relations*

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[2]http://www.amu.apus.edu/lp/intelligence-studies/masters/

[3]Http://www.amu.apus.edu/academic/programs/degree/537/graduate-certificate-in-intelligence-studies

[4]http://www.amu.apus.edu/academic/programs/degree/1324/associate-of-arts-in-counter-terrorism-studies

[5]http://www.amu.apus.edu/lp/homeland-security/index.htm

Online Degrees[6]; *National Security Studies Degrees & Certificates*[7].

Henley-Putnam University is a private higher education institution founded in 2001 as *the California University of Protection and Intelligence Management* and is providing bachelor and master programs: *Bachelor of Science, Terrorism and Counterterrorism Studies*[8]; *Bachelor of Science, Strategic Security and Protection*[9]*; Bachelor's Degree in Intelligence Management*[10]; *Master of Science, Strategic Security and Protection*[11]; *Master of Science, Terrorism and Counterterrorism Studies*[12]; *Master of Science, Intelligence Management*[13]; *Doctorate, Strategic Security*[14], şi certificate: *Counterterrorism Studies, Executive Protection, Intelligence Analysis, Intelligence Collection, Intel & Terrorism Profiling, Security Management, Strategic Intelligence.*

The Institute of World Politics[15] also organises many intelligence and security studies such as: *Master of Arts in Statecraft and National Security Affairs*[16]; *Master of Arts in Statecraft and International Affairs*[17]; *Master of Arts in Strategic Intelligence Studies*[18]; *Certificate of Graduate Study*[19] circumscribed to eight different areas of specialization: *Comparative Political Culture, Counterintelligence, Intelligence, International Politics, National Security Affairs, American Foreign Policy, Democracy Building, and Public Diplomacy and Political Warfare*; *Academic Programs for Defense and Intelligence Leadership*[20] (in collaboration with **United States Naval War College**, **United States Army** and some other agencies belonging to the American intelligence community).

Although there are some higher education institutions that are delivering only a few courses, they must be mentioned here because of the quality they get. So it is important to underline the contribution provided by **University of Maryland** (*Program on Intelligence Research and Education (PIRE)*[21]; *Certificate Program in Intelligence Analysis*[22]), **University of Pittsburg** (*Major in Security & Intelligence Studies*[23]), **Georgetown University** (**Edmund A. Walsh School of Foreign Service** settled the **Center for Peace and Security Studies - CPASS**[24] with the masteral degree *Security Studies Program – SSP*), **Stanford University** (*Freeman Spogli Institute for International Studies – FSI* settled the **Center for International Security and Cooperation** - *CISAC*[25] with *CISAC Interschool Honors Program in International Security Studies* and **Center for Counterintelligence and Security Studies**[26], which provide expertise in the field of counterinformation, antiterrorism, regional studies).

3. UNITED KINGDOM OF GREAT BRITAIN

UK is also positioned in the top states having scientific concerns in the field of intelligence studies. Because of the academic and administrative interest for such topics a large number of experts in this field emerged. In a study on British intelligence's, Maddrell has identified more than 30 specialists who

[6] http://www.amu.apus.edu/lp/international-relations/
[7] http://www.amu.apus.edu/lp/national-security-studies/
[8] http://www.hotcoursesusa.com/us/bachelor-of-science-terrorism-and-counterterrorism-studies-at-henley-putnam-university-2461681-usa.html
[9] http://www.henley-putnam.edu/126-191.htm
[10] http://www.henley-putnam.edu/127-192.htm
[11] http://www.henley-putnam.edu/101-189.htm
[12] http://www.henley-putnam.edu/478-233.htm
[13] http://www.henley-putnam.edu/101-189.htm
[14] http://www.henley-putnam.edu/641-260.htm
[15] http://www.iwp.edu/
[16] http://www.iwp.edu/programs/degree/master-of-arts-in-statecraft-and-national-security-affairs
[17] http://www.iwp.edu/programs/degree/master-of-arts-in-statecraft-and-international-affairs
[18] http://www.iwp.edu/programs/degree/master-of-arts-in-strategic-intelligence-studies
[19] http://www.iwp.edu/programs/detail/certificate-of-graduate-study
[20] http://www.iwp.edu/programs/detail/academic-programs-for-defense-and-intelligence-leadership
[21] http://www.publicpolicy.umd.edu/research/intelligence
[22] http://www.publicpolicy.umd.edu/executive-education/intelligence-studies
[23] www.gspia.pitt.edu/Academics/Programs/MasterofPublicInternationalAffairs/MajorInSecurityIntelligenceStudies/tabid/95/Default.aspx
[24] http://cpass.georgetown.edu/
[25] http://cisac.stanford.edu/
[26] http://www.cicentre.com/?page=all_courses

had already been teaching intelligence in 2003. Many universities have developed programs and master's degree, most of them being integrated by the departments or schools of political science, international policy, international history, war studies. Academic works of British experts are constantly delivered at specialised conferences such as *British International History Group, British International Studies Association* şi *British Political Studies Association* (which has its own *Security and Intelligence Studies Group* from 1993). The most prestigious universities of UK have incorporated into their curriculum the field of security and intelligence. Thus:

- **Brunel University West London** established the *Brunel Centre for Intelligence and Security Studies*[27] and a *Master of Art Intelligence and Security Studies*[28];

- **King's College London** oferes a pluridisciplinary program including military disciplines, intelligence history, international relations, social sciences to enables the understanding of different approaches, including critical or unorthodox viewpoints and established **Department of War Studies**[29] (Goodman & Omand, 2008:1) and *MA in Intelligence & International Security*[30];

- University of Wales, Aberystwyth with its *Centre for Intelligence and International Security Studies*[31], (*Intelligence and Strategic Studies*[32], *Intelligence Studies and International History*[33]);

- **University of Buckingham** deliver *Security and Intelligence Studies (MA)*[34] and established *Centre for Security and Intelligence Studies (BUCSIS)*[35]**;**

- **University of Birmingham, Birmingham** provides *US Intelligence Services (M.Phil.)*[36]**;**

- **University of Salford, Salford** offers a MA and Postgraduate Diploma în *Intelligence and Security Studies (MA)*[37]**;**

- Sheffield University, Department of Politics - *International Politics and Security Studies*[38].

4. ROMANIA

After the fall of communism Romania's intelligence was reconceptualized in several stages and this process was facilitated by the integration of the country in NATO and EU structures and the need to align to the main paradigms of thought in these areas.

The "Mihai Viteazul" National Intelligence Academy (MVNIA) is the leading provider of intelligence and security expertise in Romania, and its curriculum include bachelor[39] and masteral[40] degrees and postgraduate courses[41] which are organized in a transdisciplinary manner from using knowledge from the filed of psychology, intelligence, communication studies, public relations, security studies. Their main objective is to revolve security culture among students, but also the skills and competencies specific to the domain. Also, together with the Faculty of Sociology, University of Bucharest, MVNIA established a *Master program: Information Analysis*[42] (this institution also deliver master programme *Security and Defense Studies*[43]).

[27] http://www.brunel.ac.uk/about/acad/sss/research/centres/bciss

[28] http://www.brunel.ac.uk/courses/postgraduate/L900PINSSTD

[29] http://www.kcl.ac.uk/schools/sspp/ws/grad/programmes/maiis/

[30] http://www.kcl.ac.uk/schools/sspp/ws/grad/programmes/maiis/

[31] http://webcache.googleusercontent.com/search?q=cache:m8rAJr6asuUJ:users.aber.ac.uk/rbh/iss/aber.htm+University+of+Wales,+Aberystwyth+%22Intelligence+Studies+and+International+History%22&cd=4&hl=ro&ct=clnk&gl=ro&source=www.google.ro

[32] http://www.aber.ac.uk/en/interpol/prospective-students/masters/degree-schemes/intelligence-studies-strategic-studies/

[33] http://www.aber.ac.uk/prog-specs/index.php?L298S-MSCEC

[34] http://www.buckingham.ac.uk/humanities/ma/securityandintelligence

[35] http://www.buckingham.ac.uk/research/bucsis

[36] http://www.uscanada.bham.ac.uk/postgraduate/Intelligence_Studies/index.shtml

[37] http://www.salford.ac.uk/course-finder/course/1345

[38] http://www.sheffield.ac.uk/prospectus/courseDetails.do?id=4986282012

[39] http://www.animv.ro/ro/index.php?ccs=20

[40] http://www.animv.ro/ro/index.php?ccs=21

[41] http://www.animv.ro/ro/index.php?ccs=23

[42] http://www.unibuc.ro/ro/master_ai_ro

[43] http://www.unibuc.ro/ro/master_fsassa_ro

Another important institutions that is providing bachelor and masteral programme dedicated to security and intelligence are:

- the **National Defence University "Carol I",** who founded the **Center for Strategic Studies and Defence**[44];

- the **West University of Timisoara,** where the Faculty of Master of Economics provides the masteral programme *Security, Development and European Integration*[45];

- the **Babes-Bolyai University**, which organizes in **the Faculty of History**: Security *Studies*[46], *Security Management in Contemporary Society*[47] and training programs to became *"security inspector"* and *"security agent"*;

- **the Christian University "Dimitrie Cantemir":** *the Security and Defence Studies*, *the NATO Studies Center*;

- **National School of Political and Administrative Sciences** which prepares NATO experts through *Senior Executive Master*[48];

- **Romanian Association of Security Industry**[49], **which own the franchise of the Security Institute of UK**[50] for Romania and Moldavia organizes *The Management of Security*, which include 2 stages: a certificate and then a bachelor degree.

3. A COMPARATIVE ANALYSIS OF SECURITY AND INTELLIGENCE STUDIES

The enumeration[51] of the security and intelligence academic programme in the western and Romania areas allows us to identify some trends on several levels of comparative analysis. Thus the obvious differences or uniformity are derived from variables that influence the orientation programs of study, the involved staff in different teaching subjects, the priority areas that are orienting those studies.

As a general conclusion the curriculum of security and intelligence is that such programmes are concerned to teach general knowledge of history's intelligence and security, to clarify the priority areas of interest (terrorism, economic security, environmental security, proliferation of weapons of mass destruction, crisis management and conflict, human rights), the manner in which the specific activities are developing and how they are valued by the beneficiar. In western area, there is constant concern to ground the theory of the domain and therefore they are extensively discussing topics such as ethics, human rights, the relations with civil society, the public - private partnership.

The funding of the identified programs is whether institutionalized by the state or by private initiative. The teaching staff is generally mixed as the practitioners, who offer their expertise in different areas of intelligence, and the theoreticians, who store theoretical knowledge of the field, are equally involved. Frequently, the first category shall recruit new members from retired or retired practitioners. In terms of beneficiaries of such programs, graduates are prepared either for the state own needs in various institutions's intelligence or to work in other connected area (foreign affairs, politics, diplomacy).

Regarding the degree of the openness of the country to the study security and intelligence there are different characteristics. Thus, there is a significant opening of academics and officials to study such topics in the United States and their points of view are converging. The Central Intelligence Agency is an important promoter of academic study and teaching of this subject since 1960: the National Security Agency and CIA have their own team of historians specialized in intelligence, who initiated and made permanent the practice of inviting teachers to spend long periods of time in their agencies[52].

[44] http://cssas.unap.ro/
[45] http://www.scritube.com/economie/DOSAR-DE-PREZENTARE-MASTERAT-S734111015.php
[46] http://hiphi.ubbcluj.ro/licenta/securitate.html
[47] http://admitere.ubbcluj.ro/master-istorie.html
[48] http://www.centru-studii-nato.ro/pcsnato.html
[49] http://www.arisonline.ro/
[50] http://www.iisec.co.uk/
[51] The lack of space is the reason for giving the web address of every mentioned programme instead of describing it more specifically.
[52] Also, the National Security Agency launched an invitation for students.

In UK, on the contrary, there is no such synchronization, but a considerable distance between academics and practitioners. The access to archives and information was allowed only for a few historians commissioned to write the history of the Second World War and only in 2004 *the Advisory Group on Security and Intelligence Records* was established under the tutelage of *Cabinet Office*, which is responsible for the relations with the academic field.

In Romania the situation is different, especially in terms of our socioistoric context: the transition from a totalitarian state to democracy has been a challenge for the Romanian intelligence services, born on the ruins of the former *Securitate*. Lingering feelings of suspicion that people are still feeling for *the Securitate*, lack of trust in state institutions, the selective and weak legal basis governing the intelligence activity and its lack of transparency have been major obstacles for developing and strengthening a sense of confidence that people would have been cherished for these institutions.

This may be the reason why, not mentioning the notable exception of **"Mihai Viteazul" National Intelligence Academy** established 20 years ago, the most initiatives to study intelligence are of recent date. Unfortunately, Romania still lacks a national strategy to address direct academic research of the field or a law to regulate the domain specific unclear concepts (Sebe, 2009). The lack of such a coherent strategy is reflected even in the relatively few studies dedicated to security and intelligence and their random distribution across the country. The very term of "intelligence" was firstly introduced in various scientific papers and articles only a decade ago.

The few Romanian specialists in intelligence have adopted a rather passive way of relating to the field developments and their contributions have remained unknown. Instead of cooperation and collaboration, universities seem to rather compete having no tangible results. The cases of institutional cooperation (as was the master "Information Analysis" conducted by the Faculty of Sociology, University of Bucharest and NAIMV) are very rare. But the biggest problem of Romania is the lack of international visibility of these programs of study. Without a link to the quality of teachers involved or to the other ingredients related to education quality, the publications are poorly capitalized and poorly disseminated, the participation in professional conferences is sporadic, and exchanges of students and teachers nonexistent. The research topics addressed are therefore limited and not dependent of context, as it requires the global one.

As a conclusion, we can say that the level and visibility of intelligence studies programs is conditioned on the one hand by the current strategic interests in that area, but also by the financial strength of the country and the importance it attaches to security and intelligence. Although the orientation and curriculum of Romanian programme are in line with those of the highly developed countries of the world, there is a gap in terms of funding, methods of dissemination and the degree to which experts and research results are used by authorities of the state.

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THE USE OF ENGLISH VS. AMERICAN MILITARY TERMS BETWEEN THE XVIIth and XXth CENTURIES

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***Abstract**: The present paper focuses on presenting some aspects related to the use of military terminology, both British and American, during the XVIIth and XXth centuries. When it comes to British English we can highlight the richness in military terms, as connected to how people lived during ancient times. They were conquerors, involved in historical armed conflicts, where a certain of weaponry was needed. The XVIIth century represents a landmark of English language evolution. It is the moment when the American language began to shape itself. As language is concerned, trade and colonization altered language during the XVIIIth century, thus becoming a rather corrupted one. English language continued to change as the British Empire moved across the world - to the U.S.A., Australia, New Zealand, India, Asia and Africa. American language fully emerged with The Spanish-American War (1898) which lasted for only four months but considerably improved language in general, and slang in particular.*

***Keywords**: military system, borrowings, slang, change of meaning.*

1. INTRODUCTION

The identification of military terminology development is a difficult process because language has a major role in influencing culture, culture, in its turn, shapes language and thus, language change is a permanent phenomenon throughout history. From this interconditioning, the impossibility to recover the whole results, taking into account two entire dynamic variables.

But, analyzing it in depth, we find, on the one hand, that language is the culture (at the dawn of culture and language, for a population living under war time, it is natural for military terminology to have fundamentally influenced the development of culture), on the other hand language is a form of culture expression, ensuring its transmission, flow, transfer of cultural signs and codes. This second self-referential dimension, or metacommunication, is somehow aware of what happens in the depths of language and culture. As Pyles and Algeo sustain, „change is a normal state of language. Every language is turning into something different, and when we hear a new word or a new pronounciation or novel use of and old word, we may be catching the early stages of a change.

Change is natural because a language system is culturally transmitted" (1993:13). Thus, the above mentioned authors see language as „undergoing revision constantly; with language such revision is slower than with some other cultural activities", such as fashion, enternainment, etc. The XVIIIth century was important for the development of modern English: the ruling tradition of neo-classical attitudes and prescriptive grammar laid the foundations for linguistic correctness on various levels. The XIXth century has decided the victory of English as spoken language of the English people, although it was firstly accepted as the most valued language for "creative literature" (Millward, 1996: 15), as early as the end of the XIVth century. The Spanish-American War (1898) lasted for only four months but improved slang considerably. The period was linguistically fruitful as it was the first time that American

troops had a chance to absorb foreign languages. American language borrowed Spanish military terms like: *insurrecto, troche, junta, ladrone, lay fuga, machete, incommunicado*.

2. THE XVIIth CENTURY

We have to bring to attention the moment of the emergence of so-called "Black America" in August 1619, when a Dutch warship sailed up the James River to the colony of Jamestown, Virginia, together with 20 black people on board that were taken from a Spanish ship captured in the Carribean. Even if the geographical beginning – when the discovery of America happened in 1492 (made possible by Cristopher Columbus), the first signs of migration towards the Americas were visible during the above mentioned century. The most important tribes were: the Pueblo, the Apache (that were mostly hunters), the Iraquois – warriors, the North Pacific Haida and the Midwest Winnebagoes. This migration process had 5 "frontier phases" as □tefan Avădanei calls them, both temporal and geographical ones (1993:25-26), as follows:

1. the sidewater phase of settlement (up to 1700);
2. the setting of fertile river valleys (1700 – 1750);
3. the fertile lands of Kentucky and Tennessee opened to explorers (1750 – 1775);
4. the treaty of 1783 that set the western boundary of the US on the Mississippi;
5. the 1803 Louisiana Purchase.

But, the first regular U.S. fighting force, the Continental Army, was founded by the Continental Congress on 14th of June, 1775. Its purpose was to add to the local militias in the American Revolution. It was under the control of a five-member civilian board. In 1789 this Continental Army was dissolved and a small regular army was established. The army`s size increased only in times of crisis, expanded with conscription and decreased during peacetime. Anyway, citizen soldiers were serving in the militia on the American frontier, even before the Declaration of Independence was drafted, written and adopted in 1776. Being allies of the English, the early Americans protected the towns and farms from Indian and French invaders and helped expand the frontiers of the future nation. The U.S. military started not only as a means to apply force but it was and still is a reflection of the morals and traditions of the American way of life. This early frontier soldiers created new units, such as the Rangers that were the forerunners of today`s special operating forces. They were an example of bravery and inventiveness that reflects the freedom-loving and independent spirit that is still a character of the American military today.

As the language is concerned, the first English colonists in America continued to speak as they had done in England. But, step by step, language changed on both sides of the Atlantic. On the American continent, these changes were mainly caused by the new conditions that the colonists faced with. Therefore, American language has much to owe to the mother tongue, i.e. English of those times. As Pyles and Algeo state, "However, the English spoken in America at present has retained a good many characteristics of earlier British English that do not survive in contemporary British English" (1993:213). They further on support the idea that "to consider American English as inferior to British English is to impugn earlier standard British English as well, for these was little difference at the same time of the Revolution. (...) supposed characteristics of American English are also to be found in pre-Revolutionary British English (..)" (1993:213). Thus, an example of how language was unconsciously conserved is the retention of the American term "gotten", still used nowadays. But, obviously, American English has lost a certain number of language characteristics, but that are still preserved in British English. And to prove this, we may consider the following example: "waistcoat" denoting a garment that Americans usually call a "vest", it is a word that in England usually means "undershirt".

In case of American inhabitants, there was a great need to name the topographical features, of fauna and flora that were kind of new for the colonists. All these acquired names that belong nowadays to the basic American stock. More, the inhabitants of the

New World were not illiterate at all. They were considered to be ambitions, industrious members of upper-lower and lower-middle classes (clergymen, lawyers and even people belonging to aristocracy). Therefore, it is likely that some cultural nucleus was created by that time within the early American communities. Thus, even if American English is basically a continuation of the VIIth century English – ancestor of present-day British, Pyles and Algeo consider that the differences between American English and the British one are not of great importance, even if they are many (1993:215). And to stick to this register, we have to mention Randolf Quirck remark that completes the above mentioned idea. In a review of the time, he said: "The long and imposing lists of so-called distinctively British and American words and usages are 75 per cent misleading; it turns out either that both the words so neatly separated are used in one or the other country, or that both are found in both countries but are used in slightly different contexts or in different proportions." (1956:7)

The idea of the English Academy appeared at the end of the XVIIth century: Samuel Johnson wrote (1755) – *A Dictionary of the English Language* (2 volumes, of great achievement due to the fixed spelling), Joseph Priestly (1761) – *The Rudiments of the English Grammar* (he focuses on the importance of usage), Robert Lowth (1762) – *Short Introduction to English Grammar*, G. Campbell (1776) – *Philosophy of Rhetoric* (aiming at ascertaining the language just like Dryden and Swift). Furthermore, we can speak of Modern English as emerging fully by the beginning of the **Georgian era** in 1714, although **English orthography** remained somewhat fluid until the publication of Johnson's dictionary.

2.1. The American Revolution. Between 1775–1783 **thirteen colonies** in **North America** joined together to break free from the **British Empire**, combining to become the **United States of America**. By 1774, each colony had established a **Provincial Congress**, or an equivalent governmental institution, to govern itself, but still within the empire. The British responded by sending combat troops to re-impose direct rule. Through the **Second Continental Congress**, the Americans managed the armed conflict against the British known as the **American Revolutionary War** (also called *The American War of Independence*,). It represented the beginning of the division of English into national dialects that developed more or less independently and that had come to have their own language standards.

From the American War of Independence (1775–1783) onwards, we can discuss of an infusion of American military terms. Most of them were slang expressions, born out of conflict, boredom, good humor or bad food soldiers were given during wars. The new military words were heard and used across the lines during the Civil War, in which enemies spoke the same language.

2.2. The Civil War (1861–1865). Due to this war, the increase in migration was also possible. Italians, Jews, Yugoslavians, Ukrainians, Russians, Czechs, Bulgarians, Slavs, Poles, Chinese, Greeks and Armenians populated the American lands. This war led to changes due to war needs and it also changed the way wars would be fought. The need for weapons and supplies influenced the improvement in industry and production methods required to maintain the war effort. It opened ways to the age of modern technology. Everything seemed to happen more quickly, people were able to move farther and faster, to produce products more rapidly and to communicate with the help of wires. Thus, battles were conducted easily, at a different level. Therefore, during the Civil War rifled cannon came into its own with a corresponding increase in range and accuracy. By the end of the U.S. Civil War the totally self-contained modern cartridge with powder and bullet in a single metal container made its appearance and, by the Franco-Prussian War of 1871, the breech-loading rifle had become a standard in Europe. Two decades later the clip and magazine-fed rifle revolutionized infantry tactics. It made possible the introduction of truly modern dispersed infantry tactics which further increased the ability of infantry to fire and manoeuvre. After the Civil War, the U.S. Army and the Marine Corps were downsized and used as garrison (i.e. barracks) troops.

Words from the Civil War include terms like *skedaddlers* (the name of those who ran away from the war, synonym of *deserter*), *blizzard* (an intense volley of musket fire), *commish* (a commission of any sort), *doodle* (a Union soldier), etc. "The Civil War spawned a slang that was both identifiable and proliferating. It was also seen as a nuisance" (Dickinson, 2004:2). As stated in the article *A Word About Slang*, published in *The United States Service Magazine* "The existence of a slang element in the Army cannot, of course, be prevented. It came from home, where the fault lies" (R.W. McAlpine, 1865). A Civil War glossary emerged, with terms that existed before the war but that only became important during the war. It includes a basic American military slang with some influences from the frontier, rural America, British shipping and the ancient traditions of the sea.

3. THE XVIIIth CENTURY

The XVIIIth century established regularity in spelling and later in pronunciation, defined the standard lexis by excluding dialect, slang and fixed the rules for the languages of literature and good style, in a unique fusion of literary and linguistic judgments with developments in political and cultural history. England began the Industrial Revolution within the XVIIth century. This had an effect on the development of the language as new words had to be invented or existing ones modified to cope with the rapid changes in technology. New technical words were added to the vocabulary. They were named after the inventor or given the name of their choice (*trains*, *engine*, *pulleys*, *combustion*, *electricity*, *telephone*, *telegraph*, *camera* etc).

The XVIIIth century was marked by two important points to keep in mind when considering any type of public behaviour of English and English-American societies. First of all, they were stratified societies and the ways in which people interacted with one another reflected their relative social positions. By the late eighteenth century, therefore, many had acquired the rudiments of polite conversation.

English language continued to change as the British Empire moved across the world - to the U.S.A., Australia, New Zealand, India, Asia and Africa. People settled and lived in their conquered places and as settlers interacted with natives, new words were added to the English vocabulary. Thus, English acquired terms from colonies, like: *caribou, moccasin, skunk* (Native Americans), *chilli, chocolate, coyote, tomato* (of Spanish and Portuguese influence via Mexico), *barbecue, canoe, hurricane, potato, tobacco* (Cuba and West Indies), *bungalow, jungle* (India), *gorilla, voodoo, zebra* (Africa), *boomerang, kangaroo* (Australia). French has an important role in this respect, deforming the English language. Philosophy also, was concerned with linguistics matters, i.e. with the idea of modern grammar.

The XVIIIth century abounds in military terms: *bastion, battalion, battery, bayonet, bomb, brigade, calibre, canister, cap, casemate (a chamber built within the walls of a fort), corporal, crossbelt (belts organized to hang diagonally across the body), epaulette, fascines (bundles of tightly bound twigs and sticks hastily assembled and tied together), frigate, grenade, grenadier, guards, hammer, lock, lunette, muzzle, rifle, royal, shrapnel (often used erroneously to refer to fragments of any artillery shell), troop, waistcoat.*

4. THE FIRST WORLD WAR

Jingoism (extreme patriotism, especially in the form of aggressive or warlike foreign policy) was not the only source of linguistic creativity in the period. American war slang fully emerged during the First World War. The circumstances of it were so horrific, so extraordinary, and involved so many people that a new language was almost essential.

Many words which emerged at the time have clear associations with the conflict, such as *camouflage, blimp, aerobatics, demob* and *shell shock.* Others have a more complex history, emerging from soldiers' slang (itself a product of the increased cosmopolitanism ushered in by the war). Therefore, Americans communicated mostly in slang, a vernacular language used by uneducated soldiers. Some

examples are: *dogtag* meaning military plates, *doughboy* bearing the meaning of American soldiers. They used a mixture of American, French and English equipment and were not allowed to fight independently. It is an informal term, usually used for members of the American Expeditionary Forces (AEF) during the First World War. But the term dates back to the Mexican-American War of 1846-1848, when some observers noticed that U.S. infantry forces were covered with chalky dust from marching through the dry terrain of Northern Mexico, thus giving the impression of unbaked dough. The term was not so much used during the World War II and it was soon replaced by the terms like: *G.I.*, *Troop* or *Dogface*. After the war it totally disappeared.

British soldiers adopted the language of their enemies just as keenly as they adapted that of their foreign allies, as is shown by the origins of the verb *strafe.* The German phrase ***Gott strafe England*** ('God punish England') was a common greeting in Germany from 1914 on – 'the recognised toast throughout Hunland', as one contemporary colourfully put it. Refusing to be daunted by the threat, the term was hijacked by British soldiers, who began to use 'strafe' as a comic word to refer to any harsh punishment or attack, whether targeting the enemy ('strafing the Fritzes') or doled out by the British *brass hats* (high-ranking officers).

