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Hermann Julius Oberth (1894-1989)
founding father of rocketry and astronautics

BRAŞOV

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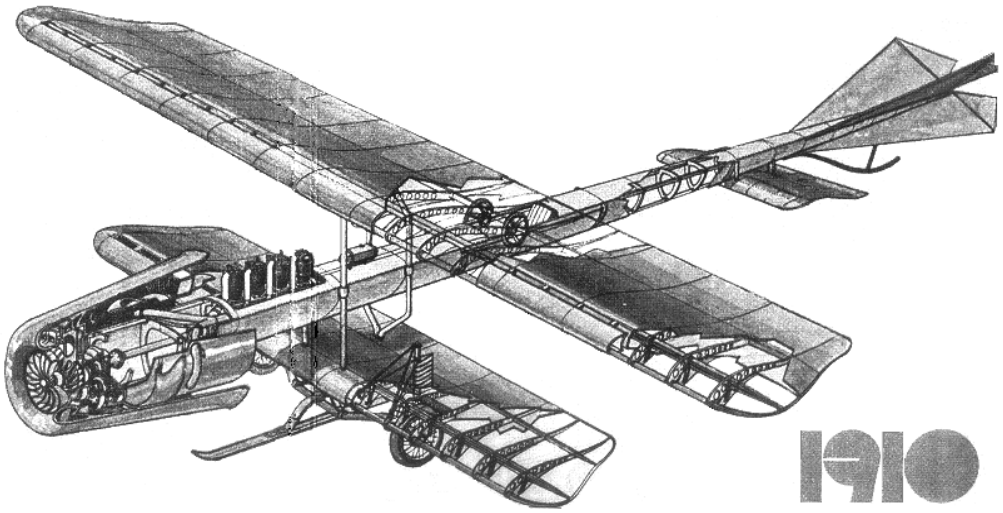

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C O N T E N T S

AN ALGORITHM FOR QUASI-ASSOCIATIVE AND QUASI-MARKOVIAN RULES OF COMBINATION IN INFORMATION FUSION

Florentin SMARANDACHE*, Jean DEZERT**

*University of New Mexico, Gallup, USA, **ONERA/DTIM/IED, Châtillon, France

***Abstract**: In this paper one proposes a simple algorithm of combining the fusion rules, those rules which first use the conjunctive rule and then the transfer of conflicting mass to the non-empty sets, in such a way that they gain the property of associativity and fulfill the Markovian requirement for dynamic fusion. Also, a new fusion rule, SDL-improved, is presented.*

***Keywords**: Conjunctive rule, partial and total conflicts, Dempster's rule, Yager's rule, TBM, Dubois-Prade's rule, Dezert-Smarandache classic and hybrid rules, SDL-improved rule, quasi-associative, quasi-Markovian, fusion algorithm.*

1. INTRODUCTION

We first present the formulas for the conjunctive rule and total conflict, then try to unify some theories using an adequate notation. Afterwards, we propose an easy fusion algorithm in order to transform a quasi-associative rule into an associative rule, and a quasi-Markovian rule into a Markovian rule. One gives examples using the DSm classic and hybrid rules and SDL-improved rule within DSmT. One studies the impact of the VBF on SDLi and one makes a short discussion on the degree of the fusion rules' ad-hoc-ity.

2. THE CONJUNCTIVE RULE

For $n \geq 2$ let $T = \{t_1, t_2, \ldots, t_n\}$ be the frame of discernment of the fusion problem under consideration. We need to make the remark that in the case when these n elementary hypotheses $t_1, t_2, \ldots, t_n$ are *exhaustive and exclusive* one can use the Dempster-Shafer Theory, Yager's, TBM. Dubois-Prade Theory, while for the case when the hypotheses are *not exclusive* one can use Dezert-Smarandache Theory, while for non-exhaustivity one uses TBM.

Let m: $2^T \to [0,1]$ be a basic belief assignment or mass.

The conjunctive rule works in any of these theories, and it is the following in the first theories:

$$\text{for } A \in 2^T,\ m_c(A) = \sum_{\substack{X,Y \in 2^\wedge T \\ X \cap Y = A}} m_1(X) m_2(X) \qquad (1)$$

while in DSmT the formula is similar, but instead of the power set 2^T one uses the hyperpower set D^T, and similarly m: $D^T \to [0,1]$ be a basic belief assignment or mass:

$$\text{for } A \in D^T,\ m_c(A) = \sum_{\substack{X,Y \in D^\wedge T \\ X \cap Y = A}} m_1(X) m_2(X) \qquad (2)$$

The power set is closed under $\cup$, while the hyper-power set is closed under both $\cup$ and $\cap$. Formula (2) allows the use of intersection of sets (for the non-exclusive hypotheses) and it is called DSm classic rule.

The conjunctive rule (1) and its extension (2) to DSmT are associative, which is a nice property needed in fusion combination that we need to extend to other rules derived from it. Unfortunately, only three fusion rules derived from the conjunctive rule are known as associative, i.e. Dempster's rule, Smets's

TBM's rule, and Dezert-Smarandache classic rule, the others are not.

For unification of theories let's note by G either 2^T or D^T depending on theories.

The conflicting mass k12 is computed similarly:

$$k_{12} = m_c(\theta) = \sum_{\substack{X,Y \in G \\ X \cap Y = \theta}} m_1(X) m_2(X) \qquad (3)$$

Formulas (1), (2), (3) can be generalized for any number of masses $s \geq 2$.

3. ASSOCIATIVITY

The propose of this article is to show a simple method to combine the masses in order to keep the associativity and the Markovian requirement, important properties for information fusion.

Let m_1, m_2, m_3: $G \to [0,1]$ be any three masses, and a fusion rule denoted by $\oplus$ operating on these masses. One says that this *fusion rule is associative* if:

$$((m_1 \oplus m_2) \oplus m_3)(A) = (m_1 \oplus (m_2 \oplus m_3))(A) \text{ f}$$

or all $A \in G$, (4)

which is also equal to $(m_1 \oplus m_2 \oplus m_3)(A)$ for all $A \in G$. (5)

4. MARKOVIAN REQUIREMENT

Let $m_1, m_2, \ldots, m_k$: $G \to [0,1]$ and $k \geq 2$ masses, and a fusion rule denoted by $\oplus$ operating on these masses. One says that this *fusion rule satisfies Markovian requirement* if:

$$(m_1 \oplus m_2 \oplus ... \oplus m_n)(A) =$$

$$((m_1 \oplus m_2 \oplus ... \oplus m_{n-1}) \oplus m_n)(A)$$

for all $A \in G$. (6)

Similarly, only three fusion rules derived from the conjunctive rule are known satisfying the Markovian Requirement, i.e. Dempster's rule, Smets's TBM's rule, and Dezert-Smarandache classic rule.

The below algorithm will help transform a rule into a Markovian rule.

5. FUSION ALGORITHM

A trivial algorithm is proposed below in order to restore the associativity and Markovian properties to any rule derived from the conjunctive rule.

Let's consider a rule ® formed by using: first the conjunctive rule, noted by©, and second the transfer of the conflicting mass to non-empty sets, noted by operator "O" (no matter how the transfer is done, either proportionally with some parameters, or transferred to partial or total ignorances and/or to the empty set; if all conflicting mass is transferred to the empty set, as in Smets's rule, there is no need for transformation into an associative or Markovian rule since Smets's rule has already these properties).

Clearly ® = O(©).

The idea is simple, we store the conjunctive rule's result (before doing the transfer) and, when a new mass arises, one combines this new mass with the conjunctive rule's result, not with the result after the transfer of conflicting mass.

Let's have two masses m_1, m_2 defined as above.

a) One applies the conjunctive rule to m_1 and m_2 and *one stores* the result: m_1©m2 = $m_{C(1,2)}$ (by notation).

b) One applies the operator O of transferring conflicting mass to the non-empty sets, i.e. $O(m_{C(1,2)})$.

This calculation completely does the work of our fusion rule, i.e. m_1® m_2 = $O(m_{C(1,2)})$ that we compute for decision-making proposes.

c) When a new mass, m3, arises, we combine using the conjunctive rule this mass m3 with the previous conjunctive rule's result mc(12), not with $O(m_{C(1,2)})$. Therefore: $m_{C(1,2)}$ © m_3 = $m_{C(C(1,2)3)}$ (by notation). One stores this results, while deleting the previous one stored.

d) Now again we apply the operator O to transfer the conflicting mass, i.e. compute ô $m_{C(C(1,2)3)}$ needed for decision-making.

e) …And so one the algorithm is continued for any number $n \geq 3$ of masses.

The properties of the conjunctive rule, i.e. associativity and satisfaction of the Markovian requirement, are transmitted to the fusion rule ® too.

This is the algorithm we use in DSmT in order to conserve the associativity and Markovian requirement for DSm hybrid rule and SDL improved rule for $n \geq 3$.

Depending on the type of problem to be solved we can use in DSmT either the hybrid rule, or the SDL rule, or a combination of both (i.e., partial conflicting mass is transferred using DSm hybrid, other conflicting mass is transferred using SDL improved rule).

Yet, this easy fusion algorithm can be extended to any rule which is composed from a conjunctive rule first and a transfer of conflicting mass second, returning the associativity and Markovian properties to that rule.

One can remark that the algorithm gives the same result if one applies the rule ® to $n \geq 3$ masses together, and then one does the transfer of conflicting mass.

Within DSmT we designed *fusion rules that can transfer a part of the conflicting mass to partial or total ignorance and the other part of the conflicting mass to non-empty initial sets*, depending on the type of application.

A non-associative rule that can be transformed through this algorithm into an associative rule is called *quasi-associative rule*. And similarly, a non-Markovian rule than can be transformed through this algorithm into a Markovian rule is called *quasi-Markovian rule*.

6. SDL-IMPROVED RULE

Let $T = \{t_1, t_2, \ldots, t_n\}$ be the frame of discernment and two masses m_1, m_2 : $G \to [0,1]$. One applies the conjunctive rule (1) or (2) depending on theory, then one calculates the conflicting mass (3). In SDL improved rule one transfers partial conflicting masses, instead of the total conflicting mass. If an intersection is empty, say $A \cap B = \emptyset$, then the mass $m(A \cap B)$ is transferred to A and B proportionally with respect to the non-zero sum of masses assigned to A and respectively B by the masses m_1, m_2. Similarly, if another intersection, say $A \cap C \cap D = \emptyset$, then again the mass $m(A \cap C \cap D)$ is transferred to A, C, and D proportionally with respect to the non-zero sum of masses assigned to A, C and respectively D by the masses m_1, m_2. And so on 'til all conflicting mass is distributed. Then one cumulates the corresponding masses to each non-empty set.