In case of the Americans, during the First World War, xenophobic feelings bolstered by war-induced nationalism focused not just on learning English but also, driven by anti-German sentiment, on discarding allegiances other than to the United States. The term *kaput*, was used to mock the Germans. The American slang was very much tied to the British one as both armies fought together.

The American linguistic innovation was significant enough to have a major impact on how the British soldier spoke, but not enough to overwhelm it. There were linguistic changes in all domains, especially in aviation, where pilots of two English-speaking nations competed with each other in terms of producing the most colourful language to minimize risk and fear. Many war terms persisted until the World War II and beyond that (like *doughboy*, meaning infantryman; the term was exclusively applied to the Infantry).

As for the British military terms are concerned, the war between 1914-1918 featured a great currency of words: some words which were either new or enjoyed great currency during the war become a part of the vocabulary of civilian life. Thus, *sector*: a distinct area or part. It was used in the sense of a specific portion of the fighting line; ***barrage***: originally an artificial barrier like a dam in a river.; ***artillery or machine-gun***: designated a protective screen of heavy artillery or machine-gun fire; ***dud***: a general word for any count filet thing; ***shell***: was specifically applied to a shell that did not explode; ***ace***: acquired the meaning of a crack airman and **hand grenade** was the hand grenade that we encounter back into 1661, but that acquired new currency during the war.

Many British military terms and even slang had their origin in India and spread from there throughout the Empire. Heres some Indian/Hindu words used by British Forces: *Badmash* =rascal/scoundrel; *Basha*=native house, hut; *Bibi, Bint*=Girl; *Bundook*=rifle; *Chabeli*-sweetheart; *Charpoy*=bed; *Chota Wallah* = little fellow; *Cutch* = inferior; *Havildar* =Sgt.; *Jawan*=soldier; *Jildi*=quickly; *allum*=understand; *Pialla*=Mug; *Ram Ram*=hello; *Shabash*=bravo; *Tik Hai*=all right.

5. THE SECOND WORLD WAR

World War II is the period when military terms develop due to modern technology, where rocket technology appears. The war led to voluntary cooperation of distinct nations, with allies like Italy and Japan that had their contribution not only to the modern warfare but also to changes in language, thus, in military terminology, especially in the air force. Allied forced had to fight and cooperate, thing not easy to be accomplished from language point of view.

Differences in language were obvious and a certain need of a standardized corpus emerged out of it. Americans and British had their own ego when it came to language; military terms were added from both sides during the war. Language standardization

appeared as a natural phenomenon, as allied troops had to have common training, each and every force category had to be trained according to its specific mission.

This period is one of memorable linguistic experimentation an innovation in terms of slang. Furthermore, "World War II may be remembered for a number of reasons, and probably the least of these is that it provided a king-size fund of new slang for the diversion of lexicographers" (Lighter, *apud* Dickinson, 2004:114). World War II represents the starting point of the introduction of acronyms and initials into language, especially into the American one. Although some traditionalists consider that these terms do not belong to slang, the war was full of them e.g. *G.I.* (government issue, later on synonym with *army), WAC* (Women`s Army Corps), *A.A. fire* (antiaircraft; one of the war`s most persistent initials), etc., due to the fighting men that were markers on these type of slag military terminology. Thus, they adopted the technique of similitude, used hidden similarities, abbreviations, compositions of words and word formations being more freely used. It was also a period when the American vocabulary was enriched with verbs and phrasal verbs. It should not omit one very important aspect, namely, that most of American soldiers came from different social categories, each and every person bringing his own distinct language that belonged to his native place.

World War I and World War II brought together people from different parts of the world. The period was followed by a great social mobility that substantially contributed to the decrease in differences between social accents, especially in the U.K.

6. OTHER CONFLICTS

The Korean conflict was a really bloody conflict, with slang words that were mainly used during the World War II. This happened because most of the American soldiers fought during the latter one. Nevertheless, new terms emerged, too, due to the new technology (it was the first time when jet fighters and helicopters were used) together with the Korean culture. Americans and South Koreans fought together, usually in the same unit, being called KATUSA (Korean Augmentation to the U.S. Army). Thus, linguistic differences were once again obvious as plenty of nations participated in the U.N. forces. The official military language tended to include more initials and acronyms. By the 1952, we can notice terms like: MASH (mobile army surgical hospital), MORCs (Medical Officer Reserve Corps) and DORCs (Dental Officer Reserve Corps). Stiff-sounding prefixes and suffixes were also present: *detrain, detruck* that evolved into *detraining point* or *detrucking point*. Articles of the time noticed that the American vocabulary closely resembled plain English.

The War in Vietnam soldiers used terms that were utilized in previous wars. But, this conflict also produced its own vocabulary, based on a rough and direct jungle warfare terms. As the Americans were defeated, the terms are full of frustrations and cynicism.

The Gulf War produced new official jargon that seemed to be more vivid than ever. Thus, "hard" and "soft" targets became: *degraded, neutralized, suppressed, eliminated, cleansed, impacted, taken out*, etc.

The Cold War language was shaped by the huge military buildup and by the nuclear threat. Acronyms, code words, jargon and slang formed the military language spoken during this war.

Even the term Cold War was created in 1946 by Herbert Bayard Swope. He mentioned it to Bernard M. Baruch who used it in 1947 and made it known in 1948, during a statement to the Senate War Investigating Committee. It represented the state of international tension where all necessary measures were employed to achieve national objectives.

On the other side, British soldiers` slang was also very colorful, many words being derived from Hindu Indian and other African dialects, or dating back to the Boer Wars, fought during 1880-1881 and 1899-1902 by the British Empire against the two independent Boer republics, the Oranje Vrijstaat (Orange Free State) and the Republiek van Transvaal (Transvaal Republic). They are called "the

South African War" as the population of South Africa was also involved in the conflicts.

6. CONCLUSIONS

The identification of military terminology development is a difficult process because language has a major role in influencing culture, culture, in its turn, shapes language and thus, language change is a permanent phenomenon throughout history. From this interconditioning, the impossibility to recover the whole results, taking into account two entire dynamic variables. But, analyzing it in depth, we find, on the one hand, that language is the culture (at the dawn of culture and language, for a population living under war time, it is natural for military terminology to have fundamentally influenced the development of culture), on the other hand language is a form of culture expression, ensuring its transmission, flow, transfer of cultural signs and codes. This second self-referential dimension, or metacommunication, is somehow aware of what happens in the depths of language and culture. As Pyles and Algeo sustain, „change is a normal state of language.

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Colonialism is an important factor that helped the English language spread widely. English established itself on many parts of the globe, from Australia, Southeast Asia, Hong Kong, India, and Africa to North America. The British government established schools in these countries, which helped the language to expand. The governments of former British colonies later adopted English as their national language. This phenomenon finally led to more varieties of English all over the world. In England, the so-called Standard English or 'national language' is used mostly in formal contexts. If one were to ask whether English today can still be considered a national language, the answer is yes and no. It can still be considered a 'national language' by the British since many Britons still speak that language and the British government still recognizes it as its national language. But for the rest of the world, it can no longer be considered a national language. Many people adopted English as their mother tongue or second language. English has become an international language or a *lingua franca* for many people worldwide. It is now a national language not only of England but of countries like Singapore, India and so on.

When we speak about modern warfare, military terminology is expanding rapidly, due to recent developments in all fields, especially in technology. Thus, we can notice that modern technology lead to language development, especially in the Airforce, as new types of combat aircrafts and rockets have been designed and put into practice. In this respect, specialized training of military pilots is involved in this particular area of interest, no matter the country they come from. This teaching of specialized terms should be standardized and done quickly in order to avoid fatal disasters like plane crashes due to certain temrs misunderstandings.

American language holds supremacy in the military field, being the language of military treaties, of general orders and of regulations. The U.S Army took part in all major conflicts starting with the Revolution and continuing with the War of 1812, The Mexican War, the Civil War, the Indian Wars, the Spanish-American War, World War I, World War II, the war in Korea, Vietnam, the Gulf Wars and the Iraq War.

Warfare and the military have greatly impacted the English language throughout centuries. Furthermore, the military language and terminology are very productive as it`s a language built during crisis situations, each and every crisis creating in turns a certain proper vocabulary and terminology. Many British military terms were born during the World War I and II, par of them being lost with the age of modern mechanized warfare.

The Pidgin English spoken in the north-west Territory of New Guinea contributed substantially to the British terminology.

All members of the Commonwealth contributed to the military vocabulary, together with the Australians that supplied some humorous terms and phrases.

An official standardized terminology does not completely fulfill the needs of the fighting soldiers. Military slang is as old as the warfare and it covers all aspects of soldiers` lives. They are the ones who shaped language in times of war, with nicknames, acronyms, abbreviations, etc.

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UNIVERSITAS SAXONUM – A POLITICAL AND ADMINISTRATIVE INSTITUTION OF THE TRANSYLVANIAN GERMANS

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Abstract*: The German colonists of Transylvania received in the 13th century the right to manage their territories. Their religious organizational structures are very old (called capitles) and then their administrative structures follow: counties and districts. The German administrative territory was called* fundus regius *and it enjoyed numerous privileges granted by the kings of Hungary. In the 15th century Universitas Saxonum was established for the purpose of mixing the Germans' political and administrative interests. After researching the structure of this institution in Sibiu, we have obtained a better understanding of their political, national and cultural features.*

Keywords*: kingdom, autonomy, institution, tax, council.*

1. INTRODUCTION

Transylvania is located inside the Carpathian Mountains chain, and due to its geographical positioning, natural resources and economic and human potential it has always been a focal point of the surrounding powerful states. First, it stirred the interest of the Hungarian kingdom, then of the Turks' empire, and then of the Habsburgs' empire. The young kingdom of Hungary, set up after the 10th century, attempted to control de the Country beyond the Forests, as Transylvania was called. Their military actions of the 10th and 11th centuries focused on two directions: territorial colonization and population's conversion to Catholicism. They found here a protho-Romanian population religiously affiliated to the orthodox Constantinople. The tactics adopted by the Hungarians was based on bringing into these territories populations loyal to the Hungarian kingdom. Thus, Transylvania was colonized in two stages:

- the 11th and 12th centuries, when the Szeklers were brought here in order to protect the borders of the new province;
- the 12 and 13th centuries, when the German colonists were brought here from the Flanders, Rhine and Saxony. Their main duty was to organize the towns according to the western patter and to insure economic prosperity. They were granted the right to settle down and organize themselves autonomously by the Hungarian king Andrew the 2nd in the year 1224.

In the 14th century, Transylvania was under full control of the Hungarian royalty structured in two autonomous areas: the Szeklers' area in the south-eastern part, and the Germans' in the south-western part. Throughout the centuries, the two populations would strengthen their privileges. The rest of the territory was organized in counties owned by noblemen loyal to the Hungarian authorities.

In the early 16th century, Transylvania drifts away from the Hungarian kingdom that had been seriously damaged by the Turks' attacks, and for the next 200 years it would become an autonomous kingdom which bought its autonomy by paying taxes to the Turks. This was the most prosperous, but also agitated period in the province's history, when its princes played an important role in the European political decision making. At the end of the 17th century, Transylvania would be a part of the Habsburgs Empire until 1918.

Our article focuses on a fragment of Transylvania's history, that is, the German administrative and political institution.

2. UNIVERSITAS SAXONUM

2.1 The background of establishing the institution. The right to autonomous administration granted to the Germans upon the colonization of Transylvania is the first argument to sustain the establishment of a political structure. Its name derives from the Latin word ***universitas***, which designates a political body with public law duties. The document issued by the Hungarian king Andrew the 2nd in 1224 stipulates the following:

1. the territory given to the Germans was bordered by Orastie, Baraolt and Drauseni;
2. the yearly tax paid by the Germans was 500 silver marks;
3. The province of Sibiu was ruled by a supreme judge elected by the Germans and who was named Comes Saxonum in the year 1477 to represent them to the political authorities;
4. the German population had to support the Hungarian king in combat with 500 soldiers;
5. only the king had the following rights:
   a. sealing;
   b. recognition of the elected representatives;
   c. salt exploitation;
   d. fair organization on the date proposed by the local authorities;
   e. use of forests; ponds and hunting areas.
6. the colonists alone had the right to decide who would be allowed to settle down on their land;
7. the colonists had religious freedom and their own priests provided that they paid their annual tax to the bishop of Alba Iulia.

Another argument to support the establishment of a political body was the unification of the political forces in Capalna in the year 1437 – the so called "unification of the three nations" in front of the Romanians. It was a defense alliance that led to the enforcement of the Germans' political position in Transylvania.

In the 16th century, the economic power of the German towns was increasing. The Germans would support the Transylvanian rulers against the Turks, which would result in their significant economic strength.

The decisive period of the university establishment was the recognition granted by the Hungarian king Matei Corvin on 19 October 1486. This was when the university was organized according to some rightful principles, among which the most important was autonomy, both in a territorial sense, and in a personal-corporatist sense (Teutsch, 2001:56).

2.2 The Germans' University during the Transylvanian principality period (the 16th and 17th centuries) – a political institution

This period was when the university knew maximum development. Then the university statute was drawn up and it stipulated the following:

1. the university was managed by the German head elected for a limited period;
2. the university gathering (made of the representatives of all the counties and districts, as well as the judge, the mayor of Sibiu etc.) met once a year, on 25 November, and made decisions regarding the most important issues;
3. the tax level was set up for each administrative unit;
4. granting the right to organize fairs and guilds as a legislative body;
5. the approval of each locality's ordinances and statutes;
6. legal duties as a superior court (litigations between noblemen and German communities, border delimitation etc.);

The most important activity was the political one. After the battle of Mohacs and Hungary's transformation into a Turkish province, Transylvania had to perform its own political roles. Thus, its representatives had to travel to Rome, as the letter of Michael Gereb of Sighisoara reveals. He asked for the Sibiu magister's recommendation in order to visit the pope (Statarchive Wien, d.14/f.79), and so did the university when protecting the Germans' rights. In the second part of the 16th century, the university representatives

strengthened their right at the meetings of Turda and Sighisoara. At the same time, two major towns fought for supremacy: Sibiu and Brasov, simultaneously with the Lutheran reform spreading among the German people.

By using its economic power, Brasov succeeded in obtaining a short-lived support from the king Ioan Zapolya in order to gain supremacy. However, Sibiu returns to its previous privileges as the Germans' political and cultural center. The archive of Vienna preserves numerous documents connected to the activity of the German University. The activity of copying these documents was undertaken by the German leaders for back up purposes (Statarchive Wien, d.14/f.359, f.310).

The university makes decisions in confessional problems such as the recognition of a Evangelic church in 1557 after the confession of Augsburg in connection with the superintendents and bishops' roles within the parishes (Dangsch, 1990:197). Also, the university made decisions in the field of education thus controlling the community's moral and spiritual life. The council of the Principality of Transylvania was attended by officials appointed from Sibiu. In a document dated 1744 the German delegates are listed: Georg Kelp – official of Sibiu, Stephen Weingarten – notary of Sighisoara, and Michael Schwartz – juror of Rupea. The document was signed by the empress Maria Theresa (Statarchive Wien, d.18/f.270-285). In the second part of the 17th century the control of the university belonged to some influential families of Sibiu, who acted to the detriment of the ordinary people. The university then became a truly modern institution representing the interests of a nation.

In the archive of Vienna there is a document: a petition of a royal judge of Sibiu, who demanded that the tax from the German territory be collected by their representative as the council of Turda had confirmed (Statarchive Wien, d.18/f.862-863).

In the 18th century the situation changed. The court of Vienna set up many bodies that replaced the local ones: the Transylvanian government, the Aulic Chancellery, the Treasury, the Royal tables and the province administration. All of these were served by catholic clerks loyal to Vienna and unaware of the Transylvanian realities.

The university would be forced to apply the *Edict of living together* issued by Joseph the 2nd on 4 July 1781, which "*granted all the local people the right to citizenship and ownership, regardless of their religion or denomination*" (Vlaicu, 2000:12). In the next century, the university would be served by Romanian clerks, too.

The relationships between Vienna and the Germans became stronger after 1650: on 5 January 1701, Johann Sachs of Hassalch informed Leopold the 1st that shelter was provided for the Wallachian prince Constantin Brancoveanu and his family in Brasov and asked that his family rights be enforced (Statarchive Wien, Konv.A/f.387).

2.3 The dissolution of the University. After 1876, the system of administrative autonomy in the territory of the Habsburg Empire was dissolved, and the old institutions were replaced by the ones belonging to the court of Vienna.

Half of the University's fortune was owned and controlled by the Institution of the 7 Judges (Orastie, Seica Mare, Cincu, Sebes, Rupea, Miercurea and Sighisoara). It also controlled the trades and tax collection in the passings of Talmaciu and Turnu Rosu.

The role of the University in controlling the royal land is illustrated by a document dated 25 February 1729 dealing with tax distribution in the territory and issued by the emperor Carol the 6th (Statarchive Wien, d.12/f.123).

Once the Austrian – Hungarian regime was established, the Germans built high hopes. They hoped to have their medieval rights and privileges renewed, but they were annulled instead. Thus, in 1868 a foreign representative was appointed to rule the University instead of a German one. This man called Moritz followed the orders he received from Vienna. On 28 March 1869 a new reform placed all the county and district clerks under the control of the Ministry of Home Affairs and the military commissioners. The aim of Kalma Tisza's regime was to remove the Germans' autonomy and to turn the territory into a Hungarian one. His actions resulted in the law of March 1876,

which stipulated that the University and the Institution of the seven judges be dissolved.

The faith of the considerable university fortune was discussed by a commission of the Ministry of Home Affairs until 1883. The amounts of money, which had been allocated to educational establishments such as Honterus High School of Brasov or the Greek Catholic schools of Sebes and Orastie, were confiscated. A small part of this fortune was divided between the Evangelic school of Sibiu and the Romanian high school of Orastie. Many other real estate properties of the university were confiscated, and apparently only one house was preserved in Sibiu. This is where the archives were preserved until the year 1900, when they became part of the state archives.

The role played by the university was therefore an essential one as it was a unifying factor in terms of the medieval autonomous structures.

3. CONCLUSIONS

The colonization of the German population in Transylvania was a decision made by the Hungarian royalty in order to ensure the economic development of these territories. At the same time, the Germans were granted the right to settle down in southern Hungary. The structure of their villages and towns had a strong western flavor and resulted in the development of commerce and crafts. Initially, the Germans were catholic, but they joined the evangelic church as soon as the reform began. The religious structures coincided with the administrative ones, and they were grouped mainly in the south-western part of Transylvania. They were ruled by a county or district judge and a royal clerk. The initial religious and administrative center was Sibiu, where the Germans' representatives were elected and Universitas Saxonum was set up for political and administrative reasons. It functioned for 400 years. After 1876, when the royal land was dissolved, the university would continue to coordinate the activity of the Germans' schools and evangelic churches.

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THE IMPACT OF INTERNATIONAL ORGANIZATIONS ON GLOBAL SECURITY

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Abstract: *The present paper deals with the impact of the international organizations on global security. The paper aims at defining the concepts of security and international organizations and describing the present global security context. The present paper also analyzes the most important organizations and their impact on the security environment. The main elements of this analysis assess the importance of such entities in the process of maintaining and improving the actual security context.*

Keywords*: global security, international organizations, NATO, UN, EU, impact* .

1. INTRODUCTION

The early 21st century has marked the beginning of a new era, the war against terrorism. This conflict was initiated after the 9/11 attacks. The battle is carried by the members of different terrorist organizations who stipulate that they defend the Islam against the diabolic influence of capitalism symbolized mainly by the United States of America and an alliance formed by many Occidental countries (but also states like Turkey, for example) which act under the umbrella of the North Atlantic Treaty Organization.

The last decade was marked by two major wars taking place in Iraq and Afghanistan, both of them having a debatable outcome. For example, on the one hand, many specialists from Washington D.C. consider that the Iraqi campaign was a great success, but on the other hand, other experts think that the war was a failure, which can be compared with the Vietnam War.

But is the war against terrorism going to remain the main threat to the international security environment in the following decades? Probably not.

Many specialists think that this battle is going to be less important concerning the fact that, unfortunately, the world is heading towards a new World War. This fact is underlined, for example, by the situation between Iran and the Occident, the tensed relations between Turkey and Syria, or by the economic problems (it is worth to mention here the financial crisis from the Euro zone), conflicts which could easily become global.

In the present-day world, the main shift is from unipolarity (represented by the United States of America) to multipolarity (identified with China, India or Brazil, which are countries that have regional superiority and soon will play an important part at global level when referring mainly to the decision-making process). In this particular context, it looks that the international organizations will have an increasing role in the dynamics of global security.

2. SECURITY AND INTERNATIONAL ORGANIZATIONS

Firstly, it is important to define the concepts of *security* and *international organization.* The English specialists describe

security as representing all means designed to protect persons and property against a wide range of contingencies, such as: murder, fire, accident, espionage, sabotage, subversion or unprovoked attack (Bădălan & Bogdan 2009:17).

This concept is also defined as being in opposition with insecurity, which directly influences security. For example, people are concerned about their individual security, then about the national security – all the measures designed to protect elements as suzerainty and national independence, territorial integrity or internal order (guaranteed by the constitution) – and regional security, namely, a strong relationship between the states which are situated in a certain part of the globe.

Also, this concept can be analyzed from different points of view. Thus, there could be different types of security: political, military, economic, social and environmental ecurity (Bădălan & Bogdan 2009:25).

As for the international organizations, the United Nations statistics reveal that in 2005 there were approximately 5,700 intergovernmental organizations and 28,000 NGOs. The existence of the international organizations depends on elements, such as: the existence of multilateral treaties, the existence of common objectives or goals and the existence of a private constitutional structure (Besteliu, 2006: 10-11).

The intergovernmental organizations are formed by states. They have specific decision-making mechanisms, but also headquarters. They deal with global issues from different domains, such as: economy, education, and criminality.

It is worth to mention that the UN is the only organization which has global identity. The other organizations, representing approximately 97% of the total number, have limited objectives when it comes to the number of their members and the domains they operate in.

These organizations could be analyzed taking into account the following classification: global organizations with multiple objectives (the United Nations, the United Nations Educational, Scientific and Cultural Organization), with a single objective (the World Health Organization, the International Monetary Fund) and intercontinental, regional as well as sub-regional organizations with multiple objectives (the European Union, the Organization for Security and Co-operation in Europe), with a single objective (the Danube Commission) as Eugen Bădalan *et al.* consider (2009:105-106).

On the other hand, when dealing with NGOs, it is important to mention that only 10% of these organizations have global identity. Also, most of the NGOs are situated in North America. The NGOs can mediate agreements (between states) in issues which are considered to be nongovernmental (for example, the social integration of people who have AIDS).

As previously mentioned, these organizations will have a major influence on the global security. But how does the world look like nowadays?

Among the regional powers, it is worth to remember the European Union, China, Russia, Japan or India. There are also states which have developed in certain fields offering them the power to influence, in a certain way or another, the international environment (Bădălan *et al.*, 2009:10).

Such a power is, for example, Pakistan, which stand nowadays for an important nuclear power. Also, most of the states still have to deal with a global economic crisis, this situation being an important problem especially in the Euro Zone. This fact is underlined by the rating agencies. Standard and Poor's has penalized important states like France and Austria. Greece is still on the edge of the precipice, facing the risk of entering in default. Other countries have been included in the "junk" category (not recommended for investments).

Some European leaders tried to implement drastic austerity measures. But on many occasions, these measures created social issues. The populations were not satisfied and this led eventually to the replacement of many governments. And things are not better in other regions. A good example in this sense is the United States of America, which lost its maximum rating last year and is still struggling.

Of course, the world has to encounter other types of problems, such as: political instability, terrorism, drugs, corruption, organized crime, the degradation of the natural environment or the depletion of natural resources, religious and ethnic conflicts, computer crimes or overpopulation (especially in countries which are considered to be third world states).

There are many regions where a war could outburst and this conflict could rapidly spread like a deadly disease, thus getting a global identity. These regions include countries, such as: Iran, Syria, Yemen, Afghanistan, North Korea or Columbia (drugs). But who are the organizations who have a decisive role in the equation of global security?

3. ORGANIZATIONS WITH GREAT IMPACT ON GLOBAL SECURITY

The **United Nations** has approximately 190 members. Its role is to maintain peace and the global security, to create and improve the economic and social co-operation, to protect the human rights and the fundamental liberties and to develop friendly relationships between the nations (Besteliu, 2000:156-158).

The UN was founded at the end of the WWII. Its main institutions are The General Assembly, The Security Council, which has 15 members who can approve a military intervention, the Economic and Social Council, the Trusteeship Council and the International Court of Justice. In the past, the UN has intervened in conflicts like those from Congo, Suez Chanel, Indonesia, Yemen, Afghanistan, Iran-Iraq, Korea War, Kuwait War, the Balkans.

The North Atlantic Treaty Organization has a regional (Euro-Atlantic) identity, but specialists say that the role of this organization is very important nowadays because it intervenes in regions where there is no threat for the members of the alliance. This thing is possible because of NATO's capacity of initiating interventions anywhere on the globe (with the approval of the UN, of course).

The alliance was created a few years after the WWII. In 1948, Belgium, France, Holland, Luxembourg and Great Britain signed a treaty, which created a defense system (through an alliance initiated by these states) against the Soviet threat.

One year later, the USA, Canada, Denmark, Iceland, Norway and Portugal joined the alliance and in April 1949, NATO was officially created.

It is considered that NATO passed through three stages of evolution, the first one being represented by the Cold War (the annihilation of the nuclear threat), the second one highlighting the end of the Cold War (NATO wanted more partnerships with different countries and created better mechanisms of crisis management) and the third one being the period situated after the 9/11 events (interventions in regions which do not belong to NATO).

It is also worth to mention that NATO made several partnerships with states which do not belong to the alliance (Russia or Ukraine, for example), in order to strengthen the security environment.

Among the most important operations made by NATO, it is important to mention those from Bosnia, Kosovo, Iraq, Afghanistan or Libya (it is to be expected, in the next period, an intervention in Syria).

The **European Union** has also a regional identity, but recently, the EU leaders have assumed more and more actions in the areas and states outside the Union. It could be said that the idea of creating such an organization (according to the American model) existed even before WWII, one of the promoters of the alliance being the former British Prime Minister Winston Churchill.

These organizations were officially created in 1957, when Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany signed the *Treaty of Rome*. In 1973 Denmark, England and Ireland entered the alliance. In 1979, there took place the first elections for the European Parliament. In 1992 the *Maastricht Treaty* (the Treaty on EU) was signed and in the 1999 the European unique monetary system was adopted.

Nowadays, the EU has 28 members. The main institutions of the EU are the European Council, the Council of Ministers, the European Commission, the EU Parliament and the European Court of Justice. The EU has the

capabilities and resources to ensure and consolidate the security level in vulnerable places (for the global security), like the Orient or Central Africa. In the past, the European leaders sanctioned (through economic embargos, for example) states, such as: Iran (in 1980), Israel (1982), Iraq (1990), or Yugoslavia.

The Organization for Security and Co-operation in Europe also has, theoretically, a regional identity. But, just like the EU, the OSCE has the necessary capacities of making interventions at global level.

It is worth to remember the organization's interventions in Albania (1997), Kosovo (1997), Bosnia (1995), Croatia (1996), Macedonia (2001) or Central Asia (Tashkent, Almaty, Dushanbe).

Because of the actual economic context, it seems that the **International Monetary Fund** (funded in 1944, nowadays having 184 states) will have a major impact on the global security level. This is because the survival of many states, which are facing economic problems, depends on the loans from IMF. And this means that these countries will implement even draconic austerity measures in exchange for this aid.

4. CONCLUSIONS

It is clear that international organizations like the UN, NATO or IFM will have an even greater role in what is considered to be global security simply because nowadays the states are not able to deal alone against different threats (economic, politic, military, etc.). It is important also to mention that a crucial role will be hold by regional and even sub- regional organizations.

The most important aspect is that the world is in a transitional period (nobody can say for sure what is the direction) and the international organizations will be a vital component in the process of guiding it.

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RISK ASSESSMENT STRATEGIES AGAINST MONEY LAUNDERING AND INTERNATIONAL TERRORISM FINANCING

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***Abstract**: In the context of geopolitical and socio-economic situation, organized crime, money laundering and international terrorism have taken on new meanings, extending their scope at an alarming level, designed to challenge the construction of the rule of law and democratic countries. Most professionals and researchers in criminology believe that the source of such facts lies in the perpetuation of deficitary structures in politics, economy and law, in the maintenance of increasing social and economic disparities among individuals, groups and communities and increasing social and ethnic conflicts and tensions.*

***Keywords**: money laundering, illegal financial system, tax evasion, organized crime, international terrorism, means of transnational terrorism infiltration in the economy.*

1. APPROACHES TO MONEY LAUNDERING AND TERRORISM FUNDING, IN THE CONTEXT OF FINANCIAL CRISIS AND ILLEGAL FINANCIAL FLOWS

Making recommendations on preventing and combating money laundering and terrorist financing must necessarily start from a deep analysis of factors generating the dynamics of this phenomenon, because the characteristics are specific to each country. The key feature of illicit financial flows and illicit capital flows is being hidden among the official records of the country of origin. Illegal capital gains obtained by placing such capital abroad usually do not return to their country of origin.

Illegal capital can be generated through series of means and operations which are not to be found in national accounts or payments balances. Some examples are illegal products trading, smuggling, corruption, currency movements, tax evasion, hawala transactions and more. It is obvious that most of the financial flows that are not captured by official records are unlawful and violate civil and criminal laws of states, fiscal and customs regulations and banking regulations of the countries in which these capitals are produced. While the conceptual difference between licit and illicit financial flows is clear, the distinction between the two categories discussed in statistical terms is difficult. Not to mention that the available statistical data are often incomplete or inaccurate. In fact, there is no official statistics on the existence of illicit capital flows because they are not detected.

Empirical studies (UNDP, 2011:16-17) on illicit financial flows indicate the possibility to classify the generating factors into three broad categories (Figure 1): macroeconomic factors, factors dependent on the structural characteristics of the national economy, factors related to global governance.

Illicit capital holders, capital which is obtained as a result of committing crimes, are careful to hide these funds rather than to maximize the official rentability rate. Also, the holders of such funds are not interested in the evolution of the fiscal deficit, economic growth and external debt of the country of origin, which is increasing due to the economic activities in the field of underground economy.

Illicit financial flows are increased by structural factors such as rising income inequality, the rate of artificial and unsustainable economic growth, the increasing international trade without legal supervision etc.

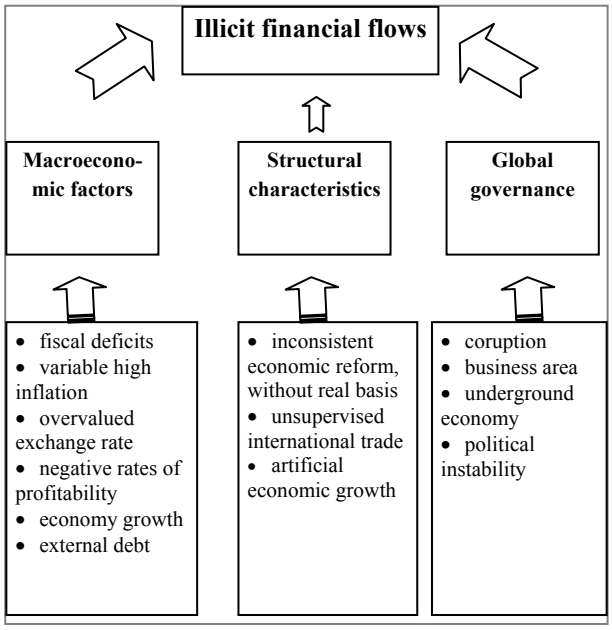

Figure 1. Generating factors of illicit financial flows. (Source: UNDP, 2011:17.)

It is obvious that there is a strong interaction between the three categories of factors. For example, overvalued exchange rates stimulate the development of a parallel foreign exchange market, with significant effects on the growth of the underground economy activities, including corruption and income distribution distortion in society.

There is also a strong interaction between macroeconomic context and the business climate. Promoting sustainable growth economic policies (sustainable fiscal deficits, low and stable inflation, attractive interest rates, etc.) may attract significant foreign direct investment, while an unstable economic policy, severe macroeconomic deficits discourage such investments. Moreover, corruption increases the cost of business development, reducing the country's ability to attract investors.

Money laundering and terrorism financing have some common aspects (Schneider, 2010:3): they use different types of transfers and electronic payments systems to move money through several jurisdictions; the individuals involved engage in a variety of criminal activities either as traffickers or as members of criminal syndicates. In this regard, the line between money laundering and terrorism financing becomes thinner as terrorists often participate in the crime area and cooperate with criminals to get money and weapons.

Based on these features, a meaningful risk assessment strategy regarding money laundering and terrorism financing at state level should take into account the following three categories: geographic risk and country risk, business risk, production and trading risk.

Companies whose important customers are located in countries that have not implemented an adequate strategy to prevent and combat money laundering and terrorist financing will need to consider additional rules on customer knowledge and risk management procedures to monitor money laundering.

High risk countries are considered to be those that: use cash as the main exchange mean, have an unstable political regime characterized by high corruption both in the public and private sectors, are known as drug-producing or transit countries for drug trafficking, have been categorized as countries with major abnormalities in preventing and combating money laundering and terrorist financing.

Risk assessment on money laundering and terrorist financing clasify countries worldwide as follows: countries with high risk, medium risk or low risk. These attributes are assigned based on publicly available information that can be found in the following documents:

- blacklisted countries at high risk of money laundering and terrorist financing, published periodically by the Financial Action Task Force (FATF) (includes recently removed countries);

- mutual evaluation reports of the FATF, the World Bank and IMF on money laundering and terrorist financing; the USA Patriot Act, Section 311 designates the most vulnerable countries to money laundering;

- OECD blacklist of countries that promote negative tax practices;

- USA list of drug producing countries and drug transition countries;
- U.S. list of terrorism sponsors;
- the annual reports of the State Department of the U.S. regarding the risk of money laundering and terrorism by countries, reports of the European Council, Transparency International and other similar bodies;
- management system and country rating of national banks.

There are different characteristics that make a business to be considered risky. For example, casinos and gambling are preferred targets for money laundering because in this activity field there is no developed culture on preventing and combating money laundering. Such activities, which convey significant cash amounts, should be carefully monitored.

Offshore banks provide a wide range of financial services under the protection of privacy and secrecy. Professionals facilitates the creation of genuine money laundering vehicles. When the illegally obtained amounts of money are used for the purchase of real estate, luxury cars and various items, it is likely that this action represents a net loss to the economy.

These principles do not apply in the context of illegal monies invested in legitimate, legal business. On the other hand, unfair competition generated by these amounts of money in that industry / branch induce potentially disastrous effects for honest operators in this area. Similarly, but in purely economic perspective, it may be considered that the entrance into the country of large amounts of money to be washed would generate an overwhelmingly positive effect. However, this kind of input creates unfair competition in the economy for legitimate operators and facilitates corruption proliferation.

Businesses that use cash funds allow masking money obtained from illegal activity into deposits containing money produced in legal activities. This is why the U.S. Bureau for exchange control published a list of high-risk businesses of money laundering.

Individual risk which an entity can expose itself to refers to the potential risk of facilitating a terrorist transaction by any individual, organization or public person, by avoiding the mandatory inspections required by specific legislation in the area.

Products and services that involve high risk of money laundering are those in whose process of production and / or trading an intermediary element occurs, on an ongoing basis and without any constraints. In other words, selling / trading these products interposes an intermediary whose identity is usually unknown.

Movement of products / services ensures rapid movement of large volumes of funds or transactions, or both, hiding the real source of these funds. Such operations allow anonymity and cash converting into financial instruments. Individual and business accounts are likely to host such transactions.

Because the final goal is always obtaining profit and because the source of the funds and the financing is often "legitimate" the purpose of terrorism financing is different from money laundering, in each case, both criminals and terrorist organizations, transfer money from one country to another in order to conceal any traces.

Due to this fact and because some of the performed operations refer to people that are on the lists, the role of banks and other financial institutions - in particular, currency exchange houses, financial investment companies, insurance companies and quick money transfer operators - is essential in combating terrorist financing.

The instruments used in order to combat terrorism financing are similar to those used against money laundering: standard norms about the client, continuous monitoring of specific transactions (such as fast transfer of money and transfers via SWIFT) and norms about the accounts of customers who have as partners persons located or that come from countries with an increased risk of terrorism.

Banks and other financial intermediaries are required to focus in particular on non-profit and charitable organizations and on their activities or operations related to them by:

- the existence of non-profit organizations without being able to justify the connections between them (organizations that have the same address, same managers or staff, transfer

money towards each other or use the same intermediate in their dealings with the financial system) nonprofit organizations that operate across sectors or countries under different names;

- large amounts of money (especially cash) declared as being collected from various individuals or communities of a certain ethnicity or religion; amounts of money that do not seem to have any economic justification regarding the purpose and the activity of the declared non-profit organization or regarding the community from which the funds apparently came;

- sudden rise in the frequency of financial transactions and amounts of money credited to non-profit organization, or conversely, the non-profit organizationhas in the current account funds that have been kept for a long period of time;

- operations or transactions to or from countries of high risk; operations of the same type performed in their own name by the directors of non-profit organizations coming from such countries.

Identifying transactions with funds suspected to be linked to acts of terrorism involves transmitting a report to the appropriate competent authority. Other types of professions or activities which fall under the same incidence of combating money laundering should consider getting involved in activities intended to contribute to the development of laws, regulations and guidelines to combat money laundering and terrorist financing.

The financial crisis has revealed quite clearly the limits and sometimes the deficiencies of the surveillance system used in Europe. However, they could not identify excessive risks. The supervision and control did not intervene in time. Coordination among national authorities was far from optimal when transnational financial institutions were faced with problems, despite the fact that these institutions were becoming more numerous.

The Union's response to these serious problems was the introduction of completely new supervisory structures adapted to the transnational nature of financial transactions namely the European Banking Authority, the European Securities and Markets Authority and the European Insurance and Occupational Pensions Supervisors (in operation since 1 January 2011). In addition, the European Commission proposed a series of measures that having as their object rating agencies, capital of the banks and audit reform.

European Systemic Risk Board monitors the entire financial sector in order to identify potential problems that could lead to a future crisis . It works in close collaboration with the new European Supervisory Authorities.

In addition to coordinating and monitoring national authorities these new bodies will work with other authorities around the world to ensure a better global supervision. In Romania, money laundering for financing international terrorism is regulated and sanctioned by law no. 230/2005, for preventing and combating money laundering and the establishment of measures for preventing and combating terrorist financing. In 2011, taking into account the recommendations included in the, MONEYVAL European Council report concerning the third round of the detailed assessment of Romania in the fight against money laundering and terrorist financing, the law was amended and supplemented by Law no. 23S/2011.

2. INSTITUTIONS INTERESTED IN COLLECTING AND PROVIDING DATA CONCERNING THE FREQUENCY OF OCCURRENCE OF MONEY LAUNDERING FOR THE FINANCING OF INTERNATIONAL TERRORISM

Until 1970 statistics of were widowed opportunity to examine crime patterns. Collection of data concerning crime was poor, without the possibility of electronic transmission and processing. In 1974 Professor Walker started the first research project on crime in Australia, his research was based on data collected from individual reports of the Metropolitan Police.

In Romania, terrorism is included in the category of threats to the national security by Law no. 51/1991 concerning Romania's national security. Subsequently, by Law no. 14/24.02.1992 regarding the organization and functioning of the Romanian Intelligence Service, preventing and combating terrorism is the express

responsibility of this service. Also, for combating terrorism, Romania has effectively committed to the International campaign against terrorism through military participation, being a major landmark of Romania's National Security Strategy. Romania has also acted and shall act within NATO, the European Union and other international organizations towards promoting and consolidating democracy, supporting governments and security and defense institutions in the fight against terrorism, participating in multinational operations, comprehensive assistance in the process of prevention, counteracting and post-conflict reconstruction (H.G. no.21/2001). The analysis of crime trends at a national and international level had started from the data provided by national police authorities on identified crime, but the processed information raised problems of reliability and international comparability, especially since national statistics were dependent on the availability of victims to report crimes. You might think that data regarding crime are collected and centralized by all interested institutions.

We refer in particular to the following categories of institutions / services / persons:

- police services that should be concerned by monitoring their own achievements recorded on line of identifying and bring to justice the perpetrators and publish such data as very important performance indicator;
- the prosecution and prosecutors should also monitor the achievements of convictions, so namely to make sure that offenders are appropriately punished, depending on the nature and seriousness of the offenses committed;
- criminology and forensics services whose mission is to prevent and counteract organized crime activities in the area and reduce their impact on society;
- Border Guard, Coast Guard and National Customs Authority, whose responsibility is to protect national borders and that represents the first and last redoubt of defense against transnational organized crime;
- National Agency for Fiscal Administration, whose job is to ensure that all incomes are taxed;
- attorney bars, associations and legal unions, accouters and appraisers, and other similar bodies that protect the ethics and integrity of the profession;
- banking associations and other financial organizations whose concerns include ensuring the stability and credibility of the national financial system;
- national statistical institutes responsible for compiling statistics on important developments of society, including the economic ones.

Unfortunately, both at national and international level such bodies / institutions do not develop reliable and complete statistics concerning illicit financial flows and money laundering.

Most of them do not even centralize such data. The situation can be attributed to the fact that until recently it was not treated as money laundering phenomenon itself but was approached tangentially related to other crimes. As identifying and capturing an offender can be the first step towards dismantling a criminal networks, similar attempts to identify money laundering can lead to the discovery of drug offenses, for example, and vice versa.

By definition, the phenomenon of money laundering manifestation indicates a prior offense that is included and highlighted in the statistical processing and can be monitored in order to assess progress over time. Given the fact that the estimation of revenue generated by prior crimes is very difficult (for example, the crime of drug trafficking) is understandable why organizations like those listed above are reluctant to provide estimates of the share of illicit financial flows caused by such crime and involved in money laundering operations.

However, the existence of a problem of great importance, money laundering, is unanimously accepted. International organisms, governments, financial institutions etc. are willing to spend heavily in the implementation of strategies of preventing and combating the phenomenon, though they _ do not certainly know its extent. Furthermore, they are not able and do not have the capacity to check if the problem is extending and it takes the allocation of additional funds in order to fight the phenomenon, or if the size of was limited as a result of effective strategic measures. In the contemporary era it seems unreasonable to exert

so much effort in tackling money laundering without having to confirm their effectiveness.

To finish with explaining the reasons that caused us to state that official statistics are not useful in estimating illicit financial flows / money laundering we must underline that there are no such statistics actually.

There is published data concerning individual cases, that confirm the existence of the phenomenon, but not its magnitude. Furthermore, because in the investigation of money laundering are involved several institutions (police, forensics, criminal investigations, prosecution, etc..) and several procedural stages of legal research are held, published data are provided simultaneously by several institutions, sometimes overlapping which makes any form of analysis extremely difficult.

3. CONCLUSIONS

Analyzing the issue of money laundering and its impact on international terrorism financing one considers that at least the following conclusions can be drawn:

- money laundering or financial flows generated by organized crime are extremely difficult to quantify, certainty exists only with regard to the existence of the phenomenon that varies from one country to another;

- traditional methods, case studies, quantitative estimates econometric models for quantifying the size of the underground economy tend to underestimate or overestimate the contribution that money laundering has in exacerbating the phenomenon.

- the Walker pattern still seems to be the most reliable and robust method of estimating global financial flows generated by money laundering, although the microeconomic foundation is built on ad-hoc variables Although plausible the variables of the model they are still arbitrary.

- estimating the size of funds of organized crime (money laundering volume) is an extremely difficult task mainly due to lack of adequate data, both at national and international level (one of the reasons for this is the lack of unity and transparency of states, that have not established a system of integrated management of strategic information);

- effects generated by money laundering on the economy cannot be estimated accurately based on the information available (given that the estimation of prior revenues generated by crime is very difficult is explainable why concerned national and international bodies are reluctant to provide estimations of the proportion of illicit financial flows produced by the various operations involved in crime and money laundering and official statistics are virtually useless);

- quantifying the volume and dynamics of money laundering is a constant need for decision-makers involved in developing policies to prevent and combat the phenomenon, it is required a considerable improvement in the processes of collecting and providing adequate data on the effects of crime suspected and / or proven and the frequency of money laundering in different criminal environments.

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METHODS, INSTRUMENTS AND SOURCES OF MONEY LAUNDERING USED FOR FINANCING INTERNATIONAL TERRORISM

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Abstract*: In order to study the way in which in the contemporary world profits are 'washed' as a result of illegal activities and the routes that money go through, involves complex investigations and a considerable amount of work. Countries that have regulated as a independent criminal offense, the offense of money laundering, have also included in its scope those actions taken to achieve hiding the illicit origin of values from committing this offense. The mixing of legal and illegal profits and the reporting of the total earnings from the business as the legal means for money laundering. Through this practice, all cycle stages of money laundering are combined .Financial funds are spaced from crime, hidden in legitimate business accounts and then brought back to the surface as legal earnings of a company. The reason is plausible: maximizing profits and available cash.*

Keywords*: organized crime, illegal financial system, tax evasion, money laundering, transnational terrorist infiltration in the economy.*

1. INTRODUCTION

In specialized literature "the method of money laundering," means the individual techniques and recycling schemes. A technique of money laundering, is a single procedure, while a schema involves a series of procedures whereby the profits of an illicit operations are translated into legal profits. Money laundering is more than just contraband or conceal illicit funds, although such actions may constitute essential components of the process. A logical way to distinguish money laundering from one of its component parts is to emphasize the difference between hiding the existence of money resulting from crime and disguise their nature.

Some of the most popular illegal operations, such as drug trafficking continue to be profitable, but a relatively new phenomenon is the transport or trafficking illegal immigrants. This activity, which combines the growing movement of people with criminal activity is often characterized by a deeper involvement of organized crime groups.

2. MONEY LAUNDERING METHODS AND ROUTES OF ILLICIT FUNDS USED FOR FINANCING INTERNATIONAL TERRORISM

In order to achieve an effective study and to understand the specific routes followed by illicit funds, it is necessary to highlight the way in which members of criminal organizations work when it comes to recycling illicit amounts of money, in order to give the appearance that those funds are obtained legally. In practice several ways of money laundering, are known, as follows:

a) Money laundering involving politically exposed persons (PEP). According to members of the Committee of Experts for evaluating the implementation of the anti-laundering measures[1], corruption and bribery offered to public officials are two of the four sources of dirty money, the

[1] It is a Sub-Committee on Crime Problems (CPDP) body of the European Council. The Committee of Experts presented for the first time, typologies of money laundering in 1998. Today checking the implementation of this measures by States to prevent and combat money laundering fall within the functions of MONEY VAL.

other two sources being drug trafficking and human trafficking (PC-R-EV, 1998:1). In terms of financial offenders, drug dealers or traffickers, the criminal activities undertaken by them are exposed to lower risks if certain public figures are persuaded to cooperate. Therefore, corruption of civil servants has become an important part of the criminal activity. The bribe often takes the form of cash, forcing the recipients of these "gifts" to strive in order to launder illegally obtained revenues (PC-R-EV, 1998:1).

Depending on the degree of the socio-economic development of a country, four types of corruption have been identified (Johnston, 2007:23): corruption related to the exercise of a dominant area; group leaders corruption, corruption commonly used by criminal groups, corruption of high public officials. Is not neglected the fact that due to the special status of politically exposed persons, some financial institutions are tempted to give them a wide margin of discretion in carrying out financial activities, discretion that can sometimes be used for criminal purposes (FATF, 2004:19). According to experts of the Financial Action Task Force (FATF) the sources of illegal money subjected to recycling by politically exposed persons are not only bribery, the receival of undue benefits or rewards obtained illegally. Politically exposed persons from countries where corruption is endemic are likely to be directly involved in running criminal activities related to organized crime. On the other hand, in almost every country politically exposed persons can be identified carrying out suspicious activities (FATF, 2004:19). According to FATF experts, there are at least two ways of detecting the illegal activities of politically exposed persons. The first is the change of power in a country in which a PEP operates illegally while the regime that succeeds to power promotes a policy of settling of scores. The second way concerns the discovery of some indicators regarding the conducting of suspicious transactions in financial activities carried out by them (FATF, 2004:22). Depending on the criminal culture of various politically exposed persons, FATF experts have identified four types of money laundering: money laundering obtained through corruption, by association with a politically exposed person; laundering money from embezzlement, money laundering obtained through diversion of public funds through the family members of a PEP, money laundering obtained through high-level corruption.

b) Money laundering through real estate investments - investing money in real estate is a technique frequently used for money laundering. As recently confirmed by the FATF, these investments are a classical method, tested in a while to launder illegal money. The typological review of cases reported by CTIF-CFI confirms that several techniques used for laundering money of illicit origin involves the real estate sector. The used techniques, vary from relatively simple to very complex, involving large sums of money. Details regarding these techniques are described below. The use of non-financial professions - to evade anti money laundering measures, those who carry out this activity had to develop increasingly complex methods. Criminals who wanted to recycle criminal income have oriented towards the experience of the professionals. This trend has been observed internationally and is becoming increasingly common in money laundering operations. Lawyers, notaries, accountants and other professionals perform a series of tasks that criminals target them in order to use their knowledge and to put in place a money laundering mechanism with an illegal origin. The typological review of recorded cases has focused on the services most used by those who recycle the money. These are explained below in accordance with the extent to which non-financial professions are involved in money laundering ranging from minimal to very intensive.

Submission to the financial institutions - in order to avoid awakening suspicion about their criminal activities, those who recycle money use non-financial professions to be presented to financial institutions. When a person engaged in non-financial profession presents the client of a financial institution, this client will present credibility due to the ethical standards associated with such occupations.

Engaging in real estate transactions - different non-financial professions were faced with money laundering activities because of the key role they play in such transactions. When they are exercising their profession they are in a favorable position to record any irregularities that would create suspicions regarding money laundering.

Execution of financial transactions -, non-financial professions can perform various financial transactions for their customers (eg cash deposits, issue or withdrawal of checks). They can also carry out transactions through accounts opened in their name, but for those who recycle money. Using the account of a non-financial professional as transit account is meant to conceal the identity of the ultimate beneficiary and the link between the illicit origin and the destination of the funds.

Establishment of corporate structures and legal financial constructions - those who recycle money also turn to non-financial professions to establish corporate structures and legal financial constructions to make transactions as obscure as possible. Complex corporate structures and legal financial buildings are designed to conceal the true identity of the beneficiaries. Some files concerning the use of the established legal financial construction of self non-financial professions have shown that they can play an active role in money laundering.

The use of corporate structures - the use of fake companies is a money laundering technique that hides the origin of the funds and which increases the anonymity of transactions partners or beneficiaries. When using shell companies concerns should arise regarding financial institutions and non-financial professions. Beyond buildings using off-shore companies, financial experts and lawyers are sometimes used to make the scheme more complex and less transparent. Using obscure legal structures, such as trust funds, helps hiding the identity of the real beneficiaries.

Acquisition of immovable property of great value - through the purchase of immovable property of great value, large sums of money from criminal activity can be converted into bona fide securities and invested in the legal economic system. The acquisition of such property, especially where there is no clear economic justification, should lead to further investigations authorized entities.

Buying or selling above or below market value - it was discovered that another technique used in money laundering through real estate investment is the sale or purchase of a property above or below its market value. It is also suspicious the repeated sale of a property with unusual profit margins when one can not provide a plausible explanation for these transactions.

Using intermediaries for real estate acquisitions - in some cases, the person involved buys properties on behalf of third-parties, with which he has no connection. Thus the person who recycles money wants to hide the connections between him and transactions used for "laundering" money, using a middleman or a front man.

The use of suspense accounts - another identified technique used in money laundering is the use of suspense accounts. Funds usually arrive in the accounts by deposits, transfers, checks or international transfers. They never remain in the same account for a long period of time. Analyzing these accounts has led to the conclusion that they were formed solely for the purpose of such transactions.

The distorted use of mortgage - contracting a mortgage loan repaid through bank deposits is a technique through which money illegal origins is injected into the financial system on a regular basis, with the aim of recycling it.

c) Laundering money resulted from corruption uses the following techniques at least:

Banking Transactions - those who recycle money originating in corruption prefer to use the banking system in their operations. They often use bank accounts for the sole purpose of engaging in used in money laundering process.

Making liquidity transactions and international transfers - the classical scheme of these operations generally consists either of cash deposits followed by transfers abroad or from transfers outside the country followed by cash withdrawals. The purpose of making cash deposits and cash withdrawals is to disguise the origin and the destination of the funds. Using international transfers allows one to add

a transnational dimension to the operations, in order to cover the traces. It is well known that those who recycle money prefer to delimit the criminal activity from money laundering .

Using third-party or non-financial professions - although in most cases money laundering is carried out by corrupt individuals there are plenty of situations where such activities are carried out by third-parties, such as family members or close people , especially when involving politically exposed persons.

The private banking - private banking system has been used for money laundering operations related to corruption. Most reported cases have shown the use of banking services abroad.

The use of suspense accounts, shell companies and offshore companies - in many cases complex techniques of money laundering are used in order to increase the difficulty in detecting these operations. Thus, some people open accounts abroad in the name of ghost companies, which use them as transfer accounts to move funds from and / or to foreign countries, especially offshore centers.

Investments in real property, real estate and insurance business - these allow large masses of illegal money to be wagered legally in the financial circuit.

d) Money laundering originating from fraud - people who recycle money arising from fraud using the following techniques:

Using the banking system, respectively through the accounts they have opened in more than one bank units - opening a large number of accounts at the same bank branches and disposal of repeated transfers of large sums of money between accounts, frequent deposits of cash on behalf of clients by third parties, without apparent connection with the recipient account are some of the techniques used.

Investing money from fraud involves the purchase of land or buildings which are then resold for profit.

Simulation of trade and international economic and financial operations - this involves using commercial relations that any country has, while conducting false financial operations . Thus, the operators involved in money laundering, in agreement with some "trading partners" conduct extensive import-export activities that either do not occur in reality or are held in values and quantities different from those contained in the financial documentation submitted to the custom authorities. In this context, certain company will proceed to a purchase from the country in which it is established, e.g. a machine , in exchange for a certain sum (which comes from illegal activities). Subsequently, this good is subject to a succession of sales of several companies that actually were created specifically for this purpose. Successive sales finally lead to a dramatic and artificial increase of the value of the machine, which is finally exported and financial authorities of that particular state shall be obliged to reimburse the VAT, which is often 2-3 times higher than the real value of the exported machine. Moreover, the overseas company unit which is acquiring the machine is property of the same criminal network so the initial capital used to purchase equipment can Sbe recycled back home and can be introduced without problems in the legal economic circuit.