For two masses one has the formula:

For $\emptyset \neq A \in D^T$,

$$m_{SDLi}(A) = \sum_{\substack{X,Y \in G \\ X \cap Y = A}} m_1(X) m_2(X) + c_{12}(A) \sum_{\substack{X \in G \\ X \cap A = \Phi}} \frac{m_1(X) m_2(A) + m_1(A) m_2(X)}{c_{12}(A) + c_{12}(X)} \quad (7)$$

where $c_{12}(A)$ is the non-zero sum of the mass matrix column corresponding to the set A, i.e.

$c_{12}(A) = m_1(A) + m_2(A) \neq 0.$ (8)

For more masses one applies the algorithm to formulas (7) and (8).

7. AD-HOC-ICITY OF FUSION RULES

Each fusion rule is more or less ad-hoc. Same thing for SDL improved. There is up to the present no rule that fully satisfies everybody. Let's analyze some of them.

Dempster's rule transfers the conflicting mass to non-empty sets proportionally with their resulting masses. What is the reasoning for doing this? Just to swallow the masses of nonempty sets in order to sum up to 1?

Smets's rule transfers the conflicting mass to the empty set. Why? Because, he says, we consider on open world where unknown hypotheses might be. Not convincing.

Yager's rule transfers the conflicting mass to the total ignorance. Should the conflicting mass be ignored?

Dubois-Prade's rule and DSm hybrid rule transfers the conflicting mass to the partial and total ignorances. Not completely justified either.

SDL improved rule is based on partial conflicting masses, transferred to the corresponding sets proportionally with respect to the non-zero sums of their assigned masses. But other weighting coefficients can be found. Inagaki (1991), Lefevre-Colot-Vannoorenberghe (2002) proved that there are infinitely many fusion rules based on the conjunctive rule and then on the transfer of the conflicting mass, all of them depending on the weighting coefficients that transfer that conflicting mass. How to choose them, what parameters should they rely on – that's the question! There is not a measure for this.

In my opinion, neither DSm hybrid rule nor SDLi rule are not more ad-hoc than other fusion rules.

"No matter how you do, people will have objections" (Wu Li).

8. NUMERICAL EXAMPLES

We show how it is possible to use the above fusion algorithm in order to transform a quasiassociative and quasi-Markovian rule into an associative and Markovian one. Let T = {A, B, C}, all hypotheses exclusive, and two masses m1, m2 that form the corresponding mass matrix:

	A	B	$A \cup C$
m_1	0.4	0.5	0.1
m_2	0.6	0.2	0.2

8.1 Let's take the DSm hybride rule:

8.1.1. Let's check the associativity:

a) First we use the DSm classic rule and we get at time t_1: $m_{DSmC12}(A) = 0.38$, $m_{DSmC12}(B) = 0.10$, $m_{DSmC12}(A \cup C) = 0.02$, $m_{DSmC12}(A \cap B) = 0{,}38$, $m_{DSmC12}(B \cap (A \cup C)) = 0.12$, and one stores this result. (S1)

b) One uses the DSm hybrid rule and we get: $m_{DSmH12}(A) = 0.38$, $m_{DSmH12}(B) = 0.010$, $m_{DSmH12}(A \cup C) = 0.02$, $m_{DSmH12}(A \cup B) = 0{,}38$, $m_{DSmH12}(A \cup B \cup C) = 0.12$. This result was computed because it is needed for decision making on two sources/masses only. (R1)

c) A new masses, m_3, arise at time t_2, and has to be taken into consideration, where $m_3(A) = 0.7$, $m_3(B) = 0.2$, $m_3(A \cup C) = 0.1$. Now one combines the result stored at (S1) with m_3, using DSm classic rule, and we get: $m_{DSmC(12)3}(A) = 0.318$, $m_{DSmC(12)3}(B) = 0.020$, $m_{DSmC(12)3}(A \cup C) = 0.002$, $m_{DSmC(12)3}(A \cap B) = 0{,}610$, $m_{DSmC(12)3}(B \cap (A \cup C)) = 0.050$, and one stores this result, while deleting (S1) (S2)

d) One uses the DSm hybrid rule and we get: $m_{DSmH(12)3}(A) = 0.318$, $m_{DSmH(12)3}(B) = 0.020$, $m_{DSmH(12)3}(A \cup C) = 0.002$, $m_{DSmH(12)3}(A \cup B) = 0{,}610$, $m_{DSmH(12)3}(A \cup B \cup C) = 0.050$. This result was also computed because it is needed for decision making on three sources/masses only. (R2)

e) And so on for as many masses as needed.

First combining the last masses, m_2, m_3, one gets: $m_{DSmC23}(A) = 0.62$, $m_{DSmC23}(B) = 0.04$, $m_{DSmC23}(A \cup C) = 0.02$, $m_{DSmC23}(A \cap B) = 0{,}26$, $m_{DSmC23}(B \cap (A \cup C)) = 0.06$, and one stores this result. (S3)

Using DSm hybrid one gets: $m_{DSmH23}(A) = 0.62$, $m_{DSmH23}(B) = 0.04$, $m_{DSmH23}(A \cup C) = 0.02$, $m_{DSmH23}(A \cup B) = 0{,}26$, $m_{DSmH23}(A \cup B \cup C) = 0.06$. Then, combining m_1 with m_{DSmC23} {stored at (S3)} using DSm classic and then using DSm hybrid one obtain the same result (R2). If one applies the DSm hybride rule to all three masses together one gets the same result (R2).

We showed on this example that DSm hybrid applied within the algorithm is associative (i.e. using the notation DSmHa one has): $DSmHa((m_1, m_2), m_3) = DSmHa(m_1, (m_2, m_3)) = DSmHa(m_1, m_2, m_3)$.

8.1.2. Let's check the Markov requirement:

a) Combining three masses together using DSm classic:

	A	B	$A \cup C$	(M1)
m_1	0.4	0.5	0.1	
m_2	0.6	0.2	0.2	
M_3	0.7	0.2	0.1	

one gets as before: $m_{DSmC123}(A) = 0.318$, $m_{DSmC123}(B) = 0.020$, $m_{DSmC123}(A \cup C) = 0.002$, $m_{DSmC123}(A \cap B) = 0{,}610$, $m_{DSmC123}(B \cap (A \cup C)) = 0.050$, and one stores this result in (S2).

b) One uses the DSm hybrid rule to transfer the conflicting mass and we get: $m_{DSmH123}(A) = 0.318$, $m_{DSmH123}(B) = 0.010$, $m_{DSmH123}(A \cup C) = 0.002$, $m_{DSmH123}(A \cup B) = 0{,}610$, $m_{DSmH123}(A \cup B \cup C) = 0.050$.

c) Suppose a new mass m_4 arises $m_4(A) = 0.5$, $m_4(B) = 0.5$, $m_4(A \cup C) = 0$. Use DSm classic to combine m_4 with $m_{DSmC123}$ and one gets: $m_4(A) = 0.5$, $m_4(B) = 0.5$, $m_4(A \cup C) = 0$. Use DSm classic to combine m_4 and $m_{DSmC123}$ and one gets: $m_{DSmC(123)4}(A) = 0.160$, $m_{DSmC(123)4}(B) = 0.010$, $m_{DSmC(123)4}(A \cup C) = 0$, $m_{DSmC(123)4}(A \cap B) = 0{,}804$, $m_{DSmC(123)4}(B \cap (A \cup C)) = 0.026$, and one stores this result in (S3).

d) Use DSm hybrid rule: $m_{DSmH(123)4}(A) = 0.160$, $m_{DSmH(123)4}(B) = 0.010$, $m_{DSmH(123)4}(A \cup C) = 0$, $m_{DSmH(123)4}(A \cup B) = 0{,}804$, $m_{DSmH(123)4}(A \cup B \cup C) = 0.026$. (R4)

Now, if one combines all previous four masses, m1, m2, m3, m4, together using first the DSm classic then the DSm hybrid one still get (R4). Whence the Markovian requirement. We didn't take into account any discounting of masses.

8.2. Let's use the SDL improved rule on the same example.

a) One considers the above mass matrix (M1) and one combines m_1 and m_2 using DSm classic and one gets as before: $m_{DSmC12}(A) = 0.38$, $m_{DSmC12}(B) = 0.10$, $m_{DSmC12}(A \cup C) = 0.02$, $m_{DSmC12}(A \cap B) = 0{,}38$, $m_{DSmC12}(B \cap (A \cup C)) = 0.12$, and one stores this result in (S1).

b) One transfers the partial conflicting mass 0.38 to A and B respectively: x/1 = y/0.7 = 0.38/1.8; whence x=0.223529, y=0.156471. One transfers the other conflicting mass 0.12 to B and $A \cup C$ respectively: z/0.7 = w/0.3 = 0.12/1; whence z=0.084, w=0.036. One cumulates them to the corresponding sets and one gets: $m_{SDLi12}(A) = 0.38 + 0.223529 = 0.603529$; $m_{SDLi12}(B) = 0.10 + 0.156471 + 0.084 = 0.340471$; $m_{SDLi12}(A \cup C) = 0.2 + 0.036 = 0.056000$.

c) One uses the DSm classic rule to combine the above m_3 and the result in (S1) and one gets again: $m_{DSmH(12)3}(A) = 0.318$, $m_{DSmH(12)3}(B) = 0.020$, $m_{DSmH(12)3}(A \cup C) = 0.002$, $m_{DSmH(12)3}(A \cup B) = 0{,}610$, $m_{DSmH(12)3}(A \cup B \cup C) = 0.050$, and and one stores this result in (S2) while deleting (S1).

d) One transfers the partial conflicting masses 0.610 to A and B respectively, and 0.050 to B and $A \cup C$ respectively. Then one cumulates the corresponding masses and one gets: $m_{SDLi(12)3}(A) = 0.716846$; $m_{SDLi(12)3}(B) = 0.265769$; $m_{SDLi(12)3}(A) = 0.017385$.

Same result we obtain if one combine first m_2 and m_3, and the result combine with m_1, or if we combine all three masses m_1, m_2, m_3 together.

9. VACUOUS BELIEF FUNCTION

SDLi seems to satisfy Smets's impact of VBF (Vacuum Belief Function. i.e. m(T)=1), because there is no partial conflict ever between the total ignorance T and any of the sets of G. Since in SDLi the transfer is done after each partial conflict, T will receive no mass, not being involved in any partial conflict. Thus VBF acts as a neutral elements with respect with the composition of masses using SDLi. The end combination does not depend on the number of VBF's included in the combination.

Let's check this on the previous example. Considering the first two masses m_1 and m_2 in (M1) and using SDLi one got: $m_{SDLi12}(A) = 0.603529$; $m_{SDLi12}(B) = 0.340471$; $m_{SDLi12}(A \cup C) = 0.056000$.

Now let's combine the VBF too:

	A	B	$A \cup C$	$A \cup B \cup C$	(M2)
VFB	0	0	0	1	
m_1	0.4	0.5	0.1	0	
m_2	0.6	0.2	0.2	0	

a) One uses the DSm classic rule to combine all three of them and one gets again: $m_{DSmC(VFB)}(A) = 0.38$, $m_{DSmC(VFB)}(B) = 0.10$, $m_{DSmC(VFB)}(A \cup C) = 0.02$, $m_{DSmC(VFB)}(A \cap B) = 0{,}38$, $m_{DSmC(VFB)}(B \cap (A \cup C)) = 0.12$, $m_{DSmC(VFB)}(A \cup B \cup C) = 0$ and one stores this result in (S1).

b) One transfers the partial conflicting mass 0.38 to A and B respectively: x/1 = y/0.7 = 0.38/1.8; whence x=0.223529, y=0.156471. One transfers the other conflicting mass 0.12 to B and A4C respectively: z/0.7 = w/0.3 = 0.12/1; whence z=0.084, w=0.036. Therefore nothing is transferred to the mass of $A \cup B \cup C$, then the results is the same as above: $m_{SDLi12}(A) = 0.603529$; $m_{SDLi12}(B) = 0.340471$; $m_{SDLi12}(A \cup C) = 0.056000$.

10. CONLUSIONS

We propose an elementary fusion algorithm that transforms any fusion rule (which first uses the conjunctive rule and then the transfer of conflicting masses to non-empty sets, except for Smets's rule) to an associative and Markovian rule. This is very important in information fusion since the order of combination of masses should not matter, and for the Markovian requirement the algorithm allows the storage of information of all previous masses into the last result (therefore not necessarily to store all the masses), which later will be combined with the new mass.

In DSmT, using this fusion algorithm for $n \geq 3$ sources, the DSm hybrid rule and SDLi are commutative, associative, Markovian, and SDLi also satisfies the impact of vacuous belief function.

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ASSESSING THE RELIABILITY OF MECHANICAL SYSTEMS AFET ANTIAIRCRAFT CANNON AUTOMATIC

Doru LUCULESCU

"Henri Coandă" Air Force Academy, Brasov, Romania

***Abstract**: The reliability calculus is made taking into consideration the specific and the particularities of each system or use of it concrete. For solving this problem it is necessary to know the relations between system and element parameters. It was made the logical diagram of the method of system reliability using decomposition. The reliability function for the time duration is pre-established resulting from execution of a sufficient number of Monte Carlo simulation technique simulations trough considered for the system, made it to get higher confidence levels of estimated output parameters.*

***Keywords**: reliability of mechanical systems, antiaircraft cannon, Monte-Carlo simulation technique.*

1. PRELIMINARY

To determine the reliability of forecasting antiaircraft gun carriage mechanisms automatically, can be used analytical methods are used when computing analytical relations, custom cases in which resistance and distribution applications are specific laws reviewed equipment components, or method of using existing data in the literature regarding the intensity of failure of machine parts in the composition of the mechanical system analyzed. To achieve the numerical evaluation of forecast reliability function antiaircraft gun carriage mechanisms studied, considered as a complex system, using Monte-Carlo simulation technique. This method is related to problems with random data, random variables modeling in order to assess their reliability. Generate random numbers based on the values of a selection on a random variable X, which has a given interval [0, k], $k \in N$ a uniform distribution. Achieving a certain way random numbers uniformly distributed on the whole [0, k], k is sufficiently large, u can get uniform random numbers in the interval [0,1] by the transformation: $u = x / k$, $0 \leq x \leq k$. Establishing the number of simulations required result by Kolmogorov-Smirnov-test. Be n-number of simulations, L - the maximum difference between the empirical distribution function Fn (xi) and distribution function F theoretical (xi), obtained by simulation for a level of significance α. Values for the α and L, with $n > 35$ are presented in Table 1.

Table 1 Relations for determining the maximum difference between the empirical function and the theoretical distribution, the level of significance

α	0,20	0,15	0,10	0,05	0,01
L	$1,07/\sqrt{n-1}$	$1,14/\sqrt{n-1}$	$1,22/\sqrt{n-1}$	$1,36/\sqrt{n-1}$	$1,63/\sqrt{n-1}$

It is considered that the building blocks of machine mechanisms analyzed individual reliability functions that have exponential type with different failure rates.

2. DEVELOPMENT RELIABILITY BLOCK DIAGRAM

Reliability block diagram was developed based on the interconnections between

antiaircraft gun carriage constructive elements (MKOMAAG, 1998), as shown in Figure 1. Are also presented and connections with other gun systems analyzed complex components.

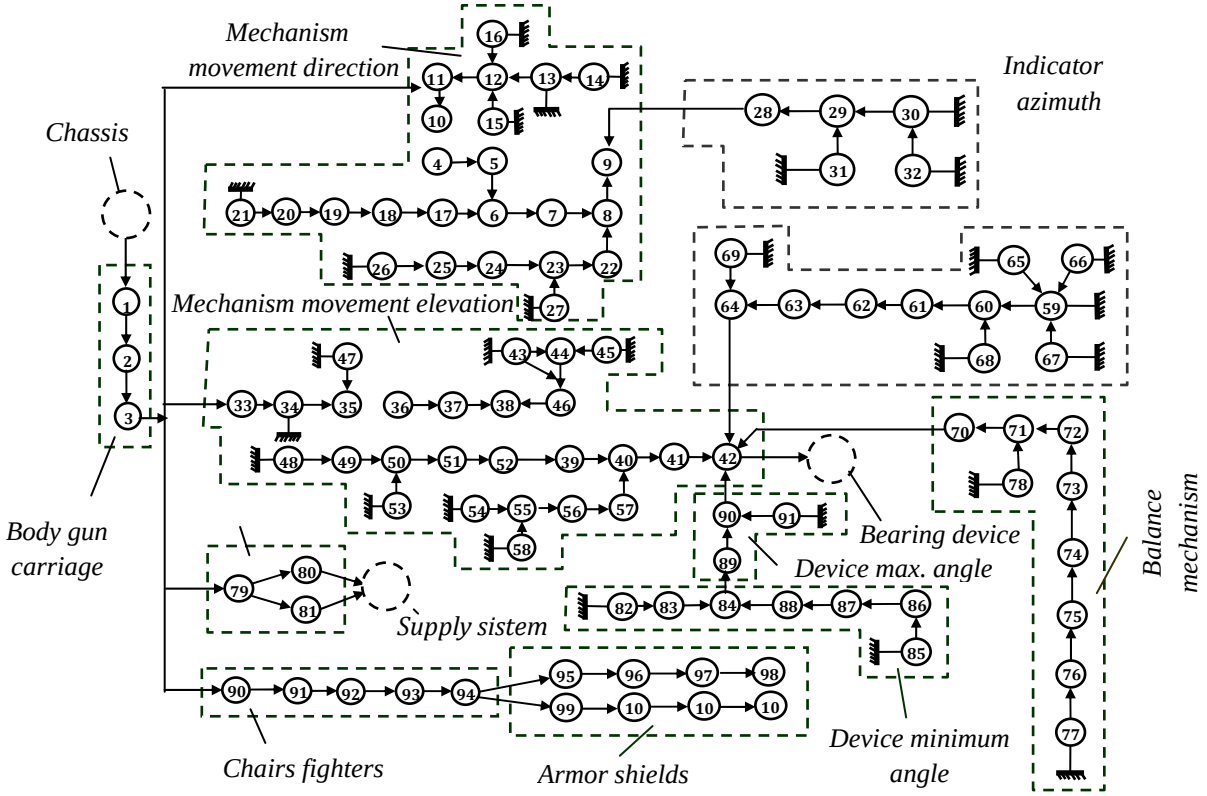

Fig. 1 Reliability block diagram antiaircraft gun carriage mechanisms

3. DETERMINATION OF RELIABILITY MECHANISMS AFET CANNON

For the simulation technique Monte-Carlo method, were originally established a total of 1000 simulations (nrs: = 1000) and the length of time [a, t] for which system reliability analysis is determined t: = 1000 hours.