Legally addressing the phenomenon it becomes evident that on the one hand the state is subject to VAT liability of certain economic and financial offenses (forgery of official documents, forgery, fraud and so on), and on the other hand recycling and reintroducing the initial capital in the economic circuit leads to the offense of money laundering.

e) Money laundering originating from drug trafficking - in the drug business drug dealers earn relatively small amounts money but in many locations. The money thus obtained are invested in activities such as restaurants, very suitable for money laundering. The advantage is that the flow of circulating money is very large. Criminals can also periodically declare additional revenue in addition to legally obtained revenues. The disadvantage is that illicit money are taxed along with legally obtained capital. Mixing legal money with illegal money has the advantage that it provides almost immediate explanation for the origin of large sums of money - profits arising from lawful activity.

The method used is chosen depending on the criminal activity and institutional status of the country in which illegal money are obtained. Also, money deposits (so called

smurfing method) and illegal gambling are often used. Obviously these methods clearly show that there are many ways to recycle money. As mentioned, it would be much easier to reduce criminal activity than to fight against these methods.

Fight against terrorist financing concerns worldwide organizations including the International Financial Action Task Force (FATF / FATF) which decided to extend the mandate at a special session in Washington in October 2001. Thus, the FATF adopted a set of nine Special Recommendations to stop terrorist organizations in obtaining and transferring funds for their criminal activities. Such recommendations are the new international standards for combating terrorism. These countries prohibit the use of alternative money transfer and other informal or underground banking systems. In addition FATF called on its members to strengthen customer identification measures for wire transfers and prevent charitable donations to be used for terrorist financing activities. In this respect the FATF has invited countries to ratify the UN Convention the Suppression of the Financing of Terrorism and implement relevant Security Council resolutions.

In Romania, the issue of terrorism is addressed from the prevention perspective , which involves focusing on preventing terrorist activities, human resources supply, logistics and finance. Consequently, the institutions involved in the National System for the Prevention and Combating of Terrorism (NSPCT) actively participate according to areas of competence to halt the activities of terrorist groups funding , working with the National Office for Prevention and Control of Money Laundering in the identification of suspected terrorist financing operations. National Strategy for preventing and combating terrorism (since 2002) and Law no. 535/2004 on preventing and combating terrorism set the following major objectives and supporting actions in preventing and combating the financing of terrorism: protecting national territory associated with terrorist activities, protection of Romanian citizens and foreign objectives of activities subsumed / Associated terrorism regardless of origins and forms of manifestation, preventing the involvement of Romanian citizens and foreign residents in Romania in activities subsumed / associated with international terrorism, regardless of the area of development, the objectives or their targets, participation in international efforts to prevent and combat terrorism in different geographical areas.

At the same time, nationally, the crime of *"terrorism financing"* is incriminated in the Article 36. 1 of Law no. 535/2004 on preventing and combating terrorism, article referred by Special Law no. 656/2002 on preventing and sanctioning money laundering as well as on establishing measures to prevent and combat terrorist financing, as amended and supplemented, at art. 2 letter. a1: *"Providing a terrorist entity movable or immovable goods, knowing that they are used for supporting or committing terrorist acts, and acquiring or collecting funds, directly or indirectly, or performing any financial operations bank to finance terrorist acts, shall be punished with imprisonment from 15 to 20 years and interdiction of certain rights."*

Activity of money laundering is inseparably linked to organized crime, because organized crime activities generate large amounts of money, which, in order to be used should be washed to conceal their illegal origin. Large amounts of money from illicit affairs are used for internal expenses of the criminal network, which consist of payments paid to suppliers, associates and for bribing officials - distribution of the money does not leave too many traces, as the money enter the circuit legal directly as current expenses.

Phenomenon of money laundering has made geographical boundaries to become practically insignificant because members of criminal organizations prefer to send their illegal income to countries where measures to control this crime are little or no effective. Under these circumstances, illicit income is sent to Central and Eastern Europe or to countries with poor law in Asia and Africa and is deposited in the financial centers and banks in territories known as "tax havens" where anti-money laundering regulations are ineffective. The relationship between terrorism, organized crime and crime can be described according to Figure 1, as follows:

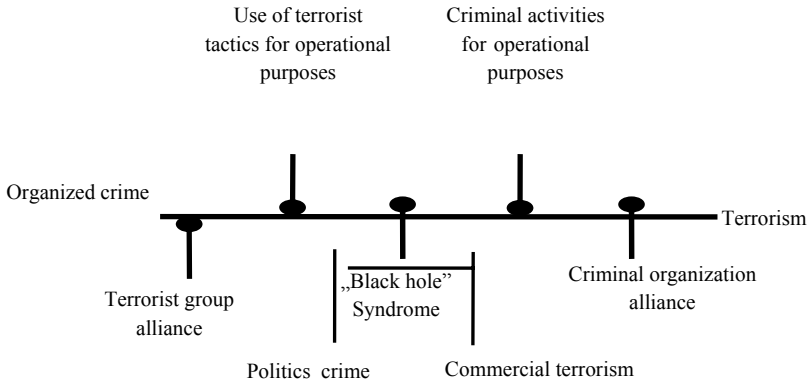

Figure 1. Relation between terrorism, organized crime and crime

Sources of terrorist financing are used through formal and informal systems , come in a variety of origins, from crimes or not. The most important are: human - individual and common (corporate) voluntary contribution; Diaspora (migrant communities with voluntary contributions) ; ethnic and religious support (donations and contributions from people with religious and ethnic affinity) ; state partnership (the state supports the terrorist group) ; public and private donors and individual donors supporting terrorism, social and religious organizations; high-level organized crime (fraud, drug production and trafficking, kidnapping, armed robbery, person trafficking); investment and legal affairs (money are used for the acquisition of companies and their involvement in profitable business to fund terrorism) ; NGOs and community organizations (terrorist organizations create phantom organizations that receive funds from twin NGOs from other countries or infiltrate into community organizations that receive funding).

3. CONCLUSION

To improve the methods of preventing money laundering the governmental authority must be very receptive to the use of the most appropriate financial mechanisms and taxation, leading to discouraging crime and to encouraging the timely reporting of unusual transfers / illegal money. An effective mechanism for capital and financial markets is necessary in order to implement a complex and continuous supervision the ongoing money laundering used for financing international terrorism. Extending control of corruption in the public sector and financial and audit control of economic activities in order to prevent tax evasion and eliminate or reduce economic underground activity. Creating a force "of intervention" for the tax sector in order to combat money laundering (a kind of tax Interpol).

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POSSIBILITIES OF COUNTERING THE AIR THREAT AND PREVENTION AGAINST IT

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Abstract: *This article elaborates on all possible air threats, especially the most lethal once, which can cause a serious damage to civilians and national economy – the renegade planes. Safety management system with all its parts is described in the article as the best prevention and protection measure, as well as Quick Reaction Alert procedures, as a last valid tool to face such menace.*

Keywords: *threat, security, decision making process, safety management system, renegade, quick reaction alert.*

1. INTRODUCTION

Civilian aviation is a target of special importance for terrorists, given the global impact of such attacks. Every terrorist attack in the air focuses the attention of the world through news coverage and around-the-clock publicity. Even now, in times of extensive intelligence and military counter-terrorist activity, it is very difficult to detect and to identify terrorists, and it is often impossible to blame concrete persons and organizations for attacks that occur.

Without any doubt, the issue of security is considered to be a major concern for air transport. Consequently, terrorism is considered to be the most serious threat to air transport. Many agree that this threat is real, persistent, evolving, sophisticated and hardly predictable. Terrorists use asymmetric methods which are difficult to reveal and defend against them. The seriousness of this threat to air transport, as well as national security, was demonstrated by terrorist attacks on the World Trade Center and Pentagon on September 11, 2001. A response to 9/11 attacks called for a change in methods, trainings and procedures in air traffic management. Now, ten years after, it is clear that with the expected growth in air transportation, we will need to make further efforts in adopting new measures to continue improving aviation safety.

The use of Safety Management System (SMS) at air traffic management (ATM) can contribute to this effort by helping detect and correct safety problems before they result in aircraft accidents or incidents.

2. TYPES OF THREAT SCENARIOS

When considering the most probable threats to in-flight security in the 21st Century, we may sum up four most probable threat scenarios. These include cyber attacks, bomb warnings, “conventional hijacks”, and last, but not least, 9/11 type attacks. However, it is need to say that these are the most probable and the length of this article does not permit us to focus on all possible threats.

In terms of the first listed threat, a cyber attack, it is necessary to make clear that aviation is far more than just planes. It is a sector, which safety and fluency is supported by a large scale computer network. Every part of this network, whether it includes radar, link, and phone lines, which make the entire system operable and safe is a potential target.

Cyber attacks have become a global pandemic and no system is immune to them. It is realistic to imagine that hackers would be able to remove all the protections of a traffic collision avoidance system (TCAS) which can lead to mid-air collision. A hack into the ATC system and consequent misuse of sensitive data is something that really needs to be addressed. In better case it would interfere with the ability of controllers to handle their job and result in massive delays and restrictions in air traffic. In the worst case, especially in combination with jamming up the radio frequency, the consequences can be fatal. Besides a loss on human lives, it is logical to predict that an economic impact of taking down the ATC systems would be tremendous.

Bomb warning represents another type of threat. A protection against bomb warning lies mainly on shoulders of ground (airport) security. Only consistent, multilevel monitoring and scanning of passengers and cargo, including banning of all dangerous, suspected and unaccompanied freight shipments could reduce the risk of further such events. Intelligence is also one of the key factors and way how to discover something doubtful.

Another type of threat is a "conventional" hijack. In this case the compliant aircraft is directed to designated or required airport with specialist facilities on the ground to deal with siege and negotiations. ATC must promptly inform all inbound traffic about closure of airport and surrounding airspace. This may result in significant reduction in capacity due to diversions and other restrictions related to ATM. Active defense is based on awareness and training, but particularly on use of aircraft protection officers and locked cockpit doors.

The fourth type of a potential threat is "9/11" type terrorist attack, which is the main type of the threat discussed in this article.

3. RENEGADE AIRCRAFT

One of the main dilemmas regarding in-flight security is determining an optimal level of integration of security systems and procedures, in order to ensure the speed and uniformity of protective actions. The way how in-flight security incidents are managed has greatly changed since the tragic events on 9/11. It was the day a civil aircrafts were used as weapons of mass destruction for the first time in history of aviation. In response to these attacks, NATO has developed a new concept called "Renegade" for dealing with such a threat. Officially, NATO defines renegade as an aircraft operating in such a manner as to raise suspicion that it might be used as a weapon to perpetrate a terrorist attack. Important to know is the fact that renegade is legislatively considered as civil threat, not the military. Hence, not NATO, but the nation itself is responsible for determining the best way of action against renegade. Of course, the decision to launch the quick reaction alert interceptor (QRA/I) is always made by appropriated NATO agency, but after successful interception and identification of a suspected aircraft the authority is given to national command and control centre. Thus, the decision to use of weapons and engaging the aircraft lies on the national authorities. This is because each country has a different law system, which can differ in such a sensitive issues.

Attacks on the World Trade Center and Pentagon and dozens of exercises pointed out on the biggest problem concerning the chain of transferring of authority and decision making process – time. Time in combination with high speed of the renegade, bad weather conditions, limited situational awareness and time-consuming decisions could pose a serious danger especially for smaller countries. Therefore, many nations have signed bilateral agreements to cope with cross-border incidents. However, this is not enough. The international dimension of in-flight security incidents requires coordination at European level. If we compare the flight paths of 9/11 aircrafts onto a Western or Central Europe, three or in the worst case five countries would be affected by occurrence in a short time frame.

Within the geographic and political conditions of European territory, it is generally agreed that there are two options to face this challenge.

The first option is to establish a specific transnational joint Pan-European office on juridical base, which would replace national Governmental Authorities (NGA) in decision making process. Such office would have full QRA(I) command competence, but should respect national legislations in particular manner with renegade handling. Advantage of this approach is a possibility of immediate action against the threat thanks to all relevant information being "in one place", minimal downtime and Europe-wide impact. Although, this option would be very effective, it is highly unlikely that countries would be willing to give up their national powers in favor of this office.

The second option is far more complex. It would require a close coordination and cooperation between all participants dealing with international menace. EUROCONTROL[1] and NATO just started to work together and created the NATO EUROCONTROL Air Traffic Management Security Coordinating Group (NEASCOG), with the mission to ensure the necessary close coordination and development of all related security activities with the aim that the member nations of each organization reach converging views. The NEASCOG promotes, develops and supports effective pan-European security measures in two focus points. Firstly, it provides a technical support enabling secure and real time dissemination and share of information of the situation on board. Secondly, it establishes a framework for dealing with in-flight security incidents via high level concept – Airspace Security Incident Management (ASSIM).

The objective of this concept is to support the decision making process by providing the national authorities responsible for airspace security with real time reliable information about airspace security incidents. NGAs are considered as the end user and the rest actors should play only supporting role and facilitate the decision making process.

One should keep in mind that there is no uniform procedure regarding the renegade. Each situation will be always assessed on individual basis and civil just like military controllers must trained to identify suspicious behavior and to work in close cooperation. Segregation of airspace around the suspected aircraft made by civilian ATC is essential for rapid approach of the military QRA. Differences in directives, procedures and rules between these two agencies creates immense problem, which could in some circumstances lead to hazard and safety incidents. Therefore, an effective SMS must be put in place.

4. SAFETY MANAGEMENT SYSTEM

In order to counter air terrorism, the world community has strived to create rational and commonly accepted judicial processes and technical regulations. These „anti-terror procedures" are being updated as a result of previous, mostly tragic, terrorist attacks, in order to prevent similar events from occurring in the future. Unfortunately, these international regulations have not fully eliminated the threats against aviation. The International Civilian Aviation Organization (ICAO) plays an important role in current counter-terrorist operations, primaril-y through elaborating and finalizing the appendixes and recommendations to existing conventions by means of SMS. Effective use of SMS is a basic requirement for any modern business. It consists in a set of coherent policies, procedures and practices for effectively managing the safe operation of any business. It is not a surprise that the same must be applied in an aviation industry.

ICAO defines SMS as a systematic approach to managing safety including the necessary organizational structure, accountabilities, policies and procedures. In other words, SMS is a systematic, comprehensive process for identifying, managing and removing safety risks, but its main goal is not to remove all safety risks, but manage them under organizational control. SMS is a complex system consisted of

[1] EUROCONTROL - European organisation for the safety of air navigation, is an international organisation with 39 European member states, with the intention of creating a single European upper airspace and supporting its member states to achieve safe, efficient and environmentally-friendly air traffic operations across the whole of the European region.

subsystems covering wide spectrum of various analyses, training methods, risk managements and multiple procedures.

In respect to a renegade aircraft, a reader should especially pay an attention to following elements of SMS:

4.1 Security Incident Management.

In-flight security incidents are time critical events that require strong coordination among different actors and the gathering and validation of nearly real time information for decision making process. The main points of view to handle a security incident include:

- Optimizing awareness - identification of suspicious aircraft, incident notification, information dissemination, maintaining awareness;
- Information requirements - relevant information needed to manage and resolve an incident;
- Time factor - required information must reach the appropriate recipient on time to be able to provide adequate response;
- Technology support - automation and encryption facilitate information exchange, reduce delays and guarantee confidentiality.

Information about situation on board is essential and must be gathered both from civil and military line. A pilot in command is the key actor, and measure to support him must be implemented according to pre-defined scenarios when possible. Risk assessment should evaluate what is the real threat posed by the aircraft in terms of its endurance, objectives at range, aircraft behavior (i.e. deep descent), confirmation of legitimate pilot in command or pilots' intention and information about the flight - type of aircraft, nationality, operator, passengers on board, nationality, VIPs (very important persons), children. Several criteria for suspicious behavior have been identified, but the list is not and can never be exhaustive. Training, security awareness and best judgment of pilots and controllers are therefore a key factor to manage such situation.

4.2 Risk Management.

Risk management is a process of identification, analysis, and elimination or mitigation of hazards to an acceptable or tolerable level. The objective of Risk management is to ensure that the risks associated with hazards to flight operations are systematically and formally identified, assessed, and managed within acceptable safety levels.

The complete elimination of risk in aviation operations obviously is an unachievable and impractical goal. As not all risks can be removed, nor are all possible risk mitigation measures economically practical. In other words, it is accepted that there will be some residual risk of harm to people, property or environment, but this is considered to be acceptable or tolerable by the responsible authority and the society. Risk management is the main component of the SMS and plays key role in addressing the risk in practical terms. In general, it is a structured approach and systematic action aimed to achieve the balance between the identified and assessed risk and practicable risk mitigation.

Risk management consists of three essential elements:

- Hazard identification - Identification of undesired or adverse events that can lead to the occurrence of a hazard and the analysis of mechanisms by which these events may occur and cause harm. Both reactive and proactive methods and techniques should be used for hazard identification.
- Risk assessment - Identified hazards are assessed in terms of criticality of their harmful effect and ranked in order of their risk-bearing potential. They are assessed often by experienced personnel, or by utilizing more formal techniques and through analytical expertise. The severity of consequences and the likelihood (frequency) of occurrence of hazards are determined. If the risk is considered acceptable, operation continues without any intervention, if it is not acceptable, risk mitigation process is engaged.

- Risk mitigation - If the risk is considered to be unacceptable, then control measures are taken to fortify and increase the level of defenses against that risk or to avoid or remove the risk, if this is economically feasible.

4.3 Risk Analysis Simulation.

Simulation of various scenarios is the best way how to arrange new procedures and challenges concerning not only day-to-day business, but especially those ones not exercised in real traffic. The figure below represents an optimal scenario simulation procedure:

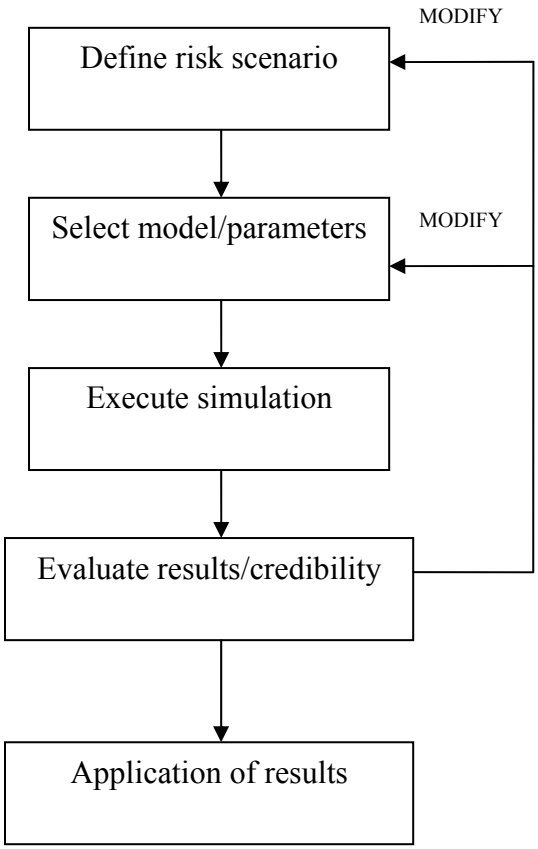

Fig. 1. Optimal scenario simulation process

Valid results are recorded and lead to change, update or redesigning of existing procedures, system upgrades. Keeping up the pace of safety as the ability to adapt to new challenge requires steadily growing investments.

4.4 Disseminating Safety Information.

Every workplace or a position should be the focal point for safety-related information — hazard reports, risk assessments or safety analyses. Some messages are urgent (before the next flight), some are directive, some are for background understanding, some are seasonal, etc. In most cases, the personnel do not have time to read all the information, so they are usually divided into two types. Safety critical information, which are an urgent safety information disseminated by direct messages (oral, written or electronically) or so-called „Nice-to-know“ information. These are mainly incident reports, safety studies, aviation journals, proceedings of conferences and symposia, manufacturers’ reports and training videos.

4.5 Renegade Decision Procedure – Target Management.

For every air traffic controller (ATC), time is always the biggest constrain when solving an extraordinary or threat situation. People need enough time to analyze, to decide, and to provide another site with important information. The decision process always suffers from lack of time and obviously brings human errors which can lead to accidents or even fatalities. Correct defining of probable target (according to predicted course, intelligence info or terrorist demands via radio/ visual signals with QRA), using proper counter-measures, analyzing overall risk and severity of consequences brings stress and errors. There are so-called decision-making supports helping the ATCs used both in military and particularly in civilian sector.

SMS is combination of risk and quality management methods in order to achieve the safety goals and provides the organizational framework to establish and foster the development of a positive corporate safety culture.

5. AIR POLICING AS AN INDISPENSABLE CONTRIBUTION TO SAFE EUROPEAN SKIES

Airspace Security comprises safeguarding of the airspace of responsibility from unauthorized use, intrusion, illegal activities or any other violation. This involves managing the airspace to prevent, detect and resolve where possible airborne threats. To determine a sufficient level of security depends on the actual threat scenario and can heavily impact normal life conditions. It is the responsibility of the relevant international and national civil and military authorities to implement the appropriate security measures in response to the actual threat scenario.

Hence, importance of Air Policing and the requirement to have air defense assets available at short notice remains fundamental. For this purpose NATO has at its disposal a comprehensive system of air surveillance and airspace management means as well as QRA assets for immediate use. By means of radar sites, remote data transmission and central command and control centers the Alliance ensures constant control of its entire airspace to react within seconds to air traffic incidents in the Allies' airspace. This structure of weapon systems, control centers and procedures is referred to as the NATO Integrated Air Defense System (NATINADS).

During the Cold War, Air policing was set up as the key air component deterrent against an adversary mounting a surprise conventional air attack against the territory of the Alliance's members. This role has marginally persisted up to this date, but new spectrum of air policing operations has emerged as a result of changed threat assessment.

Today, the focus is to deter a 9/11 type terrorist attack, verification of questionable flights and help the aircrafts in emergency. Therefore, the NATINADS should be restructured to provide optimal air defense capability against new threats combining SMS with civilian and military procedures. It is vital for each country to have supersonic fighters capable conducting these missions. Unfortunately, some nations cannot provide themselves air policing missions because of lack of suitable aircrafts or simply because of an absence of air force. They are either covered by neighboring alliance member with adequate „equipment", or by other NATO country fighters sitting directly on their airports on rotational basis. Apart from financial aspect in both cases, the first possibility is very ineffective due to longer distances QRA must overcome to reach the violator.

6. CONCLUSIONS

Aviation targets must be still considered to be highly tempting objects for terrorists. Aircraft cannot be stopped in mid-air, thus, the final effects of attacks against aircraft are both highly destructive and extremely dramatic. At present, national authorities responsible for security of national airspace are more sensitive to any indication leading to security disquiet, i.e. loss of communication with aircraft (COMLOSS), transponder switch off or wrongly set deviation from flight plan or any suspicious behavior. Nowadays, interceptions against aircrafts with problems mentioned above are more frequent and very often practiced as live exercise or simulation.

Combating air threat requires the use of a wide range of organizational and technical efforts based on appropriate legislative solutions. While terrorist actions are very hard to predict, universal international legal measures that are designed to help protect aviation from illegal interference has been put in place. The successful achievement of the ATM Security Concept and precise usage of SMS will allow the responsible organizations to focus on the security threats to the ATM system and find viable solutions to make it as least vulnerable as possible. The current strategy and the recent evolution towards single European sky underline the importance of civil-military interoperability. The application of a more dynamic use of airspace will lead to a mixed air traffic environment where all airspace users – civil and military - share the same airspace. In this mixed environment it is of utmost importance that civil and military aviation cooperate and

coordinate through the use of appropriate interoperable systems.

The organizational activities dealing with aviation security should also embrace prevention against terrorist assaults. Therefore, in terms of European continent, there is a need for inter agency collaboration, coordination and communication – common situational awareness and real time exchange of security information. Another need is for cross-border, pan-European coordination/co-operation and multi agency approach at national and international level concerning both civilian and military components.

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SELECTED ASPECTS OF AVIATION EQUIPMENT DISPOSAL ISSUE

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***Abstract**: The main aim of paper is to inform on importance and selected aspects of aviation equipment disposal issue. The first part of paper describes the system life cycle stages, including disposal stage and its specifics. The authors are focusing on the explanation of the main reasons and possibilities in the disposal aviation equipment area. The paper inform on the aim and mission of the main global aircraft producers effort and initiatives in this area - Aircraft Fleet Recycling Association (AFRA) as a Boeing initiative and PAMELA (Process for Advanced Management of End of Life of Aircraft) project as an Airbus initiative. Due to importance of composite material, which will be the main structure material of future aircraft, the author introduce selected information on aerospace composite recycling issue.*

***Keywords**: life cycle stages, disposal, aviation equipment, dismantling, recycling, composites, projects.*

1. INTRODUCTION

The progress of air transport have brought many advantages and also some disadvantages. Every airliner must have a plan of disposal aircraft from their aircraft's fleet. The age of an aircraft depends on factors including the chronological age, the number of flight cycles, and the number of flight hours. Although the aviation equipment is repaired, each aircraft reaches the point where further maintenance will lead to economic losses, inefficiency and unreliability of the aircraft.

2. LIFE CYCLE STAGES

Every system-of-interest, including aviation system, has a life cycle. The main document regarding the system life cycle issue is the international standard ISO/IEC 15 288 "System Engineering-System Life Cycle Processes". In accordance with this standard the whole system life cycle is dividing into a set of six stages consisting of relevant processes and activities (ISO/IEC 15288):

- Concept;
- Development;
- Production;
- Utilization;
- Support;
- Disposal (Retirement).

Each stage represents one essential period of the life cycle of a system. The partitioning of the system life cycle into stages is based on the practicality of doing the work in small, understandable, timely steps. Stages, in addition, help address uncertainties and risk associated with cost, schedule, general objectives and decisions making. Each stage has a distinct purpose and contribution to the whole life cycle.

The above mentioned stages of system life cycle are valid also for the aviation equipment, but we must take into account the particular specifics towards both the upgrading /modernization process (which would be started during appropriate time of operation (utilization), not closely before end of aircraft technical life) and process of aircraft aging /reaching the aircraft end-of life point limit.

Very frequently the process of aircraft modernization (with aim to meet the new requirements, to replace aging and unreliable

equipment and components, to increase aircraft reliability, maintainability and sustainability, to reduce the total life cycle cost a.o.) has been linked with process of technical life extension.

The life cycle thinking from Production stage is shown on Figure 1. The production stage starts when the raw material is extracted and processed to the particular material. Manufacturer of aircraft and aviation equipments continues in the following activities: product design, product manufacture and parts assembling. After production and testing the product is sold to airliner. Airliner starts the Operation (Utilization) and Support stages. The aircraft is used for purposes for which it was designed and manufactured. When the aircraft reaches the end-of life point limit, the Disposal stage is started. Every assigned organization and participant is responsible for the particular life cycle stage and relevant processes and activities during this stage.