3.1 Determination of body gun carriage forecast reliability.

- The structure function of the subsystem:

$$SA(e1, e2, e3) := e1 \cdot e2 \cdot e3 \quad (1)$$

- The number of constructive elements of the subsystem: n := 3

- Calculation of reliability of structural elements that compose the analyzed subsystem:

$$k := 1..3,\ j := 1..nrs,\ R_k := \exp(-\lambda_k \cdot t) \quad (2)$$

- Perform simulation state vector is given by:

$$RND_{i,j} := rnd(1),\ x_{i,j} := if(RND_{i,j} < R_i, 1, 0), \quad (1)$$

$$\lambda_k = \begin{bmatrix} 0.01510^{-6} \\ 3.53010^{-6} \\ 0.18010^{-6} \end{bmatrix},\ R_k = \begin{bmatrix} 0.999950 \\ 0.996476 \\ 0.998182 \end{bmatrix} \quad (3)$$

- Subsystem reliability resulting from the simulation is given by:

$$Sistem_j := SA[x_{1,j}, x_{2,j}, x_{3,j}],$$

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs};\ R := 0.994614 \quad (4)$$

3.2 Determination of reliability forecasting mechanism direction of movement direction.

- The structure function of the subsystem:

$$SA(e4, e5, e6, e7, e8, e9, e10, e11, e12, e13, e14, e15, e16, e17, e18, e19, e20, e21, e22, e23, e24, e25, e26, e27) := [1 - (1 - e10 \cdot e11 \cdot e12 \cdot e13 \cdot e14 \cdot e15 \cdot e16 \cdot e17 \cdot e18 \cdot e19 \cdot e20 \cdot e21 \cdot e22 \cdot e23 \cdot e24 \cdot e25 \cdot e26 \cdot e27)] \quad (5)$$

- The number of constructive elements of the subsystem: n := 24;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

k := 1 24, j := 1..nrs, R_k:= exp (-λ_k·t)

$$\lambda_k = \begin{bmatrix} 0.280\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.200\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.300\cdot10^{-6} \\ 0.980\cdot10^{-6} \\ 0.135\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.100\cdot10^{-6} \\ 0.002\cdot10^{-6} \\ 0.050\cdot10^{-6} \\ 0.220\cdot10^{-6} \\ 0.420\cdot10^{-6} \\ 0.090\cdot10^{-6} \\ 1.150\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.300\cdot10^{-6} \\ 0.002\cdot10^{-6} \\ 0.001\cdot10^{-6} \\ 0.300\cdot10^{-6} \\ 0.010\cdot10^{-6} \\ 0.050\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.030\cdot10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999720 \\ 0.999975 \\ 0.999800 \\ 0.999975 \\ 0.999700 \\ 0.999020 \\ 0.999865 \\ 0.999975 \\ 0.999900 \\ 0.999998 \\ 0.999950 \\ 0.999780 \\ 0.999580 \\ 0.999910 \\ 0.998850 \\ 0.999975 \\ 0.999700 \\ 0.999998 \\ 0.999999 \\ 0.999700 \\ 0.999970 \\ 0.999950 \\ 0.999975 \\ 0.999970 \end{bmatrix}$$

- Perform simulation state vector is given by: $RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$,1, 0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:=SA[$x_{1,j}$,$x_{2,j}$,$x_{3,j}$,$x_{4,j}$,$x_{5,j}$,$x_{6,j}$,$x_{7,j}$,$x_{8,j}$, $x_{9,j}$,$x_{10,j}$,$x_{11,j}$,$x_{12,j}$,$x_{13,j}$,$x_{14,j}$,$x_{15,j}$,$x_{16,j}$,$x_{17,j}$,$x_{18,j}$,$x_{19,j}$ $x_{20,j}$,$x_{21,j}$,$x_{22,j}$,$x_{23,j}$,$x_{24,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}, \quad R := 0.995244$$

3.3 Determination of reliability forecasting mechanism elevation motion.

- The structure function of the subsystem:

SA(e33,e34,e35,e36,e37,e38,e39,e40,e41,e42 e43,e44,e45,e46,e47,e48,e49,e50,e51,e52,e53, e54,e55,e56,e57,e58):=e33·e34·e35·e36·e37· e38·e39·e40·e41·e42·e43e44·e45·e46·e47·e48· e49·e50·e51·e52·e53·e54·e55·e56·e57·e58 (6)

- The number of constructive elements of the subsystem: n:= 26;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

k := 1 ..26, j := 1 ..nrs, R_k:= exp (-λ_k·t)

$$\lambda_k = \begin{bmatrix} 0.030\cdot10^{-6} \\ 0.001\cdot10^{-6} \\ 0.150\cdot10^{-6} \\ 0.030\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.050\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.300\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.010\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.030\cdot10^{-6} \\ 0.001\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.001\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.030\cdot10^{-6} \\ 0.022\cdot10^{-6} \\ 0.040\cdot10^{-6} \\ 0.200\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.002\cdot10^{-6} \\ 0.025\cdot10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999970 \\ 0.999999 \\ 0.999850 \\ 0.999970 \\ 0.999975 \\ 0.999950 \\ 0.999975 \\ 0.999700 \\ 0.999980 \\ 0.999990 \\ 0.999980 \\ 0.999975 \\ 0.999975 \\ 0.999970 \\ 0.999999 \\ 0.999975 \\ 0.999999 \\ 0.999980 \\ 0.999980 \\ 0.999970 \\ 0.999978 \\ 0.999960 \\ 0.999800 \\ 0.999975 \\ 0.999998 \\ 0.999975 \end{bmatrix}$$

- Perform simulation state vector is given by: $RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$,1,0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:=SA[$x_{1,j}$,$x_{2,j}$,$x_{3,j}$,$x_{4,j}$,$x_{5,j}$,$x_{6,j}$,$x_{7,j}$,$x_{8,j}$, $x_{9,j}$,$x_{10,j}$,$x_{11,j}$,$x_{12,j}$,$x_{13,j}$,$x_{14,j}$,$x_{15,j}$,$x_{16,j}$,$x_{17,j}$,$x_{18,j}$,$x_{19,j}$,$x_{20,j}$,$x_{21,j}$,$x_{22,j}$,$x_{23,j}$,$x_{24,j}$,$x_{25,j}$,$x_{26,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}, \quad R := 0.997672$$

3.4 Determination of reliability forecast balance mechanism.

- The structure function of the subsystem:

SA(e59,e60,e61,e62,e63,e64,e65,e66,e67,e68 e69):=e59·e60·e61·e62·e63·e64·e65·e66·e67· e68·e69 (7)

- The number of constructive elements of the subsystem: n:= 11;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

k := 1 ..11, j := 1 ..nrs, R_k:= exp (-λ_k·t)

$$\lambda_k = \begin{bmatrix} 0.010\cdot10^{-6} \\ 0.220\cdot10^{-6} \\ 0.040\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.130\cdot10^{-6} \\ 0.010\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.010\cdot10^{-6} \\ 0.018\cdot10^{-6} \\ 0.012\cdot10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999990 \\ 0.999960 \\ 0.999980 \\ 0.999870 \\ 0.999988 \\ 0.999990 \\ 0.999980 \\ 0.999975 \\ 0.999990 \\ 0.999982 \\ 0.999780 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$,1,0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:=SA[$x_{1,j}$,$x_{2,j}$,$x_{3,j}$,$x_{4,j}$,$x_{5,j}$,$x_{6,j}$,$x_{7,j}$,$x_{8,j}$,$x_{9,j}$,$x_{10,j}$,$x_{11,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; \quad R := 0.999485.$$

3.5 Determination of forecast reliability of the locking mechanism in the elevation.

- The structure function of the subsystem:

SA(e70,e71,e72,e73,e74,e75,e76,e77,e78): = e77·e76·e75·e74·e73·e72·e78·e71·e70 (8)

- The number of constructive elements of the subsystem: n:= 9;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

k := 1 ..9, j := 1 ..nrs, R_k:= exp (-λ_k·t)

- Perform simulation state vector is given by:

$RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$,1, 0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:=SA[$x_{1,j}$,$x_{2,j}$,$x_{3,j}$,$x_{4,j}$,$x_{5,j}$,$x_{6,j}$,$x_{7,j}$,$x_{8,j}$,$x_{9,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; \quad R := 0.999414.$$

$$\lambda_k = \begin{bmatrix} 0.220\cdot10^{-6} \\ 0.015\cdot10^{-6} \\ 0.010\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.040\cdot10^{-6} \\ 0.018\cdot10^{-6} \\ 0.120\cdot10^{-6} \\ 0.042\cdot10^{-6} \\ 0.001\cdot10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999780 \\ 0.999985 \\ 0.999990 \\ 0.999980 \\ 0.999960 \\ 0.999882 \\ 0.999880 \\ 0.999958 \\ 0.999999 \end{bmatrix}$$

3.6 Determination of forecast reliability tray discharge tubes and links.

- The structure function of the subsystem:

$$SA(e79, e80, e81) = e79 \cdot e80 \cdot e81 \quad (9)$$

- The number of constructive elements of the subsystem: n := 3;

- Calculation of reliability of structural element that compose the analyzed subsystem:

k := 1 ..3, j := 1 ..nrs, R_k:= exp (-λ_k·t)

$$\lambda_k = \begin{bmatrix} 0.020\cdot10^{-6} \\ 0.040\cdot10^{-6} \\ 0.001\cdot10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999960 \\ 0.999882 \\ 0.999880 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$, 1,0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:= SA [$x_{1,j}$, $x_{2,j}$, $x_{3,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; \quad R := 0.999974.$$

3.7 Determination of forecast reliability of the device to limit maximum elevation angle.

- The structure function of the subsystem:

$$SA\,(e89, e90, e91) = e89 \cdot e90 \cdot e91 \quad (10)$$

- The number of constructive elements of the subsystem: n := 3;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

$k := 1 ..3, j := 1 ..nrs, R_k := \exp(-\lambda_k \cdot t)$

$$\lambda_k = \begin{bmatrix} 0.025\cdot10^{-6} \\ 0.080\cdot10^{-6} \\ 0.100\cdot10^{-6} \end{bmatrix}, R_k = \begin{bmatrix} 0.999975 \\ 0.999920 \\ 0.999900 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{i,j} := rnd(1), x_{i,j} := if(RND_{i,j} < R_i, 1, 0)$

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j := SA[x_{1,j}, x_{2,j}, x_{3,j}]$

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; R := 0.999790.$$

3.8 Determination of forecast reliability of the device to limit minimum elevation angle.

- The structure function of the subsystem:

$SA(e82,e83,e84,e85,e86,e87,e88) := e82\cdot e83\cdot e84\cdot e85\cdot e86\cdot e87\cdot e88$ (11)

- The number of constructive elements of the subsystem: n := 7;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

$k := 1 ..7, j := 1 ..nrs, R_k := \exp(-\lambda_k \cdot t)$

$$\lambda_k = \begin{bmatrix} 0.045\cdot10^{-6} \\ 0.030\cdot10^{-6} \\ 0.020\cdot10^{-6} \\ 0.025\cdot10^{-6} \\ 0.080\cdot10^{-6} \\ 0.100\cdot10^{-6} \\ 0.040\cdot10^{-6} \end{bmatrix}, R_k = \begin{bmatrix} 0.999955 \\ 0.999970 \\ 0.999980 \\ 0.999975 \\ 0.999920 \\ 0.999900 \\ 0.999960 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{ij} := rnd(1) x_{i,j} := if(RND_{i,j} < R_i, 1, 0)$

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j := SA[x_{1,j}, x_{2,j}, x_{3,j}, x_{4,j}, x_{5,j}, x_{6,j}, x_{7,j}]$

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; R := 0.999660.$$

3.9 Determination of reliability forecasting mechanism azimuth indicator.

- The structure function of the subsystem:

$SA(e28,e29,e30,e31,e32) := e28\cdot e29\cdot e30\cdot 31\cdot e32$ (12)

- The number of constructive elements of the subsystem: n := 5;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

$k := 1 ..5, j := 1 ..nrs, R_k := \exp(-\lambda_k \cdot t)$

$$\lambda_k = \begin{bmatrix} 0.010\cdot10^{-6} \\ 0.005\cdot10^{-6} \\ 0.005\cdot10^{-6} \\ 0.150\cdot10^{-6} \\ 0.025\cdot10^{-6} \end{bmatrix}, R_k = \begin{bmatrix} 0.999990 \\ 0.999995 \\ 0.999995 \\ 0.999850 \\ 0.999975 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{i,j} := rnd(1), x_{i,j} := if(RND_{i,j} < R_i, 1, 0)$

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j := SA[x_{1,j}, x_{2,j}, x_{3,j}, x_{4,j}, x_{5,j}]$

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; R := 0.999805$$

3.10 Determination of the protective shield of forecast reliability.

- The structure function of the subsystem:

$SA(e95,e96,e97,e98,e99,e100,e101,e102) := (1-(1-e95\cdot e96\cdot e97\cdot e98)\cdot(1e99\cdot e100\cdot e101\cdot e102))$ (13)

- The number of constructive elements of the subsystem: n := 8;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

$k := 1 ..8, j := 1 ..nrs, R_k := \exp(-\lambda_k \cdot t)$

- Perform simulation state vector is given by:

$RND_{i,j} := rnd(1), x_{i,j} := if(RND_{i,j} < R_i, 1, 0)$

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j := SA[x_{1,j}, x_{2,j}, x_{3,j}, x_{4,j}, x_{5,j}, x_{6,j}, x_{7,j}, x_{8,j},]$

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs}; R := 0.9999999977.$$

3.11 Determination of forecast reliability seat fighters.

- The structure function of the subsystem:

$$SA(e90,e91,e92,e93,e94) := e90 \cdot e91 \cdot e92 \cdot e93 \cdot e94 \quad (14)$$

- The number of constructive elements of the subsystem: n := 5;

- Calculation of reliability of structural elements that compose the analyzed subsystem:

k := 1 ..5, j := 1 ..nrs, R_k:= exp (-λ_k·t)

$$\lambda_k = \begin{bmatrix} 0.030 \cdot 10^{-6} \\ 0.130 \cdot 10^{-6} \\ 0.050 \cdot 10^{-6} \\ 0.040 \cdot 10^{-6} \\ 0.025 \cdot 10^{-6} \end{bmatrix}, \quad R_k = \begin{bmatrix} 0.999970 \\ 0.999870 \\ 0.999951 \\ 0.999960 \\ 0.999975 \end{bmatrix}$$

- Perform simulation state vector is given by:

$RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j} < R_i$, 1,0)

- Subsystem reliability resulting from the simulation is given by:

$Sistem_j$:= SA [$x_{1,j}$, $x_{2,j}$, $x_{3,j}$, $x_{4,j}$, $x_{5,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs} \quad ; \quad R := 0.999726$$

The reliability of mechanical systems afet antiaircraft cannon automatic is determined by following the same steps to calculate the Monte Carlo simulation method, according to its own structure.

The structure function of the system:

$$SA(s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11) := s1 \cdot s2 \cdot s3 \cdot s4 \cdot s5 \cdot s6 \cdot s7 \cdot s8 \cdot s9 \cdot s10 \cdot s11 \quad (15)$$

- The number of subsystems of the system:n := 11;

- Calculation of reliability of structural system that compose the analyzed system:

k := 1 ..11

j := 1 ..nrs

- Perform simulation state vector is given by:

$RND_{i,j}$:= rnd (1), $x_{i,j}$:= if($RND_{i,j}$<R_i,1,0)

- System reliability resulting from the simulation is given by:

$Sistem_j$:=SA[$x_{1,j}$,$x_{2,j}$,$x_{3,j}$,$x_{4,j}$,$x_{5,j}$,$x_{6,j}$,$x_{7,j}$,$x_{8,j}$, $x_{9,j}$,$x_{10,j}$,$x_{11,j}$]

$$R := \frac{\sum_{j=1}^{nrs} Sistem_j}{nrs} ; \quad R := 0.985460$$

$$R_k = \begin{bmatrix} 0.994614 \\ 0.995244 \\ 0.999485 \\ 0.997672 \\ 0.999414 \\ 0.999974 \\ 0.999790 \\ 0.999660 \\ 0.999805 \\ 0.999999 \\ 0.999726 \end{bmatrix}$$

4. CONCLUSIONS

Research findings developed during the development work have revealed the following conclusions: In the study of mechanical systems afet antiaircraft cannon automatic, developing functional connections graphs and use Monte Carlo simulation technique of possible values of parameters, the result that there is a very large number of elements connected in series, this leading to a decrease in system reliability. It requires a redesign of the logical schemes of reliability in order to reduce the number of elements in series. Proposals are made in this regard (Luculescu, 2000), to reduce the number of elements in series constructive mechanisms of movement direction and elevation of anti-aircraft gun automatic. The proposed constructive alternatives analyzed will increase the operability of equipment, possibly with other similar equipment interconnection, all these in turn being driven by a modern fire control unit.

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INTEGRATING QUANTUM TECHNIQUES INTO SECURE SOCKET LAYER PROTOCOL

Gabriela MOGOŞ

University of Oradea, Oradea, Romania

***Abstract**: The Secure Sockets Layer protocol is a protocol layer which may be placed between a reliable connection-oriented network layer protocol and the application protocol layer. Secure Sockets Layer provides for secure communication between client and server by allowing mutual authentication, the use of digital signatures for integrity, and encryption for privacy. The protocol is designed to support a range of choices for specific algorithms used for cryptography, digests, and signatures. This allows algorithm selection for specific servers to be made based on legal, export or other concerns, and also enables the protocol to take advantage of new algorithms. This work proposes the replacement of classical techniques of client-server authentication by a quantum one, which is not vulnerable to the cybernetic attacks, and which solves the problem of Secure Sockets Layer protocol security*

***Keywords**: Secure Socket Layer protocol, qutrit, quantum cryptography.*

1. INTRODUCTION

In the last years, the Internet is more and more used in business activities. As it is commonly known, both the users' authentication and the access authorization are realized based on username and password. However, there are two weak points concerning the security:

- The data transmitted between the web server and the client's browser are not protected at interception, and it is possible for a person to be able to intercept confidential information, as the passwords or the data about credit cards, bank accounts etc., which circulate between the client's browser and the web server;
- While the web server presents a reasonable security level reported to the client user, the client has no possibility to establish if the web server is the correct one.

The Secure Sockets Layer (SSL) protocol has the intention to assure a private communication channel between the web server and the client's browser, and in the same time to assure the clients that the server to which they are connected is the real one. For this it is used the SSL certificate, which is a digitally signed certificate. The Secure Socket Layer protocol is a client/server protocol that provides the following basic security services to the communicating peers:

- Confidentiality - by the use of an encrypting algorithm;
- Authentication - by the use of digital certificates;
- The control of the integrity (without recovery) - by the use of some algorithms for the integrity of the messages.

Secure Socket Layer works by combining public key cryptography and secret key encryption to ensure data confidentiality. In the classical version, the Rivest-Shamir-Adleman public key algorithm is used to generate the certificates and the public and private key used pairs utilized in Secure Socket Layer. When a client connects to a server that is configured for Secure Socket Layer, a Secure Socket Layer handshake process is initiated with the server. The server at this stage has already obtained a server certificate from a Certificate Authority (CA). A Certificate Authority (CA) can be defined as an entity that generates and validates digital certificates. The Certificate Authority adds its own signature to the public key of the client.

This essentially indicates that the public key can be considered valid, by those parties that trust the Certificate Authority.

This work proposes the replacement of the existent Secure Socket Layer handshake protocol techniques with quantum versions. The quantum versions proposed substitute the authentication procedure, as well as the method of secret key distribution. The quantum versions use tri-dimensional quantum systems - qutrits, which are not vulnerable to the cybernetic attacks, assure the correct authentication, and determine giving up the long row of authentication certifications used in the classical case for removing any suspicions.

2. AN OVERVIEW OF THE SECURE SOCKET LAYER - HANDSHAKE

The Secure Socket Layer protocol itself is made up from two sub protocols: the Secure Socket Layer - Record protocol defines the method employed to transmit data and the Secure Socket Layer - Handshake protocol uses the record protocol to perform a two-way handshake. The Secure Socket Layer - Handshake Protocol is layered on top of the Secure Socket Layer - Record Protocol. It allows a client and server to authenticate each other and to negotiate items like cipher suites and compression methods. Each time a Secure Socket Layer session is initiated an exchange of messages, known as the handshake, must be performed. This handshake allows the server to authenticate itself to the client and optionally allows the client to authenticate itself to the server.

In the classical case, after authentication the client and server cooperate to generate symmetrical session keys which will be used for encryption/decryption and tamper detection throughout the session. The handshake may also be initiated at any time during a given session to re authenticate the two hosts and generate new cryptographic settings. The handshake uses public key encryption to communicate securely.

The most important part of the handshake is the authentication of the server. If this is corrupt all further generation of session keys will be corrupt and the entire Secure Socket Layer session will be insecure. The server is authenticated via a digital certificate which it sends to the client and the clients will proceed then to validate the identity of the host that the certificate claims to represent. A digital certificate contains information such as the certificate version, serial number, signature, issuer, and validity period, among other information.

3. QUANTUM VERSION OF THE SECURE SOCKET LAYER - HANDSHAKE

The Secure Socket Layer - handshake process occurs between a client and a server to negotiate the secret key encryption algorithm which the client and the server will utilize to encrypt the data which is transmitted in the Secure Socket Layer session. The most important part of the Secure Socket Layer - handshake is the authentication of the server. If this is corrupt all further generation of session keys will be corrupt and the entire Secure Socket Layer session will be insecure. The server is authenticated via a digital certificate that it sends the client and the clients will proceed then to validate the identity of the host that the certificate claims to represent. A digital certificate contains information such as the certificate version, serial number, signature, issuer, and validity period, among other information.