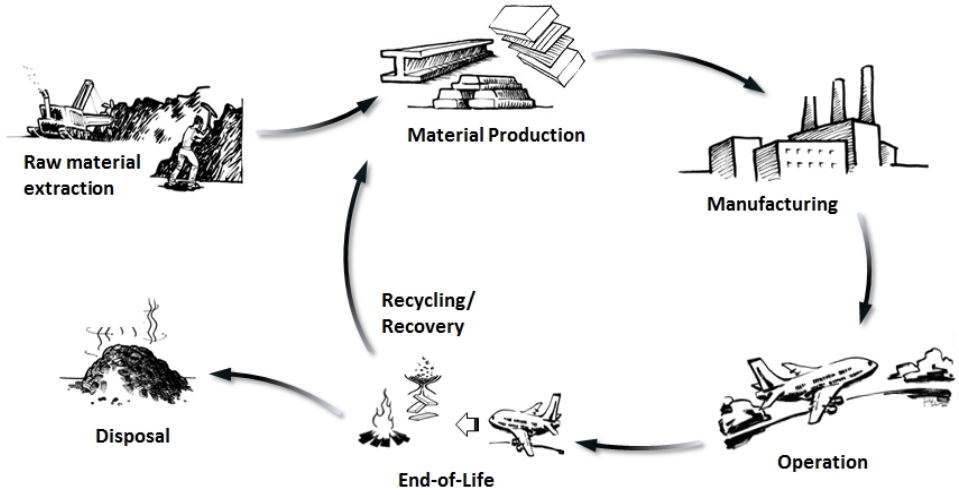

Fig. 1 Life cycle stages from production stage

3. DISPOSAL OF AVIATION EQUIPMENT -THE MAIN REASONS AND POSSIBILITIES

Each product (include aircraft) passes a life cycle. The process of disposal of the aircraft is the final phase of the life cycle. Like all products, civil aircraft come to the end of their useful working lives. The reasons for this may include:

- Increasing maintenance (operating) and repair costs;
- Difficulties to meet new/changed legislative and environmental requirements;
- Difficulties to meet upgrading requirements and expensive technology upgrades;
- Difficulties with the production and procurement of spare parts;
- Increasing content of time or service expired parts;
- Decision to replace the obsolete aircraft or to replace aircraft fleet from other reasons (ineffectiveness of fleet, low demand of air transport, accidents, et cetera).

Currently over 2,000 aircraft are in storage world-wide, and the number of military aircraft in storage is considerably greater. Over the next 20 years, approximately 5,000 commercial airliners are expected to be withdrawn or retired from service at a rate of approximately 250 per year (Towle, 2007).

Current technological development has meant that there is a situation where a moral depreciation is not identical to the physical depreciation. Science and technology plays a major role in determining the end of life value of an aircraft.

As with any product, an aircraft depreciates in value with time. The reduction in value arises from a number of factors including the increased cost of maintenance, repair and upgrading to comply with legislation. At some

stage, maintenance, repair and upgrading become uneconomic and at this point the owner will consider taking the aircraft out of service. The term „*End of Life Management Framework*“ has been used and applicable in this specific issue.

When the aircraft reaches the end of technological life, the owner of aircraft in cooperation with aircraft producers has the following possibilities:

- the aircraft is stored at the special parking areas or at the boneyard;
- the aircraft is stored, the usable parts are taken out and then will create a wreck;
- the aircraft is disposal and usable parts are recycling.

Many aircraft owners are trying after reaching the end of aircraft technological life to find a new operator or new owner. If no new operator is found before the aircraft's last service flight, **the aircraft** will often **be stored** somewhere waiting for a new user, sometimes for years. Fact is that the value of the aircraft will decrease over these years, parking fees and maintenance costs have to be paid and the condition of the aircraft worsens. The biggest cost factor, however, is the cost of ownership.

The longer an aircraft is parked, the harder it will be to obtain a good price. Especially when more and more of that type of aircraft are withdrawn from service and are offered on the market. Storing an aircraft is expensive and will often result in selling the aircraft for a value lower than could be reached when disassembled directly after the last flight, especially when the cost of parking, until the aircraft is sold, is incorporated in the financial balance. The largest **boneyards** are in deserts (Figure 2), because the progress of corrosion in hot and dry places is slighter than the places with normal or wet climate. The other benefit or reason why the aircraft are storaged at the boneyards is a visual pollution. These boneyards are usually too far from the cities. The boneyards have been in operation from 1950s.

Fig. 2 Boneyard in Mojave desert, California

The better solution of disposal is salvaging of aircraft. The **ecological disposal, dismantling, recycling and re-using** of aircraft´s parts from global view started in first years of this century.

In the case of dismantling of aircraft it is possible to sell the components under the owner's supervision, directly after aircraft last flight. It might very well be possible that the component value of the (parked) aircraft exceeds its market value as a flyer. The decision between selling and dismantling the aircraft should be primary made on economical drivers.

4. MAJOR GLOBAL AIRCRAFT PRODUCERS PROJECTS IN AVIATION EQUIPMENT DISPOSAL ISSUE

Major global aircraft producers created a special projects focused on aviation equipment disposal issue and take the initiative to establish international organization for dismantling aircraft in an efficient and environmentally-sound manners.

4.1 AFRA. AFRA (Aircraft Fleet Recycling Association) is a Boeing initiative. AFRA comprises a voluntary group of companies and individuals that have agreed to work in a cooperative fashion to provide full aircraft product life cycle capability. AFRA is recognized as the leading global industry association (members of this Association are the global leaders of aircraft recycling, dismantling and reusing) dedicated to pursuing and promoting environmental best practice, regulatory excellence and sustainable developments in aircraft disassembly, as well as the salvaging and recycling of aircraft parts and materials. In this regard the AFRA´s aim is to demonstrate that the 90 to 95 percent of aircraft components are recycled. The AFRA main goal and mission is the sustainable management of end-of-life airframes and engines and to create the conditions for co-operations with industries and governments. This Association collates, consolidates, promotes and publishes the collective experience of its members in its Best Management Practice (BMP) Guides for Management of Used Aircraft Parts and Assemblies. This document is a guide for the AFRA members.

4.2 PAMELA Project. PAMELA (Process for Advanced Management of End of Life of Aircraft) is an Airbus -initiated project to test environmentally-friendly recycling procedures with retired airliners. This initiative is supported by the European Union's LIFE (l'Instrument Financier pour l'Environnement) programme. The objective of the PAMELA project is to ensure that end-of life aircraft do not end up visibly corroding and polluting airfields, degrading the environment and brand image. The project aim is to demonstrate that between 85 and 95 percent of airframe components can be easily recycled, reused or recovered.

Equipment and products such as the electronics system, tyres, batteries, CFC (chlorofluorocarbon) and hydraulic fluids from aircraft have to go through a controlled processing channel. Also serviceable, working spares and components recovered from end of life aircraft will be catalogued and tracked as they are put back into the second hand parts supply chain. PAMELA will also help launch a European network to disseminate information about commercial airframe dismantling at their end of life.

Airbus and its partners had built a dedicated dismantling facility at Tarbes airport in France to undertake the project and plan for this facility to become a centre of excellence for commercial aircraft dismantling and recycling. Figure 3 shows the aircraft disposal process map.

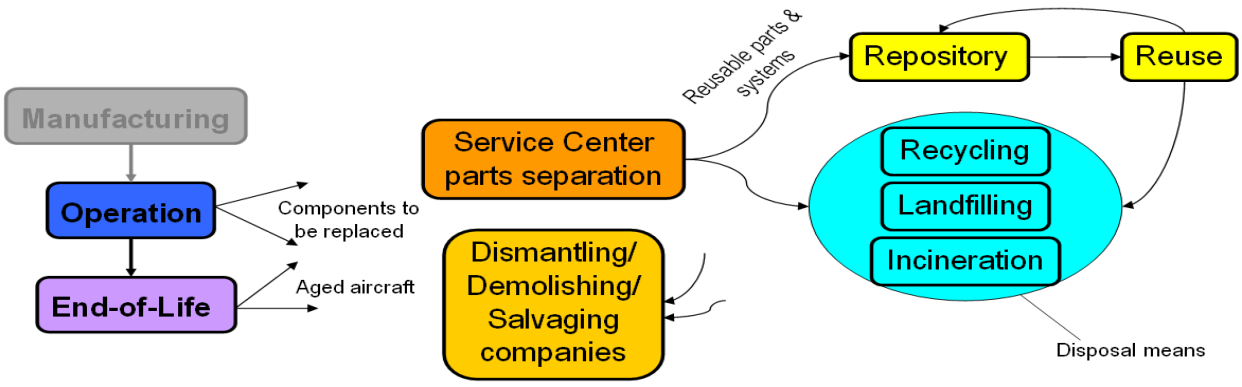

Fig. 3 Aircraft disposal process map

5. COMPOSITE RECYCLING

The importance of aerospace composite recycling is increasingly owing to the rapidly increasing use of these materials in the commercial aerospace sector. Future products from Airbus, Boeing, Embraer, etc are announced to use up to 50 % unladen weight of polymeric based composites in their primary structures. These type of materials currently pose very significant recycling and recovery challenges.

The end of life problems concerned with composites are set to increase and new approaches and technologies to resolve composite end of life problems must start to be developed now. The increased use of composites is driven by weight reduction, reduction in the number of components, reduced maintenance costs and potential improvements in fatigue behaviour. It has been suggested [3] that by 2020, the use of composites will give production aircraft of that date a fuel burn advantage of between 10% and 15 % over their year 2000 counterparts. The A 380 has been manufactured from the **GLARE** (a glass fibre and aluminium composite) material (for the upper fuselage section and horizontal tail section) and widely has been used fibre reinforced plastic (**CFRP**) composite (for the central wing box and in parts of the fuselage). One of the major reasons that GLARE was chosen is its resistance to fatigue crack growth and a density reduction of 10% compared to conventional aluminium alloys.

Figure 4 shows the increasing of using of composites in Airbus aircraft. When the A300 model had less than 5 % composits on total weight, the A380 model has 22 % composits on total weight of aircraft.

The Boeing 787 materials design is based substantially on carbon fibres in an epoxy resin matrix for the fuselage and a composite wing. New production techniques have been developed to produce the composite fuselage, including composite fuselage sections 6.7m long and nearly 6m wide, carbon fibres. Approximately 50 % of total weight are composits. Figure 5 shows the material design of Boeing 787.

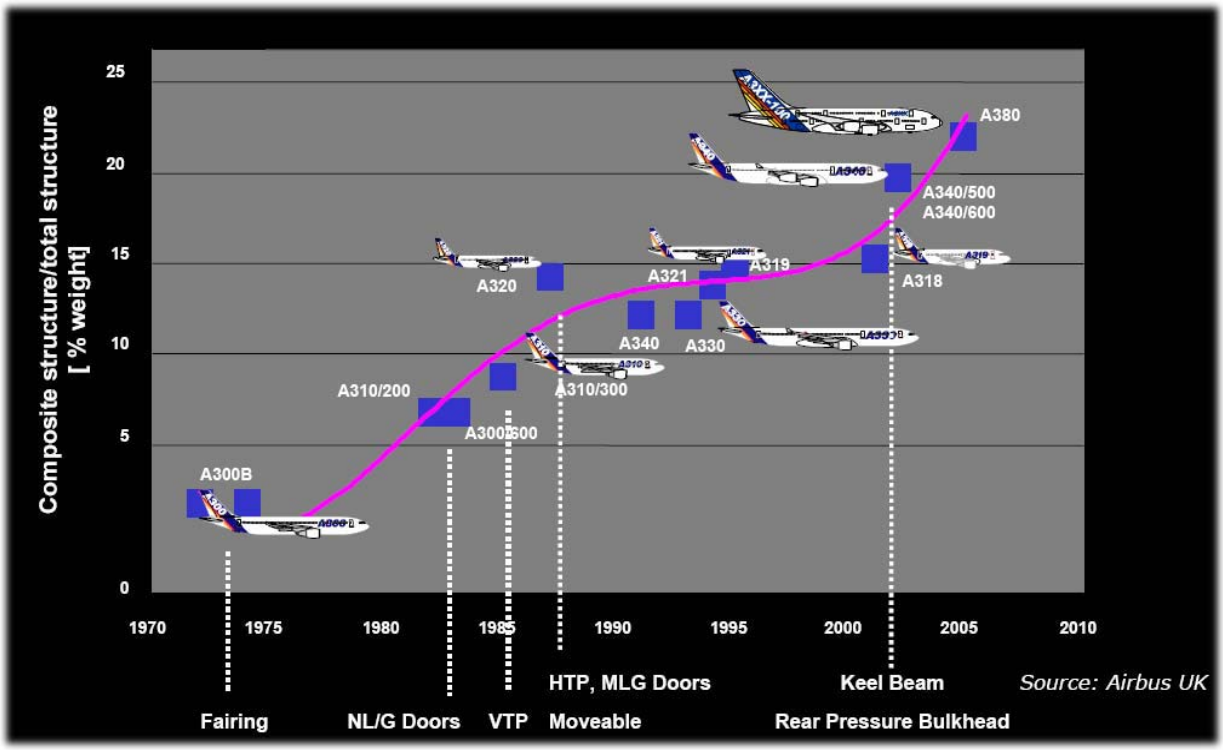

Fig. 4 Increasing use of composites in Airbus aircraft

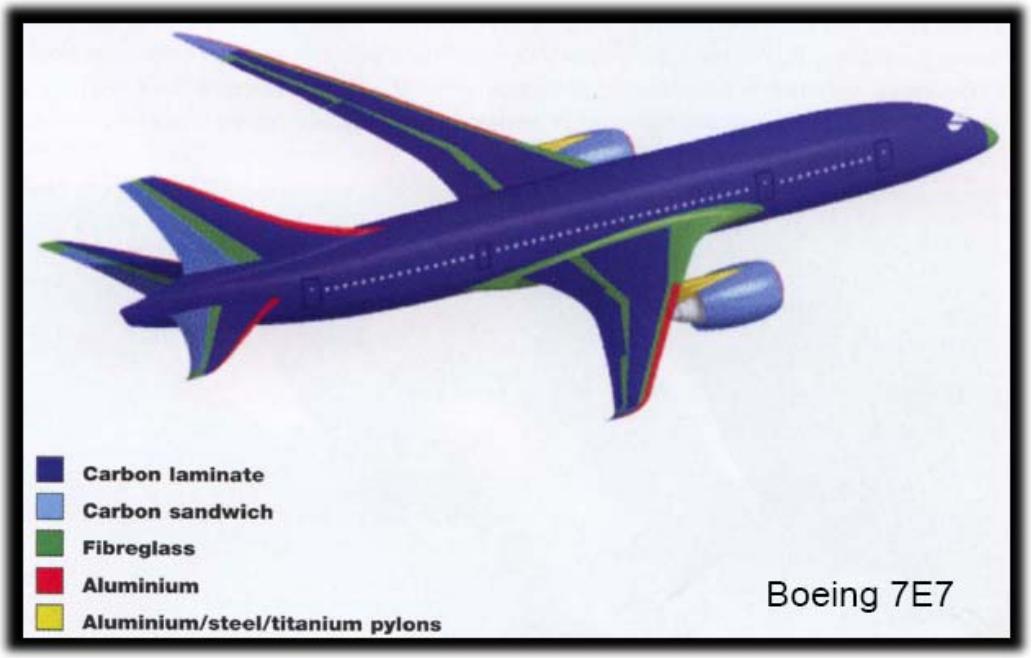

Fig. 5 Composite use in the Boeing 787

The main advantages of composite materials are high strength, resistance, excellent fatigue properties, low modulus of elasticity and good chemical resistance. Composite materials also offer economic benefits for long-term using. The most advantage for airliners is less resistance to airflow, which means a lower specific fuel consumption. These materials are important not only for manufacturers or airliners, but they are very important for companies, which provide dismantling, disposal and recycling procedures. It is necessary to support development of the composits recycling. The composit´s storaging in a landfill is not a optimal solution.

There are now a lot of European funded research projects, which are looking for develop commercially viable routes to recovering carbon fibres from thermoset composites such as the work undertaken at INASMET Tecnalia in Spain. This work investigated three potential recycling techniques (Towle, 2007):

- a nitric acid treatment to dissolve/remove the thermoset resin;
- thermal pyrolysis;
- an incineration process.

The best technique for composites recycling was determined pyrolysis which provides relatively high quality of recycled composites. Economic efficiency of recycling will increase because the implementation of composits in aviation industry will increase.

Carbon fiber used in the aviation industry has achieved higher quality level in comparison with carbon fiber used in the automotive industry. The processing of 1000 t of waste per year can recycle up to 600 t of carbon fibers. The quality of recycled carbon fiber from aircraft is higher than the new carbon fiber used in the mobile phones, computers or sports equipments´s production and recycled carbon fiber is cheaper.

6. COMPOSITE RECYCLING

The process of disposal of the aviation equipment as the final phase of its life cycle is very important due to several factors and reasons. These factors must be take into account not only during the processes and activities as part of disposal phase, but especially during the concept, development, testing and production phases.

Major global aircraft producers created a special projects focused on aviation equipment disposal issue and take the initiative to establish international organization for dismantling aircraft in an efficient and

environmentally-sound manners. Main aim of both AFRA Association and PAMELA project, which are the most reputable in this area, is to increase an efficiency of recycling and re-using of the aviation equipment and both must provide the best environmental and economical solutions resulting to elaboration of Best Management Practice Guides for Management of Used Aircraft Parts and Assemblies.

Current direction of production of civil aircraft has a direct impact on future solutions of aircraft' s disposal. It is very important to solve recycling of composite materials used in the airframe of aircraft and it systems and components.

In conjunction with the technological part of disposal is needed to pay attention also to legislative issue and procedures of aircraft´s disposal on the international and national levels (this issue is not a part of paper). Civil Aviation Authorities has been established the procedures for dismantling and disposal of aircraft. If the aircraft owner intends to dismantle or disposal the aircraft, the owner must notify procedures to the Civil Aviation Authority and inform which organization will perform the dismantling or disposal. The notification of execution of dismantling or disposal must include all needed information and organizations capable for execution of controlled dismantling or disposal must be certified in accordance with relevant aviation regulations.

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THE PSYCHOLOGICAL AND STATISTIC INSTRUMENTS USED TO MEASURE DETACHMENT FROM THE OTHER'S OPINION – THE BASIS OF LEADERSHIP

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***Abstract**: This paper has the purpose of transmitting information and ideas about the capacity to seduce characteristic of the persons with leadership skills. What impresses, enlivens, fascinates and hypnotizes in a person with leadership skills is the profound side of his/her charm, which works as a magnet wit :the harmony between what one thinks and does.*

***Keywords**: management, seduction, leadership, charisma, leader, authenticity.*

1. INTRODUCTION

What impresses, enlivens, fascinates and hypnotizes in a person with leadership skills is the profound side of his/her charm, which works as a magnet with five attitudinal properties:

1. The belief that one needs not be entirely agreeable.
2. The capacity to count on oneself alone to cope life's problems.
3. The sincerity and creativity in expressing personal opinions and solving problems.
4. The harmony between what one thinks and does.

A leader is an unperturbed person, regardless of the manner in which he/she is regarded by those around, not seeking the total approval or disapproval of the others. A person with leadership skills does not seek to be agreeable to everyone around, expects nothing from his/her fellow-creatures, which is why he/she will not attempt to constraint anyone to behave according to a pre-established scenario that suits his/her personal needs. This is the fundament of respect for the other, as an attitude specific of strong leader personalities, as people who listen to those around without judging them, thus creating a dialogue-enabling climate, fascinating through their inner freedom. Otherwise, it is the case of the "evil seducer" or the manipulator, and people will feel apathetic, suffocated, paralyzed, without initiative, deprived of the freedom of expression, obligated to behave according to a scenario to their detriment, yet serving the needs of the one manipulating them.

What is absent in the immediate reality is the charm, the pleasure of expressing ourselves through work, given by the existence, around us, of charismatic people who are as important as salt is to the food. That is why I considered this scientific analysis of leadership necessary, setting out from the personal magnetism of some people who have innate leadership skills.

The seduction exerted on fellow creatures, from a non-erotic perspective, is in fact the charismatic leaders' mutual act of leading and being led. As interaction, this implies the use of some subtle charm in order to influence the others, to make them regard you with gratitude for the inner fascination you induced when they considered you the symbol of a world that they didn't know, but that they were coveting. Seduction must be understood as something that comprises a certain degree of

autosuggestion. This can be explained by starting from the objective reality according to which the group transposes to a state of mind that is presumed to have been generated by the charismatic leader, but in effect has been intensified by the group itself. All is possible when seduction is involved:

- individuals might be seduced against their will;
- leaders might seduce a given group without even aiming for it and they may find themselves triumphant without having planned or wished to.

The type of seduction that leadership is built upon has nothing to do with eroticism and it consists of any sudden change or swing of attitude of a human being, such as any: sudden conversion, contribution in the name of a cause, moral metamorphosis. The capacity to seduce is characteristic of the persons with leadership skills, as it is innate and it consists of the personal charm some of us are born with and that we increase by means of cultural polishing up, materializing it in the sensation of dominating charm exercised more or less consciously over other individuals. The seducer controls the seduced. To be the desired person is a subtle form of control. It is equally true that the seducer, as the person seducing others, seduces himself/herself too, depending more or less on the strength of his/her desire for power. The stronger the desire is, the more we may speak of a malignant form of narcissism and manipulation. The seducer's portrayal segregated on genders appears: fragile and distinguished as a passive, defensive alternative of charm, even more redoubtable, (in women), energetic, fanatic, determined and clairvoyant, as an active and offensive alternative to charm, (in men).

Scientific research in the field of social psychology has demonstrated that, similarly to the world of bees, where the vast majority is made up of nurses and only a minority represents the queens, in the world of human beings, three quarters of the individuals lack charm, having nothing seductive in them. This type of people is terrified of inter-human relations that imply proximity, because they regard them as hazardous and therefore do nothing in order to bring their fellow-creatures closer. On the contrary, they do all they can to send them away. The paradox is that these individuals, who do all they can to isolate themselves, consider that the greatest threat that lurks is for them not to be accepted, or to be rejected, abandoned and humiliated by others. This majority of people build a scenario in their minds according to which they cannot be loved, given the fact that they do not deserve to be loved. They are the same people who surrender to the subjective perception that a charming, seductive fellow-creature, the leader, possesses something that they need.

If he/she possesses those qualities that can turn him/her into the representation of the personal fictions of the group members, the person in question will exercise, consciously or not, a certain fascination, seducing through the fact that he/she can reflect the image of the leader who embodies the strong emotional currents awaken by the subjective perception of the individuals from within the group. It is a demonstrated fact that to be a leader is a talent, such as playing the piano or writing poetry. Personal charm cannot be acquired by storing up competences. Constructed charm is or is not artificial and cannot replace authentic inter-human relating.

We are currently witnessing the apparition of literature on seduction techniques that promise the impossible, that is to transmit the competence to seduce to anybody, even to those individuals who lack charm, i.e. to certain people who fear the idea of not being accepted by the group they are a part of, who dread rejection, humiliation abandonment, who lack self-confidence, nurturing the belief that they do not deserve to be loved and are not entitled to hope to ever be loved. It is cruel to promise sight to the blind, on condition they attentively read a couple of books.

Undoubtedly, the principles promoted by this type of scientific literature on the seduction techniques are correct, but they exclusively address people born talented and charismatic. Otherwise, persons who unconsciously avoid seduction applying them will turn them into anti-seduction techniques. Thus, a person who lacks charm, is insecure or has no self-confidence may intend certain

gestures to attract others, but by monitoring their accomplishment he/she will make the charm of the interaction disappear and will let show the rigidity and lack of spontaneity. Seduction techniques are for those who try to make it look as if they were born charming, serving as a shield that the false seducers will put between themselves and those whom they wish to manipulate, so that they would feel safe and avoid being attracted or touched, thus losing control.

Similarly dangerous is the excessive use of the genuine native charm, with the purpose of dominating those in the proximity, as an obsessive need for power, case in which the manipulator will seduce himself/herself beyond limits, ending up smashed by the force of his/her own desire for power. This is the situation that designates the concept of exacerbated, malignant narcissism, where seduction operates as a defence system against painful feelings of rejection, abandonment and depression, in an attempt to convince the ill ego that it is attractive, wanted, loved and full of life, by means of confirmation of the personal value regarded as a toll of the manipulated victims, gathered in large numbers on display on "the hunting trophy wall". Seduction and manipulation are possible manifestations of the individuals' personal strength, both deriving from the innate charm and aiming to influence the other. The difference is given by the pursued purpose, which depends on the strength of the individual's personality, expressed in dimensions such as self-confidence, congruence, authenticity and morality.

The seducer might make use of the attraction created in order to exercise his power over those seduced, either by keeping the effect of the seduction to himself, or by giving up on his own glory and orienting his/her strength toward higher prizes. In the first case, we are talking about manipulation, while in the latter we speak of mentors, masters, professors, vibrant leaders, who deviate their disciples' fascination away from their own person, from their knowledge, to the idea that those whom they have inspire will be able to do things they were not aware they could.

Without the strong emotions nurtured by the group towards the leader, any activity becomes unattractive. To manipulate is to use people by seducing them, including erotically, to the end of using them for purposes that are not their own. It is essential not to mistake manipulation for seduction, the latter being most often beneficial for the one experiencing it, as it elevates him/her to another spiritual dimension. To seduce is to propose another a higher level of existence that relies on such aspects as living more intensely and expecting more from life.

What differentiates a manager from a leader is charisma, that is the individuals' magnetism, that certain '*je ne sais quoi'*, a mystery even for the one blessed with innate charm, based on character traits, which he /she tries to hide and not on something he/she would be convinced to show, as a personal advantage. The leader's charisma relies on authenticity and that is because artifice and control have nothing to do with seduction, as a phenomenon developed in the depths of personality.

2. SURVEY DEPICTION

The survey aims to evaluate the charisma of future officers of the Air Force and the Army, military leaders with a degree in 'organizational management'. The analyzed data contain the items of the 8 psychological tests combined, aiming the 5 dimensions that measure the magnetism of the personalities of the subjects from within the two groups.

2.1 The instruments used for the data collection. A battery of psychological tests has been prepared, containing the adapted variants of the components below:

- Psychological test evaluates the „addiction to the others' opinion" dimension, (the bibliographic source of origin is the 'Corpus of psychological tests to get to know yourself better', by Gilles D'Ambra, 2008:26).

The evaluation scale is of 3 points distributed as below:

1	2	3
Masochist	Uneasy	Susceptible

The battery of psychological tests used for the collection of the data needed to verify the hypotheses materializes in the adapted instrument, presented in the succession of the 8 items below:

Check each statement that suits you:

1. ● At school, just like at the office, you are better at writing than at speaking.
2. ♦ Your acquaintances often reproach you for not listening enough.
3. ○ You do not manage to look somebody in the eye for more than 3 seconds.
4. ♦ At the restaurant you often spill your glass on the table (unintentionally).
5. ♦ You are an only child.
6. ○ On the street or at the office you feel uneasy when you get the feeling that somebody is watching you.
7. ♦ Your friends have often reproached that you are too sarcastic or that you are scornful.
8. ● Before an exam or an interview, you are not able to get any sleep (you get up at 5 am).
9. ○ Compliments make you feel bad.
10. ○ Generally, you consider your success to be more a matter of fortune than the result of your efforts or merits.
11. ○ You often have a feeling of embarrassment.
12. ● You get cold feet when you know you have to talk in front of more than two people.
13. ● You often get car-sick.
14. ♦ Occupationally, you would have liked to become an actor/actress.
15. ♦ You often quarrel over petty things.
16. ○ When you compare yourself to others (which you frequently do), it is almost always to your disadvantage.
17. ● If you were to choose between a cat and a dog, you would pick the dog.
18. ♦ At school you almost always had the best grades in the class.
19. ● You rather work alone than in a team.
20. ○ When you buy clothes, you often feel sorry afterwards.
21. ● When you have a party invitation, you most often turn it down.
22. ♦ When criticised, you tend to get slightly annoyed (even if you do not show it).
23. ♦ When someone does something stupid, you can't help saying a word.
24. ● Physically, you are not a very brave person.
25. ○ When you are asked very direct or personal questions, you tend to get emotional .
26. ○ You cannot stand being tickled (they make you hysterical).
27. ● You often feel your stomach is tied in knots.
28. ○ You have had tetany crises.
29. ● You do not feel comfortable around people of another race (strangers in general).
30. ♦ When someone makes a mistake, you find it hard to forgive them.