The procedure of generation of a quantum certificate by the provider of certificates is based on the method of encoding the state of two non-entangled qubits in a qutrit introduced by Grudka and Wójcik (2003). We start from the idea that the information contained by the digital certificate (the owner's public key; the owner's Distinguished Name; the Distinguished Name of the Certificate Authority (CA) that is issuing the certificate; the date from which the certificate is valid; the expiry date of the certificate; a version number; a serial number) are encoded in elementary units of the quantum information, i.e. qubits.

The encoding of two non-entangled qubits in a qutrit is presented as follows. Suppose there are two qubits with the states:

$$\begin{aligned} |\Psi\rangle_1 &= a_1|0\rangle_1 + b_1|1\rangle_1 \\ |\Psi\rangle_2 &= a_2|0\rangle_2 + b_2|1\rangle_2 \end{aligned} \quad (1)$$

The total state of these two qubits is:

$$|\Psi\rangle = |\Psi\rangle_1|\Psi\rangle_2 = (a_1|0\rangle_1 + b_1|1\rangle_1)$$

$$(a_2|0\rangle_2 + b_2|1\rangle_2) = a_1a_2|0\rangle_1|0\rangle_2 + \quad (2)$$

$$+ a_1b_2|0\rangle_1|1\rangle_2 + b_1a_2|1\rangle_1|0\rangle_2 + b_1b_2|1\rangle_1|1\rangle_2$$

The encoding operation then consists of the following mapping:

$$|0\rangle = |0\rangle_1|0\rangle_2;\ |1\rangle = |0\rangle_1|1\rangle_2;\ |2\rangle = |1\rangle_1|1\rangle_2$$

The state $|1\rangle_1|0\rangle_2$ is filtered out in the mapping which is necessary in order to accommodate the two qubits into a single qutrit.

The normalized state of a qutrit (Melikidze *et al.*, 2004: 014435) after encoding is written as state (3):

$$|\Psi\rangle = \frac{1}{\sqrt{1-|b_1|^2|a_2|^2}}\left(a_1a_2|0\rangle + a_1b_2|1\rangle + b_1b_2|2\rangle\right) \quad (3)$$

In the process of generation of a quantum certificate we will use both the qubits belonging to the server, and the qubits belonging to the client, who will be encoded two by two (a server-qubit and a client-qubit) in qutrits which will realize the certificate. The certificate thus obtained could be used both for the authentication of the server to the client, and for the client's authentication, without the need of further exchange of certificates.

A Secure Socket Layer session always begins with an exchange of messages called the Secure Socket Layer - handshake. The handshake allows the server to authenticate itself to the client using quantum techniques.

The steps which need to be followed in *the client-server authentication* in the quantum version included in the Secure Socket Layer handshake protocol can be resumed as follows:

1. The owner of a site who wishes to use the Secure Socket Layer protocol sends an application for a certificate to a certificate provider.

2. The certificate provider works together with a Certificate Authority to whom he sends the application received from the client. After checking if the certificate application is available and if it comes from the source which he pretends he is representing, he creates a certificate which he then encodes with his private key. It is as though he "signed" the certificate. This signature consists of a row of qutrits placed at the beginning of the row of qutrits composing the certificate. The certificate is then sent to the site owner who asked for it.

One thing should be mentioned here, which is the fact that each of the qutrits of the "signature" are obtained through encoding the state of two non-entangled qubits, one qubit of every qutrit contributing to the construction of the public key, and the other qubit which was left - to the construction of the private key. In the case when the belonging of the certificate is contested, or when an intruder interposes between the applicant and the authority and tries the interception, the extraction, and the substitution of the "signature", the Certificate Authority can use the qubits of the private key to reconstruct the qutrits of the "signature" demonstrating the validity of the certificate.

The certificate contains qutrits with the state obtained through the encoding of the states of two non-entangled qubits, one belonging to the server (used in the procedure of server-client authentication), the other belonging to the client (used in the procedure of client - server authentication). Using such certificates, the client-server authentication can be realized for both parties without the need of further exchange of certificates.

3. After the server receives the digital certificate from the Certificate Authority (CA), from now on, every time a client browser compatible with Secure Socket Layer is connected to the server, this certificate will be send to the client browser. In addition, the client receives information related to the bi-dimensional subspace (base vectors) necessary for decoding the qutrits of the certificate, and for the extraction of the qubits that are checking the authenticity of the server. Similarly, for the client's authentication, the server will receive information related to the

bi-dimensional subspace (base vectors) which must be used in the decoding of the qutrits of the certificate, and in the extraction of the client's qubits. This exchange of information between the two parties is realized after the authenticity of the certificate was checked.

4. The client browser, who trusts the Certificate Authority (CA) emitting the certificate, validates the certificate with the public key of the Certificate Authority. The public key contains information related to the bi-dimensional subspace (base vectors) necessary in the procedure of decoding the qutrits from the "signature" of the Certificate Authority. If the qubits of the "signature" applied by the Certificate Authority were obtained, then the validity of the certificate is certified.

After the client assured himself of the validity of the certificate, we will continue with the procedure of client-server authentication.

The authentication mechanism is based on the study realized by Bartuśková *et al.* (2003) according to which from a qutrit with the state (3) one qubit can be perfectly extracted. For the successive extraction of the two qubits it is necessary to project the qutrit on bi-dimensional subspaces, where the projections obtained are:

$$\begin{aligned} &P_{1+} = |1\rangle\langle 1| + |2\rangle\langle 2|; \quad P_{1-} = |0\rangle\langle 0|; \\ &P_{2+} = |0\rangle\langle 0| + |1\rangle\langle 1|; \quad P_{2-} = |2\rangle\langle 2| \end{aligned} \tag{4}$$

As a result, each of the parties will use the information related to the bi-dimensional subspaces (base vectors) where the qutrits of the certificate must be projected, consequently realizing the client-server authentication.

After finishing the authentication process, the parties will continue with the generation of encrypting keys. For this they will use the H. Bechmann-Pasquinucci and A. Peres protocol [2] which generates a symmetrical key which will be used afterwards in the encryption/decryption of the information exchanged between client and server.

The H. Bechmann-Pasquinucci and A. Peres protocol (2000:3313) extended the distribution protocol of the quantum key for systems with three states, the so called qutrits. For the preparation of the states of the qutrits which will be sent to the client, the server chooses between any base vectors $|l\rangle$ and $|m\rangle$ belonging to different bases satisfying the condition: $|\langle l|m\rangle|^2 = 1/3$. As a result, the server will use some bases called mutually unbiased bases (Ivanovic, 1981:3241; Wooters, 1986: 391). Suppose the first base chosen arbitrarily is: $\{|\alpha\rangle, |\beta\rangle, |\gamma\rangle\}$. The other bases are obtained by the application of the discrete Fourier transformations.

The first base:

$$\begin{cases} |\alpha'\rangle = (|\alpha\rangle + |\beta\rangle + |\gamma\rangle)/\sqrt{3} \\ |\beta'\rangle = (|\alpha\rangle + e^{2\pi\pi i/}|\beta\rangle + e^{4\pi\pi i/}|\gamma\rangle)/\sqrt{3} \\ |\gamma'\rangle = (|\alpha\rangle + e^{4\pi\pi i/}|\beta\rangle + e^{2\pi\pi i/}|\gamma\rangle)/\sqrt{3} \end{cases} \tag{5}$$

The second base is obtained through cyclical permutations:

$$\begin{cases} |\alpha''\rangle = (e^{2\pi\pi i/}|\alpha\rangle + |\beta\rangle + |\gamma\rangle)/\sqrt{3} \\ |\beta''\rangle = (|\alpha\rangle + e^{2\pi\pi i/}|\beta\rangle + |\gamma\rangle)/\sqrt{3} \\ |\gamma''\rangle = (|\alpha\rangle + |\beta\rangle + e^{2\pi\pi i/}|\gamma\rangle)/\sqrt{3} \end{cases} \tag{6}$$

The third base is obtained through cyclical permutations:

$$\begin{cases} |\alpha'''\rangle = (e^{4\pi\pi i/}|\alpha\rangle + |\beta\rangle + |\gamma\rangle)/\sqrt{3} \\ |\beta'''\rangle = (|\alpha\rangle + e^{4\pi\pi i/}|\beta\rangle + |\gamma\rangle)/\sqrt{3} \\ |\gamma'''\rangle = (|\alpha\rangle + e^{4\pi\pi i/}|\beta\rangle + e^{4\pi\pi i/}|\gamma\rangle)/\sqrt{3} \end{cases} \tag{7}$$

The server randomly chooses one of the 12 states and sends it to the client. He randomly chooses one of the four bases and measures the state, then announces publicly what base he used, without telling the result he obtained. The server checks if the choice is correct. If it is, then both are in the possession of the same bits of information; if not, they give it up.

The procedure is repeated until the server and the client obtain a sufficiently big number of bits, the following steps being to correct the errors and to remove any residual information which an intruder could have introduced.

At this moment, both parties are in the possession of a symmetrical key, the Secure Socket Layer - handshake protocol ends, thus assuring a secure connection between a client

and a server through which any quantity of data could be sent securely.

4. CONCLUSIONS

The use the method of the encoding the state of two non-entangled qubits in a qutrit method in the authentication procedure determines giving up the long row of authentication certifications used in the classical case in order to remove the suspicions existent before starting the communication process. The main purpose of the protocol based on encoding the state of two non-entangled qubits in a qutrit is the fact that it offers a different conceptual way to solve some of the problems related to client-server authentication. The integration of quantum techniques bring an advantage in what concerns the security of the method, the no-cloning theorem, and the principle of irreversibility of quantum systems measurement, guaranteeing for it. The advantages consist in the improvement of the efficiency of the classical protocols, the detection of the intruders implying the comparison of a smaller number of bits as compared to the high probability that the intruder modifies the result expected by the parties involved in communication.

4. ACKNOWLEDGMENT

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A SECURE ACCESS SYSTEM TO MEDICAL DATABASES

Marian ALEXANDRU, Mihai ROMANCA

"Transilvania" University, Brasov, Romania

***Abstract**: In any distributed medical information system, health data security is very important. Therefore, data transmission is via secure protocols, for both smartcard and databases. In the current economical context is impossible to gather empirical data about a certain network, after deployment, because of high costs. Thus is imperative to design a simulation framework in order to be able to foresee any problems that might arise. The goal of this paper is to show the result of designing of healthcare network architecture and to create such a framework which is very important for a network interconnecting of healthcare facilities over vast geographical distances. It allows the study of key concepts, such as data security, scalability and modularity that are crucial in these types of networks.*

***Keywords**: Hospital information systems, Hospital network security, smartcard, VPN.*

1. INTRODUCTION

It is well known that medical institutions are implementing computer networks and hospital information system (HIS) technology. In the past years more and more healthcare institutions have adopted HIS integrated information systems to manage all the administrative, financial and clinical documents of a hospital. Such a system can enable: national sharing of information, improve patient doctor relationship, care provision and offer time, cost savings and convenience. An original approach for securing the access to a network that allows hospital actors to manage and have access to databases remotely is presented in this paper.