2.2 Interpretation of the answers. Interpretation of items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30: The number of times that the „♦", „○", „●" answer was chosen will be calculated. The subject goes under the category designated by the highest number of answers. If the difference between the number of answers given at two categories is smaller than 2, than the subject is ambivalent.

Most answers are „♦", the susceptible type:

- characteristics: very demanding of him/herself / demands are always higher and higher / feels guilty about not having done what he/she had intended to / feels guilty about infringing certain moral rules (when lying) / feels guilty about not having done things as well as he/she could have / has the tendency to blame the people around when he/she makes mistakes
- for this type it would be advisable to: accept his/her own limits / stop trying to make excuses when feeling incriminated, (by reacting to easily and becoming aggressive).
- in a scale measuring the individual's dependence on the others' opinions, the subject scores 6 points.

Most of the answers are „○", the masochistic type

- characteristics: exacerbated shyness / blames him/herself for all the mistakes, even when being innocent / is very much ashamed when making mistakes and is overwhelmed by

remorse and shame for being ashamed / is not self-assured or confident in what he/she can achieve.

- For this type it would be advisable to: become aware of his/her own moral standards and exigencies / accept the fact that feeling guilty when making mistakes is absolutely normal / understand that the people who really love us do not expect us to be perfect (i.e. not to make any mistakes or not have any weaknesses).
- in a scale measuring the individual's dependence on the others' opinions, the subject scores 2 points.

Most of the answers are „●", the restless type

- characteristics: anxious / fears the others' opinions / is afraid of sanctions / is pessimistic.
- for this type it would be advisable to: learn that mistaking is not bad, because most of the times any mistake can be repaired.
- in a scale measuring the individual's dependence on the others' opinions, the subject scores 4 points.

The statistic instruments used to measure the probability of error of the results:

$$\text{A var age} = \frac{\left[\sum(\text{value}\cdot\text{number of subiects})\right]}{\text{Sample group}} \quad (1)$$

$$\text{S tan dard deviation} = \frac{\sum(\text{value} - \text{a var age})}{\text{number of value} - 1} \quad (2)$$

$$\text{Variance} = \frac{\left[\sum \text{values}^2 - \left(\sum \text{values}\right)^2 \Big/ \text{number of values} - 1\right]}{\text{number of values} - 1} \quad (3)$$

The "t" test is applied in its form in which two averages calculated in two separate, independent groups are compared by applying the formula (Note : Standard deviation = Sd, Standard common deviation = SCd, Sample group=Sgr, Deviation Sample group = DSgr):

$$t = \frac{\text{a var age of sample1} - \text{a var age of sample2}}{\text{SCd}\cdot\sqrt{\frac{1}{\text{Sample group1}} + \frac{1}{\text{Sample group2}}}}$$

$$\text{SCd} = \sqrt{\frac{\text{DSgr1}\cdot(\text{Sgr1}-1) + \text{D Sgr2}\cdot(\text{Sg2}-1)}{(\text{Sgr1}+\text{Sg2})-2}}$$

$t_{calculated} \leq t_{critical}$ → the null hypothesis is accepted

$t_{calculated} > t_{critical}$ → the null hypothesis is rejected

The 't' test is applied in its forms comparing the average calculated in a single sample.

$$\text{SD} = \sqrt{\frac{\sum \text{values}^2 - \left(\sum \text{values}\right)^2 / \text{Sgr}}{\text{Sgr} - 1}}$$

$t_{calculated} \leq t_{critical}$ → the null hypothesis is accepted

$t_{calculated} > t_{critical}$ → the null hypothesis is rejected

3. CONCLUSIONS OF THE HYPOTHESIS VERIFIED WITHIN THE STUDY

Are the majority of the subjects persons who do not depend on the others' opinions in both groups or not? This hypothesis may have the significances below:

- The null hypothesis: 'self-exigency, tendency to feel guilty when not doing what they wish or when breaching their moral barriers'.
- Rejection of the null hypothesis: 'feeling of guilt for the errors they have not even committed, burning embarrassment about the mistakes they have made, tormenting remorse, anxiety, pessimism and fear of the others' opinions'.

Two study groups were formed whose subjects are military students. They agreed to take part in the study:

Group 1- made of 13 non-flying, military aviation students (air traffic controllers) and artillerymen of the Air forces.

Group 2 – made of 24 infantry military students of the Army.

Addicted to others' opinion

Sample 1 (efective=13)

Score	Efective	%
3	5	38,46%
2	8	61,53%

Sample 2 (efective=24)

Score	Efective	%
3	13	54,16%
2	9	37,5%
1	2	8,33%

Self-confidence in sample 1 :

$$\sum values^2 = 3^2 \cdot 5 + 2^2 \cdot 18 =$$

$$= 9 \cdot 5 + 4 \cdot 8 = 45 + 32 = 77$$

$$\left(\sum values\right)^2 = \left(3 \cdot 5 + 2 \cdot 8\right)^2 = 31^2 = 961$$

$$Sd = \sqrt{\frac{77 - 961/13}{12}} = \sqrt{\frac{77 - 73{,}931}{12}} =$$

$$= \sqrt{\frac{3{,}077}{12}} = \sqrt{0{,}2564166} = 0{,}5063759$$

$$t_{calculated} = \frac{2{,}384 - 3}{0{,}5063759 / \sqrt{13}} =$$

$$= \frac{-0{,}616}{0{,}5063759 / 3{,}6055512} = \frac{-0{,}616}{0{,}1404434} =$$

$$= -4{,}3861085$$

$-t_{calculated} = -(-4{,}3861085) = 4{,}3861085$

$t_{critical} = 4{,}32$

$-t_{calculated} > t_{critical}$ → We therefore conclude that a risk of error of 1%, is in sample 1 - Rejection of the null hypothesis: 'feeling of guilt for the errors they have not even committed, burning embarrassment about the mistakes they have made, tormenting remorse, anxiety, pessimism and fear of the others' opinions'.

$4{,}3861085 \leq 4{,}32$

Self-confidence in sample 2:

$$\sum values^2 = 3^2 \cdot 13 + 2^2 \cdot 9 + 1^2 \cdot 2 =$$

$$= 9 \cdot 13 + 4 \cdot 9 + 2 = 155$$

$$\left(\sum values\right)^2 = (3 \cdot 13 + 2 \cdot 9 + 1 \cdot 2)^2 = 59^2 = 3481$$

$$Sd = \sqrt{\frac{155 - 3481/24}{23}} = \sqrt{\frac{155 - 145{,}041}{23}} =$$

$$= \sqrt{\frac{9{,}959}{23}} = \sqrt{0{,}433} = 0{,}6580273$$

$$t_{calculated} = \frac{2{,}458 - 3}{0{,}6580273 / \sqrt{24}} =$$

$$= \frac{-0{,}542}{0{,}6580273 / 4{,}8989794} = \frac{-0{,}542}{0{,}1343192} =$$

$$= -4{,}0351639$$

$-t_{calculated} = -(-4{,}0351639) = 4{,}0351639$

$t_{critical} = 3{,}77$

$t_{calculated} > t_{critical}$ → We therefore conclude that a risk of error of 1%, is in sample 2 - Rejection of the null hypothesis: 'feeling of guilt for the errors they have not even committed, burning embarrassment about the mistakes they have made, tormenting remorse, anxiety, pessimism and fear of the others' opinions'.

$4{,}0351639 > 3{,}77$

Sample 1 Average = 2,384, Standard deviation = 0,5063759

Sample 2 Average = 2,458, Standard deviation = 0,6580273

$$SCd = \sqrt{\frac{0{,}5063759 \cdot (13-1) + 0{,}6580273 \cdot (24-1)}{(13+24)-2}} =$$

$$= \sqrt{\frac{0{,}5063759 \cdot 12 + 0{,}6580273 \cdot 23}{35}} =$$

$$= 0{,}7784808$$

$$t_{calculated} =$$

$$= \frac{2{,}384 - 2{,}458}{\sqrt{\frac{0{,}5063758 \cdot 12 + 0{,}6580273 \cdot 23}{35}} \cdot \sqrt{\frac{1}{13} + \frac{1}{24}}} =$$

$$= -0{,}074 \Big/ 0{,}7784808 \cdot 0{,}3443684 =$$

$$= -0{,}074 \Big/ 0{,}2680841 = -0{,}2760327$$

$-t_{calculated} = -(-0{,}2760327) = 0{,}2760327$

$t_{critical} = 2{,}73$

$-t\ calculat \leq t\ critic$ → With an error risk of 1% we conclude that 38,46% in Sample 1 and 54,16% în Sample2 Null Hypothesis is accepted: 'self-exigency, tendency to feel guilty when not doing what they wish or when breaching their moral barriers'.

$0{,}2760327 \leq 2{,}73$.

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MENTORING AN ALTERNATIVE PEDAGOGICAL CHANGE

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***Abstract**: The mentoring is seen as a process, whose essence consists in transmitting abilities and information from persons with superiority training and experience to debutantes and novices in the respective circumstance. Mentoring, as subsystem of the Project for Rural Education , has comprised within the formative process in Sibiu county 1315 persons as teaching staff from the rural medium, schoolteachers and teachers, according to purposes and contents of general didactic. The change of behavior has as purpose the exemplary achievement of the response to the needs in a certain moment, to requests, problems and new tasks.*

***Keywords**: behavior, experience, mentoring, to change one's mind.*

1. INTRODUCTION

This study has in its view the impact that the mentoring programme had on didactic careers. The impact was measured taking into consideration the statements of the teachers involved in the programme.

2. WHAT IS MENTORING?

2.1. The essence of the mentoring seen as a process regards the conveyance of abilities and information from high-prepared and experienced people to debutants or novices in the respective circumstance. Mentoring as a sub-component of the Project for Rural Education had as target 1315 teachers from rural medium of Sibiu county. The theme of the moulding programme regards the goals and the contents of general didactics. Changing the behaviour's goal is to achieve in an exemplary way the answer to the needs from a certain moment, to the problems, to the requirements, or the new appeared tasks. In its essential meaning, mentoring is seen as a process. Its essence is to convey abolities and information from high-prepared and experienced people to debutants or novices in the respective circumstance.

As far as our interest domain is concerned, the successful mentors cannot be others than the teachers, trainers, formatives, protector models, who can offer opportunities and advice for the development of others, having as background their training and experience, and they are compatible to identify the situations and current events, which are to be made or are possible. These can interfere in the life of the novices, offering them knowledge and experience, in order to deal successfully with the complexity, with the current events and with the future virtuality, in the professional and social life, in the community from which they belong to, and in the outside medium, where they are developing their activity. Mentors are advisors, professional experienced people, owners of some psycho-social, communicative and moral qualities, and therefore they are first of all identity models, support and information resource, professional human type capable to entertain a dynamic relationship between himself, as a person eager for leading, and another person, desirous to learn, before he stumbles on the difficulties. A friendship relation between the mentor and the person who is taught, is not excluded, on the contrary, it is healthy. (Nicola, 2004)

We can extract some constants, some fundamental characteristics from the thoughtful and syntagmathic components of the various definition:

- Mentoring is a communicative, interpersonal relation, one to one, or one to two or more persons, from which one is more professional mature (mentor), but not necessarily older than the others;
- At a circumstantial level, it can be indicated a crisis situation or a transition period , in work or in thinking or action mode of the person who has needs, who is searching or is asking for help;
- A mentoring relation develops during a period of time, when the needs of the person who is taught and the relation of the nature are to be changed. Mentor has to be conscious of these changes, and to diversify the grade and type of the attention, support, advice, information and encouragement he offers.
- The mentoring process can be developed also on a determined period of time, when he has as purpose the achieving of concrete pre-established goals, which belong to the both categories of members of didactical relation, also of the mentor, but especially of the person who is taught, in order to develop, to change. (Kay & Hinds, 2007)

Without any doubt, the mentoring does not have to be perceived as a knowledge transmission, even though this thing happens somehow. Mentoring must have as axial principle the application of some knowledge, the achievement of a set of correlation between knowledge and their applicability, offering support, the encouragement of change and looking for new experiences, Hic et Hunc, here and now.

The change of behaviour has as purpose the exemplary achievement of the response to the needs in a certain moment, to requests, problems and new tasks. With this imperative, the mentor must conceive and exert his vocation; even though this seems too imbibed into a romantic realism and little metaphoric grandiloquence, to us it is very interesting the statement: „*Mentors are guides, who are leading us during the journey of our life...They are our hopes, the are brightening our way and they are helping us to de-codify and interprete the marks met on the road, they are advertising us about the dangers that might appear, and they are pointing out the unexpected pleasure during our journey*." (Gehrke, 1988:27)

The researchers, from the inter-disciplinary field of educational sciences, consider mentoring, alongside of what the American English „coaching" means, the first components of the children's education, of evergrowing and permanent education. These concepts, mainly specialized in the last three-four decades of the 20th century, are brought in the public attention, although the problems of these syntagms have been known since the beginning of what specialists call modern education, in the second half of the 19th century. (Les, Leibowitz, 1983:28/4).

We are always talking about the manner we think and why do we change our minds. The meaning of this simple assertion is clear enough: our mind seems to be concerned to act into a certain direction, and after a certain procedure, the mind is oriented to a different direction. How simple the change of mind formula would appear to a superficial analysis, the change of mind phenomenon, as a rethinking and reorienting of the thinking vector, is one of the less examined and non-understandable experiences.

What does „to change our mind" mean?

What happens when we „change our mind"?

Isn't that true that when we accept „changing our mind", we actually accept changing?

Is „the change of mind" produced by their own cognitives, is it produced by the ideas suggested by those from surroundings?

What determines a person to „change his mind" and to act according to this reorientation?

What does the „change of mind" production favourise? Questions....Questions! Of course, the minds are changing with difficulty.

But many aspects of our lives are oriented through this procedure- to convince a colleague to report himself to a subject and a new attitude, or to try ourselves to let behind

our own preconceptions. Some of us are really involved in the effort of convincing the people to change their minds: the teacher who unveils to the pupils new methods of analysing some familiar subjects, the therapeutic, who influences the manner in how a patient is redefining himself, the seller or the advertising producer, who persuades the customers to try the product of new brand, the mentor, who tries to convince the teacher to organize the study in class, rather based on pupils than on himself, the project manager, who succeeds in convincing the new team of the collaboration value within the work group.

It is said that "if something is not rotten, it doesn't need to be fixed". Not necessarily we can say that something is rotten, but the state of the rural education cannot be considered a satisfactory one. Mentoring, as subsystem of the Project for Rural Education, has comprised within the formative process in Sibiu county 1315 persons as teaching staff from the rural medium, schoolteachers and teachers, according to purposes and contents of general didactic.

The general setting within this project develops, is determined by: the change from the conceptual and practical point of view of the teaching and learning modalities, a higher access to methods, school supplies, and opportunities of teachers' professional development from the rural medium, promotion of the educational experiences, which motivate the student and answer to his educational needs (any student can learn if he is taught and he learns adequately), the assurance understanding and getting the local community support for the achievement of the proposed educational goals.

The program's general goal is to improve the access to a higher education for the students from the rural medium through: better scholar results, higher graduation percentage towards other education institutes.

The specific goals of the project are: professional development and the opportunities assurance of development in career for the teachers from the rural medium, the assimilation of new concepts and ideas regarding the improvement of teaching-learning activity, the assurance of some diversified educational resources and their employment, in order to broaden the management knowledge of the class, to improve the training strategies and teaching-evaluation methods, to assure the requisite support for projecting and implementation of new didactic improvement experiences of the process teaching- learning- evaluation.

Direct beneficiaries are the students and the teachers from the rural medium, local administration and communities, the training programs suppliers, the decision factors. (Kay & Hinds, 2007)

1.2. The „change of mind" factors.

In the "Change of mind" treaty book, Haward Gardner identifies some factors, which functions as in the case of positive change of mind: reason, enlistment, resonance, redescriptions, resources, rewards, the event reality, resistance.

We are trying to respond how the six factors are in the mentoring program-conception, appliances and implementation-through reflection over the program itself and through centralization and interpretation of the responses offered by those who are mentored, in the evaluation questionnaire.

Reason. The concept, the appliances and the implementation mode of the mentoring program represents a rational approach, they involve: the identification of significant factors, to reflect upon each of them, the analysis of needs, realized by each teacher mentored, the shaping of an ensemble image regarding the teachers' needs of professional development, to a better adjustment to the needs of the students from the rural medium.

Enlistment. To complete the rational argument, we have the relevant data collecting for the different onset of each group of formatives, even of each formative, depending on situations particularities, possible achievement aspect, as an effect of schedule flexibility itself, as well as an effect of the capacity to put a diagnostic and of the mentors' adaptation.

Resonance. It appears often when a person feels that it exists "a bond" with someone who determines him to change his mind, when he finds that he can "trust" that person, or when he feels he "respects" that person. The tryout, to which the mentors were subject, has required experience regarding the formative field with adults, passion for didactic, proven formative competences, professional reputation, as well as the teachers' appreciation. All of these demonstrate the sustained level of the resonance.

Redescriptions. An act of changing your mind, your opinion, becomes a persuasive act, as far as this is substituted as representation among different shapes series, shapes that are intensifying reciprocal. Mentoring, as conception, instruments and deployment: direct formative, professional dialogue, individual research on the proposed contents, seeing demonstrative video recorded activities, inter-assistances, return to the meetings with the mentor, offers different onset modalities, sources of reciprocal intensification, inspiration in capitalization and valorisation the didactic creativity.

Resources and rewards. The possibility to think again and to change your mind exists in every open-minded person. This phenomenon can be started much faster when widely advantages loom. The first advantage-response was the personal experience of the formatives within the working group: satisfaction of something new, involvement, professional and personal progress, shared respect, doubled by the students' response, when they have to apply in classroom what they have studied before.

The event reality. Certain events take place in society, in the extended meaning of the word, affecting more persons, not only those who contemplate their thinking revolution. The Romanian educational reality, in general, and especially the rural medium one, requires, asks for a change in what the onset of the educational act does mean, with the hope that the situation will be set again.

Resistances. The six factors identified so far can all contribute in the effort to start the "change of mind" phenomenon**.** But it would not be realistic to think that the simple existence of the advantaged factors is enough. Any kind of understanding effort of the "change of mind" phenomenon must take into account different forms of resistance, which has been felt as a formatives' behaviour manifestation, as well as a result in interpreting the questionnaire. **(**Gardner, 2006: 82-87)

And all these because how Meynard Keynes says: "the real difficulty in producing a change is not to develop new ideas, but to get rid of the old ones" (Gardner, 2006).

We present the 1315 questions teachers in areas of Sibiu and the quantitative expression in Table 1, the percentage of responses.

Table 1. The responses of teachers in assessment questionnaire items, expressed in percentage

Item	Heavily [%]	Largely [%]	Insufficient [%]	At all [%]
1	37	60	3	0
2	12	84	4	0
3	24	64	12	0
4	29	69	2	0
5	60	34	6	0
6	42	47	11	0
7	27	51	22	0
8	81	19	0	0
9	52	40	8	0
10	81	19	0	0

The questionnaire items are:

1. Have the activities in which you participated increased attention to students and to their specific needs?
2. By participating in activities are you convinced of the need for colleagues to share knowledge and experiences?
3. Do you feel ready to apply classroom ideas, teaching methods and materials acquired?

4. To what extent this work has contributed to skills and attitudes needed for teamwork?

5. Have you participated in activities that will help you to put into practice in collaboration with colleagues from the perspective of modern teaching and learning?

6. Do you believe that these activities promote a new vision which considers part of the community school and community to encourage full use of local resources to achieve maximum learning potential of students?

7. Have you participated in activities that will help you develop collaboration of all stakeholders involved in supporting local education?

8. Do you appreciate the quality of the professional mentors?

9. Do the training modules studied adequate professional development opportunities (training needs are adequate, accessible, they are translated into practical activities)?

10. Do the training modules completed promote new ideas on teaching methods, do they have appropriate instructional strategies, curriculum design containing news of the course taught?

Table 2. Correlations between items and factors assessment questionnaire rethinking Howard Gardner's theory.

Reason	Recruitment	Resonance	Redescriptions	Resources and rewards	Reality Occurrence
x	x		x		x
x			x		x
	x	x	x	x	
x	x	x		x	x
x				x	x
x					x
x				x	x
x		x		x	
x	x	x	x	x	x
x	x	x	x	x	x

3. CONCLUSIONS

As shown in Table 2, most teachers interviewed highly appreciated and largely characteristic aspects of the mentoring program. To some extent, all factors of rethinking Gardner's theory has been found in design, tools and the implementation of the mentoring program.

The final questionnaire for teachers, referring to changes made after the mentoring program, the most common specifications were:

- the organization of learning;
- methods that motivate students and increases their interest in the lesson;
- learning the strategies to facilitate communication and networking with students;
- the weight given the time spent and specific methods students knowledge;
- attitude towards interactive learning, how to approach the activities carried out and parents;
- teaching strategies that enhance learning efficiency;
- using new technologies in teaching-learning-assessment;
- using alternative methods of assessment
- learning differentiation;
- depending on the particular interests and availability pupil extra skill and safety to develop tools assessment;
- another vision of the role and how to achieve continuous assessment;
- a new way of communication and cooperation with others: students, parents, colleagues;
- extra security in developing design tools;
- work to classes concurrent efficiency;
- improve teacher – student;
- fostering positive orientation against critics;
- intervention mode, where students with behavior problems;
- self-knowledge and self-assessment capacity;

- extra enthusiasm and confidence in the work of education;
- opinion and attitude towards training;
- views and attitudes towards sharing experiences within the group of colleagues.

The changes are very diverse cast, covering both the design and deployment and evaluation of teaching, knowledge, networking, communication, motivating students, communication, networking and group level team of teachers, share experiences, issues found in the largely to expectations expressed by teachers in suitcase expectations.

We appreciate, arguing that these responses from the mentoring program of the Rural Education Project, teachers have developed a conceptual and practical change in the Application, in the work. This enables us to believe that an action falling changer of Gardener's theory will produce a change.

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A STUDY ON THE PERCENTAGE OF VARIED TERRAIN RUNNING FOR IMPROVING EFFORT CAPACITY IN JUNIOR FEMALE MIDDLE AND LONG DISTANCE RUNNERS

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Abstract*: The study addresses Romania's best female middle-long distance and hurdles runners from the competition year 2010-2011. We analyzed the percentage of varied terrain running in terms of aerobic and anaerobic mixed effort over one annual preparation cycle. By examining the daily records we ascertained a higher percentage of varied terrain running in female middle- long distance and hurdles runners during winter preparation periods, in terms of mixed and aerobic effort. For the case of anaerobic effort, the athletes didn't use the means of varied terrain running. In order to assure a training program devised for promoting junior athletes to senior level, we assume that within the total amount of running workout, the percentage of varied terrain running for the development of the aerobic and mixed effort capacity should increase up to 80-85% during winter preparation periods and to 65-70% during competition periods.*
The development of anaerobic effort capacity may require the introduction of varied terrain running means, up to 20-25% in preparation periods and 10-15% in competition periods.

Keywords*: varied terrain running, aerobic mixed and anaerobic effort, middle-long distance and hurdles.*

1. INTRODUCTION

The lack of value results in Romanian female middle and long distance runners and the improper use of preparation means for the development of effort capacity, the inappropriate way of participating in the scheduled competitions are arguments in support of the ***topicality*** of this issue. As research ***hypothesis,*** we assumed that better results of female middle and long distance runners can be obtained by increasing the percentage of varied terrain running in order to develop specific effort capacity. The **aim** of the study is the continuous analysis and control of workout content by using varied terrain running as the main preparation means in all forms.

Preparing middle and long distance runners includes all workout factors: physical, technical, psychological and theoretical. The workout factors are mutually inter-conditioned and by analyzing their percentage within the overall preparation, it was found that the physical factor has the highest percentage and significantly influences athletic performance (Bompa, 2001).An inadequate level of physical preparation, as a consequence of insufficient workout periods, inadequately managed means of preparation, accidents, diseases or fatigue may have a negative influence on athletic performance. Physical preparation is an important component of the athlete's preparation being the foundation of the other components (Harre, 1973). Physical preparation includes a series of measures that ensure a high functional capacity of the human organism through optimal development of basic and specific motrical functions and optimum values of the functional indicators (Alexandrescu & Rugină, 1971). Physical preparation is employed with different percentages over the annual cycle, depending on the period and stage of the athlete, and his level of preparation (Matveev, 1988).

The imminence of the competition period and stages leads to a decreased percentage of overall physical preparation in favor of its specific counterpart. An important component of

the preparation includes participation in sports contests, which, depending on the stage and level of preparation, can be devised for achieving either victory or a certain result or for performance assessment (Homenkov, 1977). Avoiding participation in competitions, encountering poorly ranked opponents are circumstances that may lead to a fitness condition which is inadequate for objective competitions. In order to achieve optimal performance in objective competitions, the coach must devise a strategy depending on the athlete's individual characteristics, preparation conditions, and the athlete's motivation (Dragnea, 1993).

2. SUBJECTS AND METHOD

The research was conducted on Romania's best female middle-long distance and hurdles runners of 2011 (L.D.E. – 2000 m in 6.32 hurdles, F.M.M. – 5000 m in 16.36, B.M.A. 3000 m in 9.25).

Based on the athletic performance records, we analyzed the percentage of the workout means in terms of effort zones, the percentage of varied terrain running, from the overall monthly amount, as well as the strategy during participation in contests.