The paper (Tan *et al*, 2003) suggests the application of PKI (public-key cryptography infrastructure) and certificates to verify the authenticity of mobile users in the context of e-business and e-health information transactions. In (Xudong *et al*, 2005) the authors discusses the main consideration for integration of data, functions and workflow, among different and heterogeneous medical information systems in order to establish an enterprise hospital information system, and propose an architecture design system using digital neural network system in hospital. No aspects regarding the secure access and security of data are introduced. The paper (Scutaru *et al*, 2009) presents an original architecture, based on the concepts of SONA (Service Oriented Network Architecture) designed to take into consideration some important characteristics: scalability, integration with other existing hospital networks, remote and secure resource access, user friendliness, and complete data security. In (Cordos, 2008), the author proposes a three layer client-server architecture to be used in a HIS implementation for a Radiology Information System. The server resolves the problems of authentication, authorization, data security, privacy of access and protection.

Besides the proposed architecture, this paper includes a study of such a simulated network, using the Opnet Real Time Network Modeler. This section aims to validate the network's characteristics and functions according to its specifications.

2. ARCHITECTURE AND COMPONENTS

In response to the above mentioned healthcare system's needs we propose a

complete central resource distribution system, aiming to be implemented at a national-level. This system ensures secure communications, remote resource access and personnel management.

As a proof of concept the architecture (Fig. 1) is designed in such a way that it can be easily integrated in any existing infrastructure and its scalability characteristics being heavily taken into consideration. The client component has a campus network topology and is represented in the Fig. 1 by the Windows XP Client machine; it aims to simulate the behavior of a resources access public terminal. The access to medical resources is granted based on a SmartCard or eToken solution type. These login methods provide secure access to resources based on digital certificates. The database is located at the server site, represented by the Windows Server 2003 machine. This structural component has a server farm topology and contains a Domain Controller that manages users and a database server that holds the actual resources. The client and server sites are interconnected through the Infrastructure component (SmartCenter and SmartConsole), which control the gateways (firewalls FW1 and FW2) that aggregate outbound traffic from all the sites. This component ensures data security of the traffic passing through either public or private networks. Firewalls are placed at the ends of the client and server, providing securecommunication between them through a VPN (Virtual Private Network) tunnel.

2.1 Server Component. In order to implement a system that takes advantage of a strong authentication method for secure network connectivity and data security, a central management system must be implemented. This system should control and organize smart card tokens throughout the institution. Without a well structured system, token based authentication solutions can be difficult or even impractical for organizations to adopt. The server, from an end-product point of view, contains the databases meant to be accessed by the clients. There are various ways of implementing these databases; SQL, MySQL and Oracle are some examples. These databases should be stored at the central location, in order to be reachable by all clients. Their structure can be distributed over multiple servers, but this brings up synchronization issues. A mechanism that ensures the correct placement of information into the database must be implemented, so that no redundant entries are present.

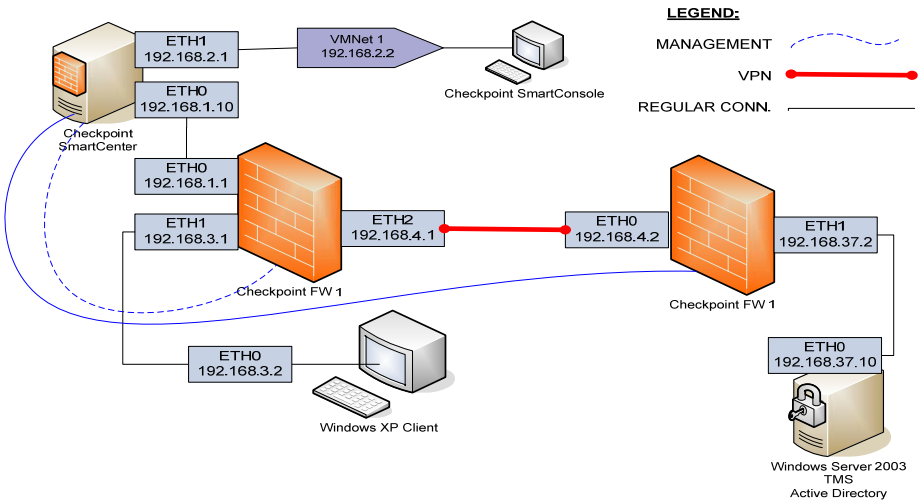

Fig. 1 Network Architecture Concept

2.2 Infrastructure Component. The part that connects the logical sides of client and server-farm is the infrastructure side. As our architecture proposes, the infrastructure has two components: gateways, which apply packet-filtering techniques on data leaving or arriving at the client side or the server-farm side, and the logical path between sites. The infrastructure component ensures security of data passing through the institutions' backbone

or through the Internet from site to site (Cisco, 2010). The gateway, located at the edge of each site, is designed to block unauthorized access while permitting outbound communication.

2.3 Client Component. The user's interaction with the authentication system is represented by an eToken smartcard. By using this solution we ensure the transparency of the security methods and user mobility, thus enabling a doctor to access a certain patient chart from any end-terminal in the network. The user's authentication in the system is done by entering the smartcard's PIN. Based on the rights of the user's Organizational Unit the interaction with the database is limited by the rank of the user in the institution. Relative to the medical specific legislation we defined several groups of users: administration personnel, head of department, doctors and nurses. Each of these groups are limited to their own department and based on their rank.

Computers installed in medical offices are considered end-user systems (Alexandru *et al*, 2010). At each terminal is connected a SmartCard reader (Fig. 2), that if a smartcard is inserted, authentication is done and the access of the terminal to hospital servers is opened. The doctor session can be opened/created only using the doctor's SmartCard. When this smartcard is inserted into the reader a secure communication channel is created between the host application and smartcard. After mutual authentication the physician's PIN number is required to be entered.

The smartcard validates the entered PIN, and then opens a communication session and the host application can communicate with remote hospital server. The hospital server's network address is obtained from the smartcard. Doctor's personal information and private key DSA (Digital Signature Algorithm) are temporarily sent to the host application, and they will be deleted when the session is closed. After the doctor's session opens, the host application waits for patient's smartcards to occur, to create/open sessions of the patient.

When a doctor session is opened, the host application can accept the patient's smartcards to open sessions of the patients. For this, to the medical office computer must be connected a second smartcard reader. As for the doctor's session a secure channel is created and mutual authentication is performed between the patient's smartcard and the host application.

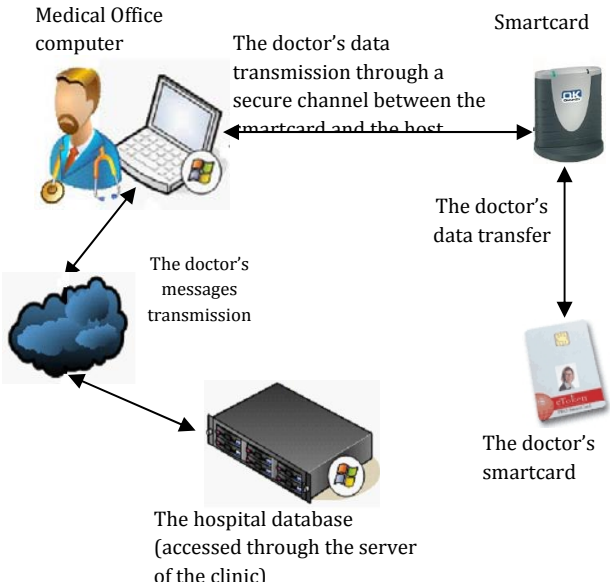

Fig. 2 The smartcard session for the doctor's access

After verifying the entered PIN, the patient data is transferred from the smartcard to the host application. To obtain the patient's health data, a secure communication channel with the hospital server is created. The terminal computer receives data requested from the server in encrypted form. The data is encrypted and decrypted using the DES (Digital Encryption Standard) key stored in the patient's smartcard.

3. SIMULATION MODEL

To create VPN community is necessary to specify a name, establishing a security policy for domestic traffic of the community, adding the participating gateways, VPN tunnel properties and other advanced settings.

The last step in configuring the environment is to install VPN policies, installation taking place all through the interface provided by SmartDashboard. Figure 3 shows the installation progress of those

policies on the two gateways involved in the VPN community, suggestively named FW1 and FW2.

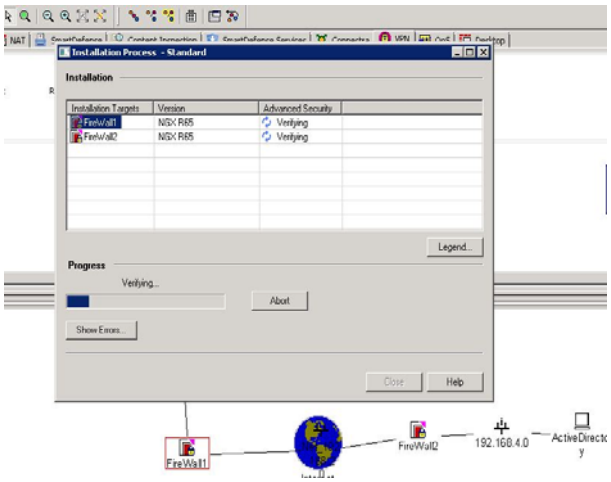

Fig. 3 Installing VPN policies

To verify the correct routing of packets and VPN tunnel operation were carried out a series of tests based on the VPN protocol, which covered all possibilities of interaction between virtual environment entities and the host server of the virtual machines. The most complex of the tests verified the possibility of communication between the extremities of architecture: the instance for network entities management, SmartCenter and the ActiveDirectory server; the communication involves also configured firewalls that serve as gateways to a public data network. As mentioned in the paper introduction, the simulation environment used to evaluate the architecture is Opnet. Both behavior and performance of modeled systems can be analyzed by performing discrete event simulations.