Table 1 Workout effort (km%)

L.D.E	Contests	Aerobic	Mixed	Anaerobic	Overall
October	1	140 km 121 km 86,4%	218,3 km 142,3 km 65,1%	-	358,3 km 263.3 km 73,4%
November	-	195,5 km 158 km 80,8%	297,3 km 173 km 58,9%	6,6 km 1,4%	499,4 km 331 km 66,2%
December	1	153 km 110 km 71,8%	265 km 186 km 58,1%	12,4 km 3%	430,4 km 296 km 68,7%
January	2	140 km 98 km 70%	179,3 km 97,5 km 54,3%	17,4 km 5,3%	336,7 km 195,5 km 58%
February	4	128,5 km 84 km 65,3%	154,8 km 56 km 36,1%	12,1 km 4,1%	295,4 km 140 km 47,3%
March	4	103,5 km 72 km 69,5%	108,2 km 61,2 km 56,5%	4,4 km 2,2%	216,1 km 133,2 km 61,6%
April	-	161 km 113 km 70,1%	220,4 km 184,6 km 83,7%	9 km 2,4%	390,4 km 297,6 km 76,2%
May	1	169 km 99 km 58,5%	191 km 98,6 km 51,6%	15,6 km 4,3%	375,6 km 197,6 km 52,6%
June	3	128 km 78 km 60,9%	192,8 km 129 km 66,9%	16 km 4,8%	336,8 km 207 km 61,4%
July	1	134 km 75 km 55,9%	186 km 128 km 68,8%	16,2 km 4,9%	336,2 km 203 km 60,3%
August	1	162 km 85 km 52,4%	155 km 121,4 km 78,3%	10,4 km 3,3%	327,4 km 206,4 km 63%
Overall	19	1614,5 km 1093 km 44,2%	2168,1 km 1377,6 km 55,7%	120,1 km 3,2%	3902,7 km 2470,6 km 63,3%

Table 2 Aerobic effort

	X	XI	XII	I	II	III	IV	V	VI	VII	VIII
Km	140	195.5	153	140	128.5	103.5	161	169	128	134	162
t.v	121	158	110	98	84	72	113	99	78	75	85
%	86,4	80,8	71,8	70	65,3	69,5	70,1	58,5	60,9	55,9	52,4

Table 3 Mixed effort

Month	**X**	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	218,3	297,3	265	179,3	154,8	108,2	220,4	191	192,8	186	155
t.v	142,3	173	186	97,5	56	61,2	184,6	98,6	129	128	121,4
%	65,1	58,9	58,1	54,3	36,1	56,5	83,7	51,6	66,9	68,8	78,3

Table 4 Anaerobic effort

Month	**X**	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	0	6,6	12,4	17,4	12,1	4,4	9	15,6	16	16,2	10,4
%	0	1,4	3	5,3	4,1	2,2	2,4	4,3	4,8	4,9	3,3

By analyzing L.D.E.'s preparation (Table 1 and 2) it can be seen that the percentage of varied terrain running from the aerobic amount increases during the winter period, to 70-80% and constantly decreases during competition period, to 65-70%. During the 2nd macro cycle it can be seen that the percentage of varied terrain running is greater, 69.5-70.15% during preparation, while it decreases to 58.5 - 60.95 - 55.9% in the competition period.

The percentage of varied terrain running from the mixed effort (Table 1 and 3) is relatively constant over the preparation period of the first preparation macrocycle (65,1-58,9-58,1-54,3%), and then decreases to 36,1% over the winter competition period. During the summer competition period, the percentage of varied terrain running within the mixed effort is greater in contrast to the winter period because the athlete has engaged longer events, as well.

With regard to the percentage of varied terrain running within the anaerobic effort, it can be noticed that this is completely absent since the development of anaerobic effort capacity was achieved on using only flat terrain means of preparation (Table 1 and 4).

Contest participation was achieved for a number of 19 starts engaging cross-country, intra and extramural events, while the objective competition was the Junior II World Championship, Lille, 10.07.2011, with a 6.40 performance, and 12th position ranking.

Table 5 Workout effort (km%)

L.D.E	**Contests**	**Aerobic**	**Mixed**	**Anaerobic**	**Overall**
October	3	128 km 111 km 86,7%	203 km 167,5 km 82,5%	-	331 km 278,5 km 84,1%
November	-	185 km 155 km 83,7%	284,4 km 202,8 km 71,3%	9,6 km 2,1%	479 km 357,8 km 74,6%
December	1	111 km 72 km 64,8%	189,8 km 150 km 79%	9,2 km 3%	310 km 222 km 71,6%
January	-	133,5 km 85 km 63,6%	223,6 km 143 km 63,9%	16,8 km 4,5%	373,9 km 236 km 63,1%

February	1	117,5 km 75 km 63,8%	194,3 km 113,9 km 58,6%	15 km 4,7%	326,8 km 188,9 km 57,8%
March	3	102 km 75 km 73,5%	134,2 km 94 km 70%	4,4 km 2%	240,6 km 169 km 70,2%
April	-	116 km 92 km 79,3%	166,5 km 124,7 km 74,8%	5,8 km 2,1%	288,3 km 216,7 km 75,1%
May	4	149 km 97 km 65,1%	201,8 km 133,5 km 66,1%	15,8 km 4,4%	366,6 km 230,5 km 62,8%
June	3	156,5 km 103 km 65,8%	205,2 km 135 km 65,7%	17,8 km 4,8%	379,5 km 238 km 62,7%
July	1	136 km 89 km 65,4%	195,3 km 125,9 km 64,4%	16,6 km 4,9%	347,9 km 214,9 km 61,7%
August	1	162 km 108 km 66,6%	160 km 103 km 64,3%	10,2 km 3,2%	332,2 km 211 km 63,5%
Overall	17	1496,5 km 1070 km 41,7%	2158,1 km 1493,3 km 58,2%	121,2 km 3,7%	3775,8 km 2563,3 km 67,8%

Table 6 Aerobic effort

	X	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	128	185	111	133.5	117.5	102	116	149	156,5	136	162
t.v	111	155	72	85	75	75	92	97	103	89	108
%	86,7	83,7	64,8	63,6	63,8	73,5	79,3	65,1	65,8	65,4	66,6

Table 7 Mixed effort

Month	**X**	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	203	284,4	189,8	223,6	194,3	134,2	166,5	201,8	205,2	195,3	160
t.v	167,5	202,8	150	143	113,9	94	124,7	133,5	135	125,9	103
%	82,5	71,3	79	63,9	58,6	70	74,8	66,1	65,7	64,4	64,3

Table 8 Anaerobic effort

Month	**X**	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	0	9,6	9,2	16,8	15	4,4	5,8	15,8	17,8	16,6	10,2
%	0	2,1	3	4,5	4,7	2	2,1	4,4	4,8	4,9	3,2

Table 9 Workout effort (km%)

L.D.E	**Contests**	**Aerobic**	**Mixed**	**Anaerobic**	**Overall**
October	1	184 km 176 km 95,6%	280 km 215,4 km 76,9%	-	464 km 391,4 km 84,3%
November	-	160 km 148 km 92,5%	284 km 212,3 km 74,7%	9,6 km 2,2%	453,6 km 360,3 km 79,4%
December	-	141 km 115 km 81,5%	245,6 km 184 km 74,9%	15,4 km 4%	402 km 299 km 74,3%

January	1	142 km 104 km 73,2%	232,1 km 153,6 km 66,1%	17,2 km 4,3%	391,3 km 257,6 km 65,8%
February	4	115 km 72 km 62,6%	189,7 km 114 km 60%	15,8 km 5,1%	320,5 km 186 km 58%
March	2	107 km 80 km 74,7%	183,8 km 124,2 km 67,5%	8,4 km 2,9%	299,2 km 204,2 km 68,2%
April	-	191 km 164 km 85,8%	298,4 km 206,5 km 69,2%	9,6 km 2%	499 km 370,5 km 74,2%
May	3	194 km 144 km 74,2%	316,9 km 214,3 km 67,6%	20,4 km 3,9%	531,3 km 358,3 km 67,4%
June	2	143 km 110 km 76,9%	230 km 153,7 km 66,8%	14,9 km 4%	387,9 km 263,7 km 67,9%
July	3	170 km 120 km 71,4%	248,8 km 155,4 km 62,4%	13,6 km 3,2%	432,4 km 275,4 km 63,6%
August	-	174 km 122 km 70,1%	216,1 km 168,4 km 77,9%	7,5 km 2%	397,6 km 290,4 km 73%
Overall	16	1721 km 1355 km 41,6%	2725,4 km 1901,8 km 58,3%	132,4 km 3%	4578,8 km 3256,8 km 71,1%

The athlete B.A.M. employs varied terrain running for aerobic effort capacity development during the preparation period of the first macrocycle 86,7-83,7-64,8% and 63,6-63,8% in intramural competition, and about 65% in the extramural competition period (Table 5 and 6).

The percentage of varied terrain running within the mixed effort (Table 7) is about 71,3-82,5% during the preparation period of the first macrocycle, while during the preparation period of the second macrocycle, the percentage is 70-74,8%, during the summer competition period the varied terrain running percentage is 64-65% (Table 5 and 7).

The preparation means for developing the anaerobic effort capacity were applied entirely on flat terrain (Table 5 and 8).

Contest participation was achieved for a number of 17 starts, with the objective competition the Junior II World Championship, Lille/France, 6-10.07.2011 – 8th position – 3000m, 9:25:11.

Table 10 Aerobic effort

	X	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	184	160	141	142	115	107	191	194	143	170	174
t.v	176	148	115	104	72	80	164	144	110	120	122
%	95,6	92,5	80,9	73,2	62,6	74,7	85,8	74,2	76,9	71,4	70,1

Table 11 Mixed effort

Month	**X**	**XI**	**XII**	**I**	**II**	**III**	**IV**	**V**	**VI**	**VII**	**VIII**
Km	280	284	245,6	232,1	189,7	183,8	298,4	316,9	230	248,8	216,1
t.v	215,4	212,3	184	153,6	114	124,2	206,5	214,3	153,7	155,4	168,4
%	76,9	74,7	74,9	66,1	60	67,5	69,2	67,6	66,8	62,4	77,9

Table 12 Anaerobic effort

Month	X	XI	XII	I	II	III	IV	V	VI	VII	VIII
Km	0	9,6	15,4	17,2	15,8	8,4	9,6	20,4	14,9	13,6	7,5
%	0	2,2	4	4,3	5,1	2,9	2	3,9	4	3,2	2

To develop her aerobic effort capacity F.M.M. employs an increased proportion of varied terrain running during the winter preparation period (95,6-92,5-80,9 Table 9 and 10), which then decreases during intramural contests of the winter preparation period (Table 9 and 10). The percentage of varied terrain running increases again during the spring preparation period (74,2-85,7-74,2) and continues so (76,9-71,4-70,1) during the extramural competition period. The percentage of varied terrain running the mixed amount has high values (76,9-74,7-74,9%) during the winter preparation period and almost constant values over the year's duration (Table 9 and 11). The percentage within the anaerobic volume effort is absent since the preparation means includes only flat terrain running variants (Table 9 and 11). The objective competition was the J1 European Championship, Tallin/Estonia, 21-24.07.2011, 6th place – 5000m, 16:44:38 personal record.

3. CONCLUSIONS

By analyzing the degree of preparedness of Romania's best junior female middle-long distance runners, it results that varied terrain running represents the main means of preparation (L.D.E 2470.6 km , 63,3%, from the overall amount, Table 5; B.M.A 2563.3 km, 67,8% of the overall amount, Table 10; F.M.M 3256.8 km , 71,1% of the overall amount, Table 15) with a high percentage of aerobic effort (LDE 1614.5 km, 41,3% of overall amount, Table 5; B.A.M 1496.5 km, 38,4% of overall amount, Table 10; F.M.M 1721 km, 37,5% of overall amount, Table 15) and mixed (L.D.E 2168.1 km, 55,5% of overall amount, Table 5; B.A.M 2158.1 km, 57,9% of overall amount, Table 10; F.M.M 2725.4 km, 59,5% of overall amount, Table 15). The importance of employing varied terrain running as the main means for preparation is given by the proportion of this form being included in the athlete's preparation programme, this emphasizing the top performances achieved. The percentage of varied terrain running as a means of preparation is higher during the autumn/winter and spring preparation periods.

4. RECOMMENDATIONS

The planning and programming of activities should be based on data obtained by analyzing the previous achievements of each individual athlete, both in terms of the main effort indicators as well as the amount of preparation means and methods employed. There should be concern about the workout in the mixed and aerobic zone by using varied terrain running up to 80-85% of the total amount. Assessing the level of physical preparation will be done several times using the control events. Recovery after training and contest is a mandatory component of the preparation activity due to the fact that the percentage of large and moderate efforts is increasing at this level..

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BRIEF COMMENTS REGARDING THE DRAFT OF NEW LAW ON PROBATION

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Abstract*: Within the extensive regulatory reform that was triggered by the Ministry of Justice for several years, meaning in its domestic development and adoption of new codes in civil and criminal matters, was included a draft law on the organization and functioning of the probation in Romania. This paper presents briefly some of the most important provisions of the project, improvements compared to the current legislation in the field of probation in Romania.*

Keywords*: probation, psychosocial services, social reintegration, re-education, reinsertion, legislation, legality, enforcement of sentences, convicted persons.*

1. HISTORY AND BACKGROUND

1. History. Originally, the probation is a way to give a chance to those who have committed a crime for the first time or have committed minor offenses. The goal of using the probation was to determine the offender not to cause relapse, and behave morally acceptable to the community to which it belongs (Stăni□or *et al.*, 2003:58; Barbu &□erban, 2008:288-289).

Probation has a recent history in the legal system of Romania, its foundation seeds appeared around the year 1996, based on a Dutch project implemented in the penitentiary system of Romania with the specific enthusiasm for absolute news at relatively short period of time after the change of political regime in Romania. By Government Decision no. 487/1998 amending and supplementing Government Decision no. 65/1997 on the organization and functioning of the Ministry of Justice, Probation Service was established within the Ministry of Justice. By the Order of the Minister of Justice no. 2626/C/2000 for changing the organizational structure of the General Directorate for Judicial and Anti-criminal strategy coordination, the Probation Service within the Ministry of Justice was reorganized as the Social Reintegration and Supervision Directorate, under the same ministry.

The Government Ordinance no. 92/2000 on the organization and functioning of the services for social reintegration of offenders and supervision of the execution of non-custodial sanctions approved by Law no. 129/2002 have been established social reintegration services for offenders and supervision of the execution of non-custodial sanctions under the Ministry of Justice authority as specialized bodies without legal personality, operating on every court, but under the coordination of Social Reintegration and Supervision Directorate. The name of services was changed to probation services by Law no. 123/2006 on the status of the probation service and central structure from Ministry of Justice called The Probation Department.

2. Highlights of Recommendation EC no. (2012) 1 of 2010 on the European Rules on probation. Definitions:

a) **Probation**: refers to the implementation in the community of the sanctions and measures defined by law and imposed on an offender. This includes a range of activities and interventions involving supervision, guidance and assistance with the aim of social

inclusion of offenders and contributes to community safety.

b) **Probation Agency**: means anybody designated by law to implement the above tasks and responsibilities. Depending on the national system the activity of a probation agency may include provisioning information and advice to the judicial authorities and other authorities with decisional right to help them make informed and fair decisions; providing guidance and support to offenders who are in prison and prepare their community setting; the monitoring and assistance of the persons who are released early; interventions to strengthen justice; and assistance for the victims of crimes.

c) **Community sanctions and measures**: mean sanctions and measures that maintain offenders in the community and involve some limitations to their freedom by imposing certain conditions and/or obligations. The term designates any sanction imposed by a judicial or administrative authority and any measure taken before or instead of a decision on a penalty, and how to apply sentence of imprisonment outside a prison.

d) **Observation**: means the reintegration process of an offender, on a voluntary basis and after final release from detention to home community in a constructive, planned and supervised manner. Under these rules, the term is distinguished from the term "recovery", which refers to statutory involvement after release. "

2. Background: In the context of adoption of the new Criminal Code and the new Code of Criminal Procedure, which introduced significant updates to Romanian criminal law on non-custodial sanctions and measures applicable in criminal proceedings, it was necessary a reconstruction of the general framework for their execution.

Material office in the year 2011-2012 is represented by provisions of a limited number of articles of the Law no.275/2006 on execution of punishments and measures ordered by the court during the trial, which complements the provisions of the Criminal Code and the Code of Procedure criminal. As such, it can be appreciated that the present regulations are not adequate to the new reality and also the rules of the new code of criminal matters. Existence of a limited regulation of the regime of execution of non-custodial sanctions and measures in Law no.275/2006 have the origin in a reduced scope of these sanctions and measures in the Penal Code and Criminal Procedure Code, especially when they enter the force (January 1969), with some improvement in the last 20 years. Thus, institutions as supervised suspension of penalty execution supervised freedom accompanied by obligations imposed on juvenile, supervision or control suspension of minors, provisional release under judicial control, and sanctions on legal persons are modern categories of sanctions and measures taken by the Romanian law relatively recently and the new code of criminal matters provide an extension and improvement. These legislative changes have not always given due attention to regulating the implementation of the new measures introduced, framework legislation on the enforcement regime remains focused on execution in prison.[1]

In conjunction with the adoption of a new law on probation, based on the premise that extends the sanctions and alternative measures (including community) in criminal matters, by the normative content of the new codes of criminal law (eg. to establish conditional sentence, community work extends the non-custodial educational measures etc.) an important legislative necessity represents the creation of a framework regulation of the execution of sentences and non-custodial measures, distinct from that for performance under imprisonment.

2. BRIEF DESCRIPTION OF THE LAW ON THE ORGANIZATION AND OPERATION OF PROBATION (AT OCTOBER 2012)

The draft law on the organization and functioning of the probation system rethinks it

[1] The argumentation on the draft of the new probation law lists several arguments for extending the competency area of the probation services to penal sanctions and measures. The draft is published on www.just.ro and will be analysed in Parliament for adoption.

entirely, both organizationally and functional and is developed based on Law no. 286/2009 on the Criminal Code and Law no. 135/2010 regarding the Code of Criminal Procedure. The project aims at reforming the probation system assimilating more provisions of European regulations on probation, but harnessing the practical experience in probation work so far.

The draft law is **divided into 4 units** and covers the following aspects: Title I - General Provisions: Chapter I - Scope and application; Chapter II – The principles of the activity of the probation system; Chapter III - Definitions; Title II – The probation system organization; Title III – Probation activity: Chapter I - General Provisions, Chapter II - Evaluation of the defendants and supervised persons, Chapter III - Supporting the court in the process of individualisation of sanctions and educational measures; Chapter IV - Coordinating surveillance, Chapter V - Coordination of fine performance by providing a community work service; Chapter VI - Activity of the probation counsellor about detainees; Chapter VII - Acts of the probation officer; Chapter VIII - Working with community institutions; Title IV - Transitional and Final Provisions. To be noted some of the provisions contained in Title II, dedicated to the probation system organization, namely the provisions on the structure of probation on two levels, central and local levels, and indicating links between the two forms of organization.

The coordinating structure is presented as a National Probation Directorate, with legal personality, within Ministry of Justice, established by reorganizing the current Probation Department. Drafters of the law have said that "the adoption of such a measure is necessary for better management of national probation system, including the administration of the budget, taking in consideration that probation services have a double subordination: administratively to the courts and functionally to the National Probation Directorate in the Ministry of Justice, which hampers the work of probation. This solution is all the more necessary as in the view of the new code, the probation activity will increase exponentially, which will require an appropriate institutional response in terms of resources allocated to the probation system. In this context, is forcibly needed a unified administration of all probation system resources through a separate budget, to ensure a strong, coherent and sustainable probation and creation of a strong central structure which shall be able to manage both functionally and administratively the entire probation system.

In this section are presented the main tasks of the Directorate that focuses towards establishing strategic lines of the development of the probation system and the enforcement of sentences and non-custodial measures, coordination of the development of Probation system, Probation control, financial, administrative and human resources management. The elements in managing the financial and administrative resources presents novelty compared to the current situation (compared with current legislation) and were placed in the grounds of greater efficiency of managerial act.

In the draft, the National Probation Directorate is imagined therefore, as the Romanian state autonomous structure subordinated to the minister of justice, so that funding is provided from the state budget through the Ministry of Justice in which it works. Considering that the probation system will manage the execution of penalties directly, while others will be outsourced to community structures was necessary to introduce a provision for allocation of funds for such activities. However, considering the opportunity offered by EU funds and other potential donors was introduced the possibility that the Directorate can access other funding sources (besides the allocated budgetary resources) or to receive donations and sponsorships.

The draft also presents the management and representation of the central structure of the probation system, methods to appoint the management and the attribution as secondary credit coordinator of the General Director. It was introduced a fair and transparent procedure for filling management positions at the first three levels of management, and a limited mandate to hold the function, to enhance the performance management and

providing equal opportunities for career advancement of the personnel from probation system. To encourage a participatory management to develop strategic lines of the probation system was provided and there is a board that will include the coordinators from all departments of the central structure.

In order to ensure the duties of Directorate in an efficient and effective manner was provisioned the possibility of setting up departments and other specialized structures in certain areas of competence established by the Rules of organization and functioning of the Directorate. Given the complexity of the tasks of the National Probation Directorate to manage the system was necessary to identify categories of staff who can work within the central structure. In addition to categories of staff currently working in the Department of Probation was specified a large category of probation staff to extend the access of probation staff from probation services. Current reality proved the need to involve practitioners in management activities of the probation system, and this provision will increase access probation staff in such activities. The project pays specific attention to staff training activities in the field of probation and the study and research work needed to underpin the development of probation practice. These activities are assigned to central structure which it manages either directly or in the territorial structures under its supervision. Expressly stipulating these responsibilities arise from: the need of vocational training for probation staff under the novelty of regulation, adoption of a uniform practice in the probation service, probation staff specialization diversity convergence, the importance of establishment on scientific foundations of the practice directions, stimulate research and study to permanently connect the dynamics of social reality to probation practice. All considerations listed are found both in other states with consolidated probation system and the relevant European Recommendations (remember the recent Recommendation No. (2010) 1 on the European Rules on Probation).

In the local structures of the probation system, in addition to probation services currently operational (one in each county and in Bucharest) could be set up secondary establishments of their probation services according to the needs of local communities, but are envisioned also other ways to increase organizational responsiveness of probation system to crime issues, given that it varies from one area of the country to another, from one county to another and even within the same county. There were introduced methods of employment opportunity through competition and for a limited mandate for the coordinators of the local structures, similar to the employment of the management of the central structure.

Regarding territorial competency the criterion of the home of the person has proven its efficiency as far as now and was still maintained, following to be established as the benchmark by reference to the level of a county or the territorial jurisdiction of the court. The text of law foresees the possibility that inside the services can be set up certain specialized departments pursuing the same goal of effective intervention in addressing crime. Compartments can be established so that ones to work mainly with the courts, others in the community for the supervision and assistance of persons sentenced to penal institutions or to develop practice areas such as specialized programs work with offenders or community works service.

Currently in the probation service operates only probation staff, councillors and heads of services, which means that they carry inclusive administrative duties. In this respect, the draft law introduces a provision imperative for the introduction of new categories of staff to the probation staff for activities related to secretarial, administrative, IT and other specific tasks that do not require qualification of probation.

3. COMPARATIVE STATEMENT OF PROBATION DUTIES/ COMPETENCIES NOW AND IN THE DRAFT LAW

1. Positive law: According to Government Ordinance nr.92/2000 on organization and functioning of social reintegration of offenders and supervision of the execution of non-

custodial sanctions (Article 11 being the principal place of matter in this respect), the probation have essentially the following powers and duties:[2]

a) Art.424 CPS probation service prepare assessment reports in cases involving juvenile accused or defendants at the request of the court and evaluation reports on adult defendants and persons in service supervision at the request of the court;

b) Art.863 paragraph 1 letter a)-d), paragraph 3 letter a)-f) and 103 paragraph 3 letter a)-c) of the Criminal Code - Probation Service supervises compliance of the convicted person of the measures and obligations provided in case of suspension of sentence under supervision and supervised freedom, including supervision of community work service.

c) Art. 484 CPP - probation counsellors participate in hearings in juvenile cases after quoting the probation service by the court;

d) Law no. 272/2004 on the promotion and protection of child rights - Probation Services shall report, at the request of the court for children who have committed a criminal offense and not criminally responsible in all cases concerning the establishment, replacement or termination of special protection measures;

e) Participates in making the statement of the victim or civil party whose life, physical integrity or liberty is endangered, at the request of the judicial body or of the victim or civil party heard;

f) Carries on demand structured programs of social reintegration of offenders in terms of adjusting social behaviour.

g) Supports prison staff specialized in psychosocial intervention activities in prisons, in order to carry out re-socialization programs for persons convicted during the execution of the sentence of imprisonment or during hospitalization of minors in rehabilitation centres (Barbu & □erban, 2008:291-295).

h) Assessment of juveniles and adults charged in criminal prosecution, at the prosecutor request (Unianu, Frangulea-Pastor, 2011:103-107);

i) Participates in the proceedings of the conditional release proposal from prison establishments;

j) Works with public institutions for juvenile compelling execution of the provision of unpaid work in a public institution.

2. Highlights of legislation on activities and skills of probation in the draft of the new law:

[2] **Art. 11** (1) The social reintegration and probation services have the following duties:
a) supervise compliance by the person convicted of the measures referred to in art. 86 ^ 3 par. 1 letter. a)-d) of the Penal Code
b) monitor the obligations imposed upon him by the court as provided in Art. 86 ^ 3 par. 3 letter a)-f) of the Penal Code;
c) oversee the obligations imposed by the juvenile court as provided in Art. 103 par. 3 letter. a)-c) of the Penal Code;
d) prepared at the request of the prosecution and the courts, evaluation reports about persons referred to in Art. 1 or on the defendants;
e) collaborate with public institutions for juvenile compelling execution of the provision of unpaid work in a public institution;
e ^ 1) initiates and develops special programs for social reintegration for persons sentenced to imprisonment, which sentence was totally pardoned by law, and minors who have committed offenses under the criminal law, to which was removed by law educational measure of admission into a rehabilitation center;
f) conduct, on request, individual counselling activities of offenders in terms of social behaviour, group and individual;
g) initiate and conduct special protective programs, social and legal assistance to juveniles and young offenders;
h) initiate and conduct, along with volunteers and representatives of civil society and governmental and nongovernmental organizations Romanian and foreign re-socialization programs for persons referred to in Art. 1 and Art. 3. par.(2) who have applied to participate in these programs to help them comply with the conditions imposed by the court and their social reintegration;
i) collaborates with public and private institutions and individuals and businesses in their area of expertise to identify, as appropriate, available jobs, educational courses, as well as the qualifications or retraining;
j) any other duties prescribed by law.
(2) The social reintegration and probation services, with specialized staff assistance and advice of the prison administration can run programs on business activities, socio, educational and vocational training for persons convicted.
(3) The persons referred to in Art. 7. (1) prepared during their activities, periodic reports of social reintegration and supervision for those who have requested assistance and advice from the social reintegration and probation services.

a) The assessment made by the probation counsellors on adult offenders, optional at the request of the court, respectively of the juvenile defendants - mandatory during trial;

b) Supporting the court in the process of individualization of sanctions and educational measures by participating in hearings with juvenile defendants, namely the formulation of proposals (in all cases involving juvenile defendants);

c) Direct participation in the procedure for enforcement of non-custodial educational measures in front of the judge;

d) Supervising adults in cases of postponement of penalty, suspension of sentence under supervision, conditional release (if remaining unexecuted 2 years or more);

e) Overseeing adult defendants for penalty fines by providing a community work service;

f) Supervise minors in all non-custodial educational measures: length of civic education, monitoring, recording weekends, and daily assistance.

g) Evaluation of supervised minor and major (at any change and at the end of surveillance) as well as minor and major defendants in criminal prosecution, at the prosecutor's request.

h) Specific activities in relation to detainees:

- Participation in preparation for the release of detainees;

- Participation in the development of proposals for the work of the conditional release of inmates, at the Education Council organized at the level of the educational commission respectively at the detention centres.

4. CONCLUSIONS

On probation, both now and in the future regulation expected in Romania, is a group of related steps with judicial activities themselves, efforts aimed at social inclusion of offenders and support community safety, which are centred essentially on four levels: s specialized assistance given to the court on time on criminal cases as expressly provided by law, by making specialized knowledge reports about people being prosecuted in court; assistance in assessment / knowledge of people indicted, institutional support given to the prosecutor, also in cases specifically provided by law, all point to this case; - Involvement in the supervision and coordination of behaviour of persons convicted of non-custodial arrangements (typical of social inclusion activities); involvement in overseeing and coordinating the conduct of persons convicted in custodial arrangements supporting the efforts of social reintegration and rehabilitation staff they carry in prison system (social inclusion specific activities).

Of these, only the first level aims at working more closely in connection with the court, with justice itself, in the sense of Article 126 paragraph 1 of the Romanian Constitution. Others are specific responsibilities of the Executive powers, having generic role to apply penal policy and the social assistance of the state and to determine the actual role of social rehabilitation of sentenced persons under supervision and counselling procedures, harmonizing as more as possible the Romanian institutional pattern with the majority of EU states model, namely an institution is autonomous but coordinated by the Minister of Justice, or directly subordinated to the Ministry of Justice.

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ANALYSIS ON THE PRINCIPLE OF NATIONAL SOVEREIGNTY IN THE CONSTITUTIONAL REGULATIONS OF THE EUROPEAN UNION MEMBER STATES

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Abstract*: The accession to the EU implies, for a state, the assignment of a part of its powers, including a series of attributes traditionally considered as being closely linked to the exercise of national sovereignty. In fact, the participation to the Union presupposes the exercising of powers by the supranational institutions established through the constitutive treaties. The Member States faced this problem throughout the evolution of the European Communities, going from strict and specific fields, in the beginning, to increasingly wider areas of competence, by means of a sectoral integration in continuous expansion. The Member States did not uniformly approach the issue of transmitting these powers to the Community.*

Keywords*: European Union, sovereignty, constitution, Euro-skepticism.*

1. INTRODUCTION

From the experience of the Member States, there can be conceived two approaches of the issue of transmitting the state powers to the Union. The first consists of the modification of all constitutional provisions regarding the prerogative totally or partially transferred. This approach presents the inconvenience that it implies new revisions at every future moment in the Union's evolution, when significant additional transfers will occur, which may create difficulties at the political and legal levels. The second possible approach is the insertion in the text of the Constitution of a general clause, authorizing the transfers[1].

2. EUROPEAN PERSPECTIVES

In the last years, the European Union Member States – except for Great Britain, which has no written Constitution – modified the constitutional provisions for the purpose of giving legitimacy to the process of transferring sovereignty to the international organizations, including the European Communities and the European Union. States such as France expressly regulated in the Constitution the possibility to transfer certain attributes of sovereignty to the European institutions.

Thus, the French Constitution orders in its Preamble that, „under the reserve of reciprocity, France consents to the sovereignty limitations necessary for organizing and defending peace". The German Constitution regulated the federation's right to transfer attributes of sovereignty to any international forum through the legislative way (Miga-Beşteliu, 1998:96). Also, in art. 88 para.1 of the French Constitution indicates that: „The Republic participates to the European Communities and to the European Union, constituted by the states that opted freely, by virtue of the treaties that established them, to exercise in common some of their competences".

The French federalists claim that, in order to support a federal Europe, it is necessary the existence, above sovereignty, of superior moral principles, anchored in the transnational European values. In their vision, the Maastricht Treaty fractions sovereignty and is constitutive for a federation. From the

[1] The option of the general authorization clause was put into practice, for example, by Belgium, Germany, Italy, Luxemburg, the Netherlands and Spain

diachronic perspective, the Euro-optimists claim that in the European history, the principle of nationalities has always expressed the thesis, and the European wars constituted the anti-thesis; that is why, at present, there is no other solution than federal synthesis. The national states were able to impose sacrifices in the past because they were able to ensure survival. In what concerns the French Euro-skeptical arguments, extremely complex and moderate-realistic on the matter, we consider the theses of Phillippe Raynaud, who sees Europe as an international intergovernmental regime. His definition of sovereignty, whether we are speaking of a state or of the European Union, is the "power to decide for ones' self in the last resort and to have a domestic legal order with certain coherence …. the final test of the existence of sovereignty being who decides in exceptional situations". To the question "which are today the sovereign political bodies: the European Union or the composing nations?", the answer is the European Union, because the actions of the European Court send to an interpretation of the role of the European institutions as that of the organs of a sovereign political body in the making. But the fact that, through the Maastricht Treaty, the states preserve the right to withdraw sends to the idea that they - in the strictly legal sense – remain sovereign. But Raynaud's problem is that the federation creates a people. And as an example, he develops on the American solution to the problem of secession and the respective right, drawing attention to what could be imagined in the EU in case a state would wish to exit the Union. Raynaud acknowledges the fact that the legalist interpretation of sovereignty collapsed, but, at the same time, he says, we cannot leave the ambiguity created by the European Union, because the hierarchy of legal norms between the Member States and the Union is not clear and in the absence of a European Constitution, the UE Treaty is only valid because it is conform to the national constitutions. Unlike the German federalist visions, even the pro-integration attitude of the British Euro-optimists prefer to see the European Union as a community of states. At the national level, the difference resides precisely in the use of the term *community* rather than of *association* preferred by the British Euro-skeptics. Thus, Christopher Lord considers that the definition of sovereignty, corresponding to the pro-integration attitude, is the following: (i) legality of decisions, (ii) autonomy of the national decisional system from the foreign influence and (iii) the power to obtain the desired results. The supporters of the "community of states" accept the fact that the role of the state is modified under qualitative aspect, and the international economic decision is made at the level of the US – European Community axis. In the conditions in which the world economy creates economic blocks in asymmetrical interdependence, it is better to represent a center that decides, than to remain formally sovereign, but without real influence. At the same time, this line of argumentation, moderately pro-European, insists on restating the right of national veto as a precondition of Great Britain's participation to the European decisional system, accepting, in parallel, the reality of phenomena such as transnational socialization and the collaboration of international regime type. Lord says that the vision on the community of states gives priority to the definition of sovereignty as power (maneuvering margin or control over events), meaning that of politico-economic sovereignty. In Lord's vision, the moderate pro-Europeans illusion themselves when they imagine that the European Union is only a variant of economic interdependence, from which they could eventually withdraw. In fact, the experience of the European Community demonstrated how coercive are the cooperation regimes based on institutional decentralization. Lord claims that this type of regime, apparently little coercive, has among its paradoxical political consequences the release of the national Executives from the legislative control. How exactly does the executive power increase due to the European Union? Through the fact that the treaties formulated at the executive level, as a result of difficult international negotiations must be accepted or rejected *in corpore*. As a consequence, the only solution to avoid both the veto of the national parliaments, and/or the

disappearance of the control of the legislative on the Executive is, for Lord, the consolidation of the European Parliament. In that concerns the European legislation, it cannot be said that the Great Britain has no control, because its Executive participates to the elaboration of Directives. More than that, the public appreciates these directives, because they have, many times, a social sense more accentuated that the domestic legislation. The Conservatives have been and remain the legatees of British Euro-skepticism. Appanage of the conservatives, but not exclusively, the arguments of the British Euro-skeptics refers to threats towards the traditional British society, the betrayal of the post-imperial relations with the Commonwealth, the danger towards the unwritten law constitutional system, the fact that the Economic and Monetary Union affects a basic precondition of sovereignty, hence, no desire to join the Euro-zone, that the Economic and Monetary Union aggravates the division of Europe by creating a "*rich men's club*". The Euro-skeptics prefer to consider the European Union as an "association of states", any other form being form them a danger that could lead to the creation of a super-state. Their preferred definition is the legal one: the right to national veto, within the EU bodies, internal autonomy at the legal level, supremacy of domestic law, the preservation of the possibility of unilateral action or in other multi-national frameworks (NATO or Commonwealth). Therefore, the EU future, from their perspective must be limited to being a multiplier of forces at the international level, possibly a transfusion of power for the independent action of Great Britain and, if possible, a leading role in the EU for the United Kingdom, under the absolute condition of stopping a deepening of the European integration in the supranational sense (Lord, 1992 : 419-437). The Conservatives oppose the deepening of the integration, which they perceive as an inexorable process with an apparently modest debut, which ends with a complete transfer of sovereignty. Sovereignty for them represents more than simple functions, it is an expression of the identity between the governed and the governing, rejecting the functionalism intentionally lacking a political mission, according to the model of the French Euro-skeptics. Criticizing the politico-economic approach of the erosion of state sovereignty, they argue that sovereignty cannot be lost in favour of the market, but only to other states or to political institutions. The perpetuation of this confusion favours a possible capture of the European super-state by the private interests.

The British Euro-skeptics exaggerate the autonomous action ability of the state and lose sight of the fact that the European Union is very different in relation to the classical European state. Then, the Euro-skeptics deny the possibility of the existence of a dual identity, European and national. This vision exclusively belongs to the British elite, which controls the political institutions, and not to the public opinion in general. The respective vision presupposes a parliamentary absolutism, which never existed in reality.

Germany remains the most fervent supporter of federalism – for historical reasons – building its concept of sovereignty around the politico-economic meaning, seeing in the European Union a vehicle for protecting the national economies in the context of globalization (Milward, 2000). Germany supports the deepening and expansion of the EU since it copied the German model of economic-financial efficiency (the independence of the Bundesbank and the European Central Bank, the EU monetarist model.). The German Euro-optimists favour the EU enlargement because their country is the first to benefit from the investments made in the new EU space, wishing and obtaining direct influence especially over the central European states (Poland, the Check Republic, Slovakia and Hungary). Germany's Constitution, in article 24 para. 1 indicates expressly the fact that: "The Federation may, by law, transfer sovereign powers to international organizations". Art. 9 para. 2 of Austria's Constitution establishes the fact that, through law or treaty, there can be transferred federal competences to the international law organizations. In the situation in which completions or modifications are brought to the laws in effect, they require the Parliament's approval, according to a special

procedure regulated by art. 50 para. 1. The Belgian Constitution also comprises a regulation in this sense. Thus, according to the provisions of art. 33 and 34[2], the transfer of certain competences determined by law or treaty to the international public law organizations is possible. The Constitution of the Netherlands allows transfer to the international organizations of „legislative, administrative and judicial competences" by means of international treaties. In the situation when the international treaty comprises dispositions contrary to the constitutional provisions, art. 91 para. 3 stipulates that the treaty must be approved with a majority of two thirds by both Chambers of the Parliament[3].

In what concerns the Italian Constitution, after establishing in art. 1 that sovereignty belongs to the people, who exercise it in the forms and limits established by the Constitution, it regulates - in art. 11 – the fact that on the basis of reciprocity with other states, limitations can be imposed on sovereignty in order to ensure peace and justice among nations. In this sense there will be supported the international organizations that have such an objective[4]. The Constitution of Greece refers to the assignment, through treaties, of certain competences established within its content, to certain international bodies. Greece can freely proceed to refrain the exercise of its national sovereignty to the extent to which such restraints are imposed by an important national interest, do not affect human rights and are executed observing the principle of equality, on condition of reciprocity[5].

In Portugal's Constitution it is states that the norms originating from the competent bodies of the organizations to which Portugal participates enter directly in the domestic legal order, if such an effect is explicitly established in the constitutive treaties. Also, the Luxembourg Constitution stipulates that the exercise of the attributions reserved for the legislative, executive and judicial powers can be temporarily transmitted, through treaty, to certain international law institutions (Manolache, 2005).

6. CONCLUSIONS

Gabriel Andreescu and Adrian Severin consider that the doctrine of sovereignty can no longer be conceived in its classical parameters, being necessary rather the acceptance of the idea of a federation of national states, in which certain prerogatives would be transferred to the European family, on the basis of free consent (Andreescu, Severin, 2001).

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[2] Art. 33: "All powers emerge from the Nation. This power is exercised in the manner established through the Constitution", Art. 34: "The exercise of determined powers may be assigned, by treaty or by law, to international public organizations".

[3] This constitutional provision is much more flexible than the one comprised in the Romanian Constitution, according to which „the international treaty or agreement established as being unconstitutional cannot be ratified" (art. 147 para. 3).

[4] The Constitution of Italy, through this text, is the first Constitution that opens the road to the European Union.

[5] The Constitution of Greece establishes, in article 1: "(2) Popular sovereignty is the fundament of governance. (3) All powers emerge from the People and exist for the People and Nation; they will be exercised as established through the Constitution", and in article 28(2): "The prerogatives established by the Constitution may, by treaty or agreement, exercised by agencies of the international organizations, when this serves an important national interest and promotes cooperation with other states. A majority of three fifths of the total number of the Parliament members will be necessary in order to vote the law for ratifying the treaty or the agreement".

FOR A PEDAGOGY OF POINTS OF VIEW

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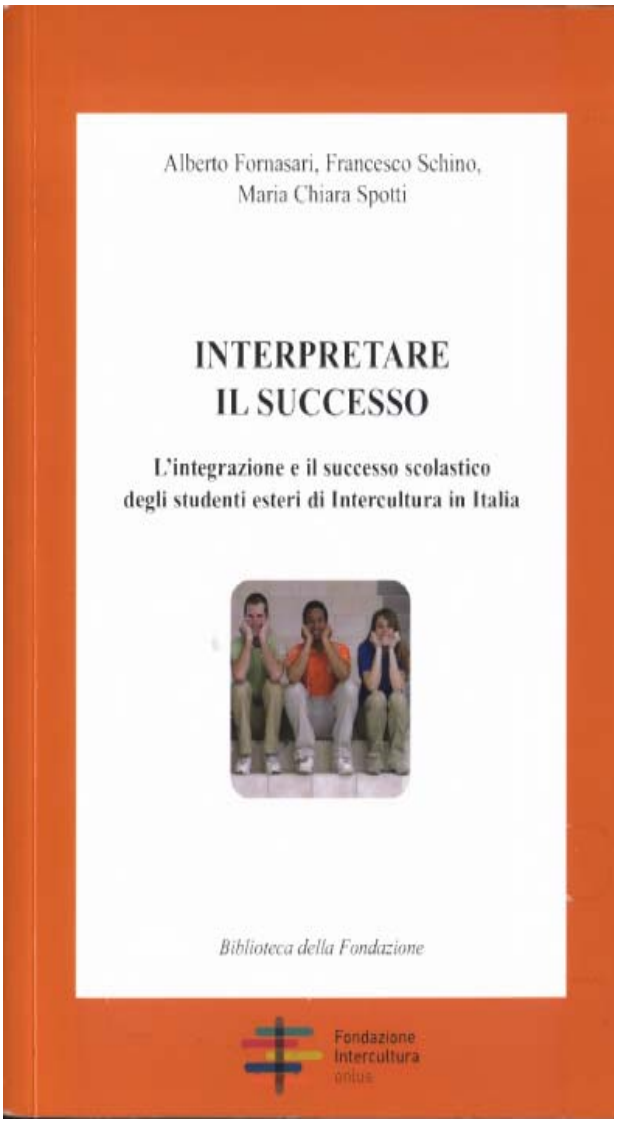
Abstract: *This article aims to present the book* Interpretare il successo. L'integrazione e il successo scolastico degli esteri di Intercultura in Italia*, written by Alberto Fornasari, Francesco Schino and Maria Chiara Spotti. The book is one of the most important works in the field of intercultural education, reflecting the results of a study regarding the school success of foreign students in Italy.*

Keywords*: intercultural education, school success, weak thought, pedagogy of points of view.*



1. INTRODUCTION

A recent great work in the field of intercultural education is the one of the Italian researchers Alberto Fornasari, Francesco Schino and Maria Chiara Spotti, entitled *Interpretare il successo. L'integrazione e il successo scolastico degli esteri di Intercultura in Italia*, published in 2011 at Fondazione Intercultura *Onlus*, Colle di Val d'Elsa.

Fondazione Intercultura, born in 2007 out of an association with the same name, has a unique patrimony of international educational experience (meaning the integration within the Italian education of students from more than 60 countries), and aims at deepening the formative aspects of a multicultural society *in statu nascendi*.

This work reveals the cumulative experience of this foundation in relation with foreign students in Italy, assessing both the difficulties of integration and their opportunity to benefit from *Intercultura* programmes, trying to focus on school success by measuring the parameters of integration – related to curricular activity and to the student`s activity within the host family – in two regions: Emilia Romagna in North and Puglia in South.

The purpose of the research is to identify ways of increasing school success knowing/deepening the mechanisms of foreign

student adaptation to Italian educational system.

The authors, covering a wide range of knowledge and interest in research: Alberto Fornasari – expert in communication and in multi-/intercultural processes, Francesco Schino – specialist in socio-anthropology and Maria Chiara Spotti - specialist in linguistics, provide the study with a complex multidisciplinary perspective.

Moreover, the main author, Alberto Fornasari, has published numerous studies regarding the aspects of foreign students' adaptation and of their integration in a multicultural Italy, such as: "The others among us: The concept of <borders> in Italian teenagers. A study for *Fondazione Intercultura*" (2011), regarding the possibilities of understanding the „other" concept and of reference to „otherness" concept, in an *Intercultura* study from 2008 (The European Year of the International Dialogue), measuring attitudes and behaviors of Italian and European students Veneto, Emilia Romagna, Tuscany and Puglia, or „To interpret success: The success in schools and the integration of foreign students in Italy" (2012), focused on the effects of intercultural education, trying to build a scientific foundation for re-interpreting the status of foreign students, despite the preconception/misconception that they are problematic, inadequate, even a threat to the proper functioning of the Italian school.

The latter study is done as an extension of the book *Interpretare il successo*, providing keys of interpretation and understanding school success in a multi- and intercultural society.

2. THE RESEARCH DESIGN. PARTICULAR DATA

In a world that allows the free movement of things, ideas and people, fear of foreign (stranger) should be abandoned. Starting with such a requirement and taking into account the social, ethical, pedagogical and political fundamentals of interculturality, the authors emphasize the main purpose of the research:

> *(...) la Fondazione Intercultura ha trovato interessante ed utile promuovere una ricerca finalizzata a ricercare i casi di successo scolastico degli alunni esteri frequentanti per un anno le scuole italiane con il programma di Intercultura, a riconstruirne le storie personali e a far emergere le scelte educative e didattiche, di scuola e di aula connesse a tali risultati* (Fornasari *et al.*, 2011:11).

Determining the level of foreign students' school success in Italy for a better integration, the focus should rely on the appropriateness of research design, as long as school performance is influenced by parental expectations, self-esteem, social life, host family, educational policies, students` relations with classmates and teachers.

In this respect, the authors have proposed to find more about foreign students within classes and in their extra-school life. In addition, the focus on good practices (as is stressed by the title) leads to a mixed research methodology, both quantitative and qualitative, combining techniques, procedures and instruments as follows: questionnaires for foreign (target group) and Italian (control group) students, interviews with teachers, focus-groups, qualitative interpretation of curriculum etc.

Mentioning some particular relevant data collected during the current research, meaning positive and negative aspects, such as: the good organization of the Italian school (implying even severity), the openness of Italians (classmates, teachers, host families) for contacts with foreigners, the inappropriate ratio between theory and practice – the most negative aspect noticed, the existence of teachers unprepared for the contact with foreign students etc., we can consider a realistic perspective of the authors on problems that need to be identified and exploited (positive aspects) or removed/diminished (negative aspects).

Through this blunt and correct identification of positive and negative aspects of Italian school, at a certain level of preparedness for intercultural society, the research became more relevant regarding

identification of good practices for increasing foreign students' school success.

Adding the fact that linguist aspects are barriers in assessment:

> *Certamente l'ostacolo della comunicazione in italiano rappresenta un fattore di svantagio che può incidere in una certa misura sui progressi e quindi anche sulla valutazione finale* (Fornasari *et al.*, 2011:192),

a balanced interpretation is recommended in this case.

3. WEAK THOUGHT'S PERSPECTIVE

The analytical flexibility is the most important aspect of this study. Being born in a country where issued the weak thought (*pensiero debole*), as deconstructive thinking, within the logics of included middle, based on a weak ontology of truth notion, as weight loss of philosophical thinking, as interpretative way for multi- and intercultural post modernity (Vattimo, 1983/1998:10-25, 1993:184), the authors do not hesitate to analyze within *pensiero debole.*

The (self-)centered and monolithical thinking specific to Italian educational system should be deconstructed and reconstructed, should be decentered and recentered.

The new perspective is a plural one (the plural perspective being a weak perspective); Fornasari's proposal (Fornasari *et al.*, 2011:206) should be taken into consideration as a very important contemporary perspective on intercultural education: a „didactics of points of view" (*didattica dei punti di vista*).

In such a frame of interpretation, the whole perspective on intercultural education is changed:

> *Quando parliamo de* **nuove educazioni**, *intendiamo un gruppo di tematiche specifiche, con finalità educative in parte comuni, che si inscrivono dentro un progetto didattico complessivo, che vuole „dotare gli studenti di strumenti di orientamento, di metabolizzazione e di critica del cambiamento, di construzione della propria identità individuale e collettiva". (...) L'educazione interculturale rappresenta il contenitore globale delle nuove educazioni, lo „sfondo integratore" all'interno del quale trattare i contenuti delle educazioni che scegliamo come importanti per il nostro percorso.* (Fornasari et al., 2011:207).

4. CONCLUSIONS

Therefore, not the apparent issue of success is important. Moreover, the school success does not coincide with school's success. In Habermas' terms (1997), we can distinguish between success-oriented actions and understanding (consensus)-oriented actions.

Success-oriented actions are a set of instrumental activities, subjected to a monologal, linear logic, subjected to preferential rules and formalities regarding the communicative agreement.

Starting from the weak thought perspective, the Habermas notion of success is inappropriate; besides, understanding (consensus)-oriented actions make possible the „didactics of points of view".

The definition of success and the definition of school's success within this book are clarified:

> *La scuola di successo si basa in larga misura sulle idee di Socrate. Il docente pone domande, ma lascia agli allievi il compito di progettare investigazioni adeguate per rispondere alle domande* (Fornasari *et al.*, 2011:365).

The projection on the success of interaction[1], on the success of real intercultural

[1] The school of success, in Fornasari's terms, is related to interaction and integration, sharing without dividing the school's success to the individual success of each student: „Innazitutto, la scuola del successo formativo non coincide con la scuola della promozione facile, che comporta un improvimento di contenuti e metodi didattici, La scuola del successo per tutti vuol creare in nclasse le condizione che redano possibile, a ciasun alunno, di avere successo nei processi di appredimento" (Fornasari *et al.*, 2011:364).

communication within the Italian school and not a detailed list of keys regarding school success makes *Interpretare il successo. L'integrazione e il successo scolastico degli esteri di Intercultura in Italia* one of the most important works in the field of intercultural education.

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ON WAR AND (IN)SECURITY

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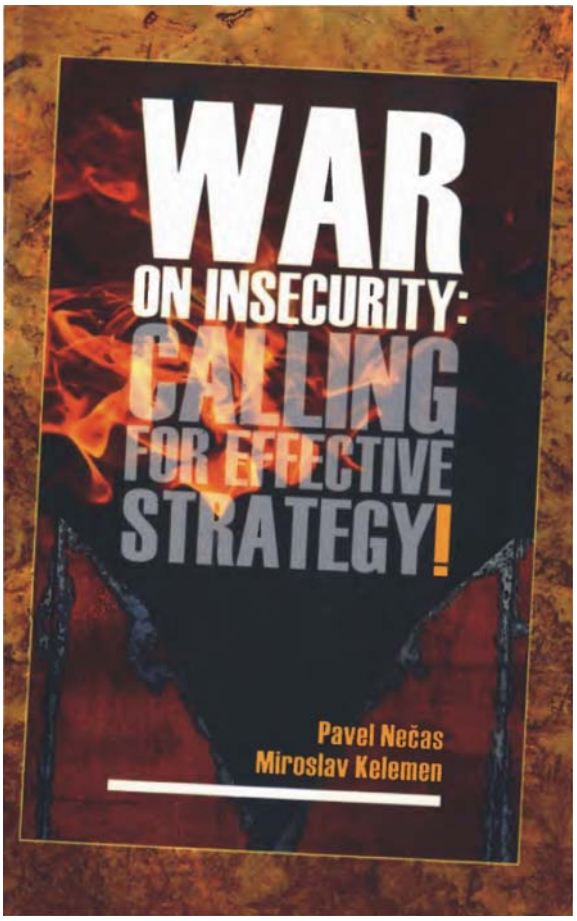
Abstract: *The present monograph,* War on insecurity: Calling for Effective Strategy! Scientific Monograph*, written by Pavel Nečas and Miroslav Kelemen, deals with the analysis of globalization, global security and defense at strategic level. It has an educational purpose for those interested in the field of security (state and public administration officials), but I find it very resourceful for military personnel that have to be very much aware of all phenomena that take place and that involve and affect the military system, as well..*

Keywords*: war, insecurity, security strategies, global security.*



1. INTRODUCTION

Thus, the book is worth reading as concepts like **war** and **insecurity** are widely heard, especially after 9/11 to define strategic concepts that reshape the international perspective on security. These are tightly connected to the present process of globalization that impacted all areas of interest, from information and knowledge to resources. The present-day security environment is characterized not only by a high level of security, but also by the incapacity of anticipating certain events, by manifesting certain risks and threats, especially asymmetric ones, by redefining the relations between the great powers and increasing the freedom of action of the regional factors. Therefore, the authors guide us through a well structured approach, where strategy at all levels is the main key.

2. BOOK'S STRUCTURE

Thus, the first chapter initiates us with the fundamentals of strategy, namely, its objectives, principles and integration within the international system.

The second chapter introduces the main tendencies dominating the international security environment targeting the U.S.A. predomination, the democracy extension and globalization. Climate change, the interethnic and interreligious conflicts, media and

information, technology and military transformation together with the proliferation of mass destruction weapons are the main issues tackled within this chapter. The actors of the contemporary world insecurity and instability are factors that cannot be treated independently. The fight against them requires the most efficient resources and action directions. Thus, the asymmetric warfare is obviously mentioned by the end of the chapter. It is viewed as a globalized phenomenon, where asymmetry can range from distinct threats that include a nation`s security forces, too. It is also mentioned the fact that the distinction between organized crime and terrorism is unclear. It is true, as the two concepts are interconnected even if the purpose of actions can be different (from a political one up to religious beliefs).

The fourth chapter deals with NATO`s strategic concept, its origins, accomplishments and even a case study on EBAO (Effects Based Approach to Operations) that managed the complete range of power instruments within the Gulf War. The conclusions raised out of it actually mirror the present global situation with respect to future threats and to the transformation of strategy and operation methodologies.

The next two chapters provide a clear-cut comparison of both US and EU security strategies with focus on historical background and content. Then, they are faced with the third strategy, that of the NATO`s. This comparison has not been an easy thing to do, as they all have special features and particularities, born out of different historical backgrounds and having distinct purposes.

The list of acronyms at the end of the volume is commonly used within the NATO structures, being of high value for academic purposes.

3. CONCLUSIONS

The 21st century has brought great hopes of liberty, a growing living standard, a world of peace, stability and cooperation, but also a series of risks and threats, mainly non-military ones, which transcend the national borders. These were always present in the relationships between people over time, underlying numerous causes of conflict that have overshadowed the development of human society. The monograph makes us aware of all these issues that have occurred and shaped effective strategies, in a turbulent time that all nations have to deal with nowadays! I strongly recommend reading it. I`m more than sure that it will draw your attention and make you think of the 21st century conflict as being one of different approaches and disagreements, whose strategy is meant to attain global security.

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