3.1 Topology. The designed topology illustrates the proposed architecture, consisting of the three logical layers. Each logical subnet consists of 50 client workstations interconnected by an OSI layer 2 switch. In order to interconnect the client networks with the server farm, an Unsecured Packet Data Network (PDN) is simulated, representing the Internet. In order to connect securely to this network, each client LAN has a Gateway. Each client Gateway controls the traffic as well as the security policies specific to the proposed architecture.

The Server Farm component accommodates the entities that provide all services for the clients. The core component, of this logical unit, is the database server. Auxiliary functions, such as secure remote login, must be provided. Also a Gateway is used in order to provide the necessary security and traffic engineering requirements. In order to run the simulation, Opnet requires two auxiliary configuration units: Application Config and Profile Config. These modules provide the necessary parameters for the Discrete Event Simulation (DES), Fig. 4.

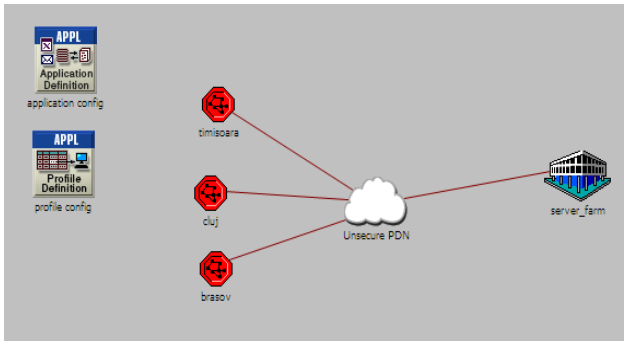

Fig. 4 Basic network simulation model

Because this architecture is primarily targeted towards healthcare facilities, we can safely assume that the main traffic model consists of heavy database usage and light remote login. To reflect this, we configured the appropriate applications and profiles. Given the fact that scalability is one of the key features of the architecture, two scenarios were created, in order to assess the behavior of the server farm under light and heavy client load. Thus, in the base scenario, the client level consists of 150 hosts, grouped in three logical subnets, each representing one county hospital. In the second scenario, we extended the client level to accommodate 2000 client workstations grouped in 40 county hospitals.

3.2 Discrete Event Simulation. The basic concept of the Discrete Event Simulation is that state variables change at discrete points in time. This approach is the most efficient in studying packet data networks. The simulation focuses on two key characteristics of the proposed architecture: scalability and data security. First of all scalability is clearly demonstrated by increasing the clients count,

thus generating more throughput in the network. The main network characteristics that were analyzed are global Ethernet delay, link utilization and server characteristics such as task processing time, traffic received and traffic sent.

To underline the differences between the two variations of the scalability scenario, relative to the analyzed characteristics, statistical data was gathered while running the simulations simultaneously. To obtain a clear perspective the results were overlaid in the following graphs.

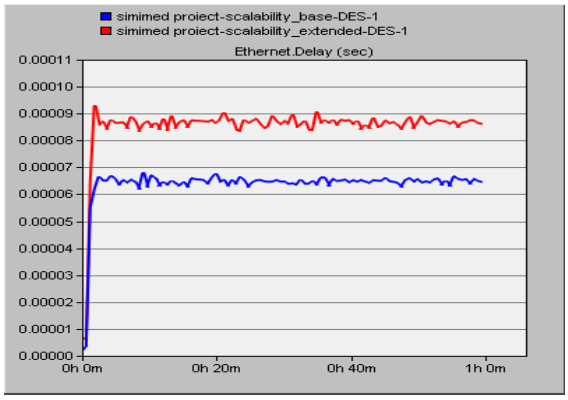

Fig. 5 Global Ethernet Delay

In the Fig. 5 the global Ethernet delay is shown, the red line (up) represents the larger network (2000 clients) and the blue one represents the reference network (150 clients). As expected the overall delay increases, but only by approximately 25% while the client number is increased almost 10 times. The uplink from the server farm to the public data network is critical because if it becomes congested it can act like a bottleneck for the entire architecture. As presented in Fig. 6 link utilization increases 8 times, directly proportional to the client increase. To avoid congestion scenarios, multiple and redundant uplinks must be provided at the server farm site.

The final statistics that were gathered refer to traffic sent/received to/from the database server (Fig. 7 and Fig. 8). As expected both traffic types show a significant increase from one scenario to another. These results show a more detailed view of the inbound/outbound traffic, and its effect on server load.

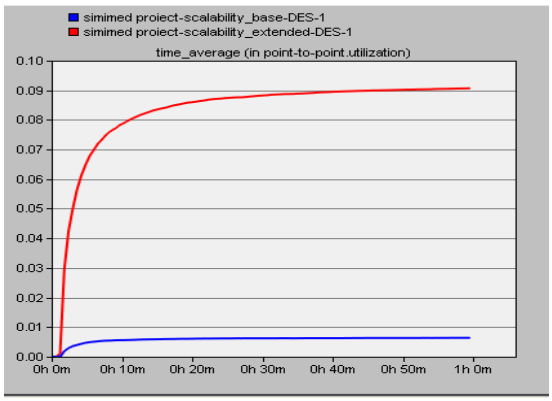

Fig. 6 Server Farm Uplink Utilization

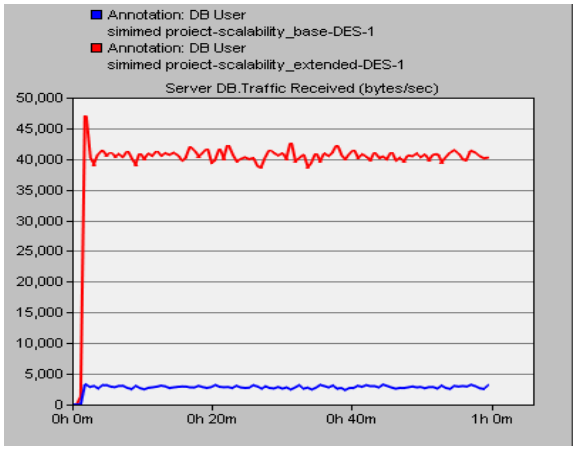

Fig. 7 Traffic received by database server

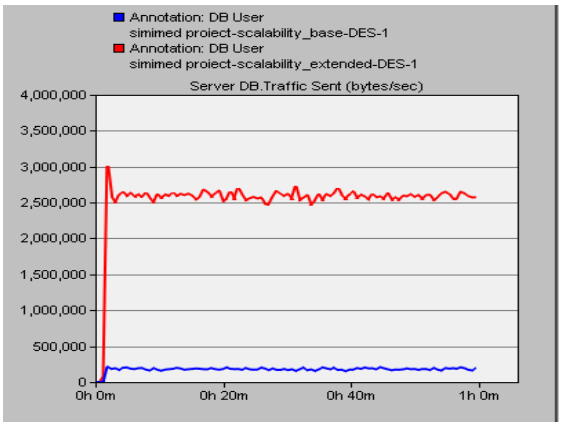

Fig. 8 Traffic sent by database server

These two statistics show an important characteristic of database scalability. While the number of requests increases dramatically, the traffic toward the client workstations has a slightly lower increase rate, which shows the server's ability to scale under high demand.

To complete the simulation of the proposed topology, a layer of security was added: VPN. In order to integrate the VPN layer into the

simulation, a new scenario was created, in which tunnels between each border gateway were configured and an IP VPN configuration entity was added.

Fig. 9 presents the differences between the scenarios after the simulations were rebuild and the results were overlaid. The red line represents global Ethernet delay for the unsecure scenario, while the blue line (up) the secure scenario.

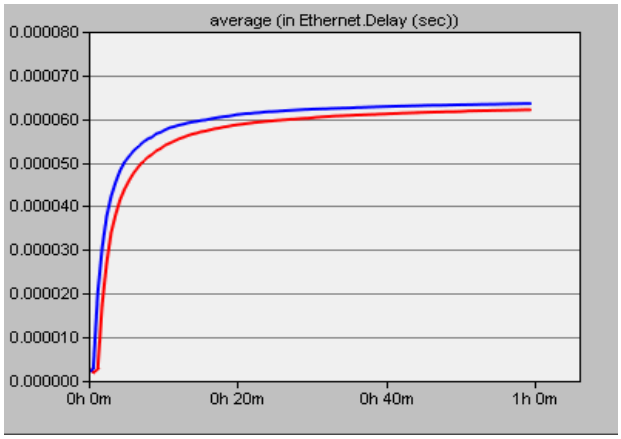

Fig. 9 Ethernet delay differences

4. CONCLUSIONS & ACKNOWLEDGMENT

This paper is a study on implementing a smartcard-based HIS system, built on a three-tier software architecture, which contains levels of client, server and database, placing also the problem of secure connections between them.

Considering the scale of the proposed architecture, number of users and traffic generated trough out the entire network, it is impossible to correctly say how traffic flows and site configuration might affect network performances. Thus it is imperative to run a complete set of simulations.

After designing the layered topology and mirroring it into the software, we ran a series of simulations in key nodes throughout the network, while also considering global statistics such as global Ethernet delay. There were created two scenarios in order to highlight the topology's scalability and secure data communications throughout the architecture.

It was demonstrated that in a controlled simulation environment the differences in global Ethernet delay between the two scenarios are relatively small, considering the advantages that VPN tunnels offer.

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PRELIMINARY AERODYNAMIC EVALUATION OF A SUPERSONIC STEALTH INTAKE

Valeriu DRĂGAN

"Politehnica" University of Bucharest, Bucharest, Romania

***Abstract**: It is the purpose of this paper to investigate the aerodynamic properties of a supersonic intake converted to be used in stealth aircraft. The information sought regard both the airflow inside the intake duct and also the mechanical loading of the added elements. A computational fluid dynamics series of tests have been carried out and the results synthesized. It was found that although the intake could still be used for supersonic flight; the airflow will be severely distorted therefore imposing the use of circulation control. Also we could derive that the stresses on the fan rotor will be quite higher and asymmetrical in nature which will lead to shorter component life. The work could prove useful in understanding the limitations of stealthy supersonic aircraft and provide leads to further improvement in this field.*

***Keywords**: supersonic, stealth, CFD, circulation control.*

1. INTRODUCTION

Stealth aircraft became part of the United States Air Force in the late 70s proving useful in increasing the survivability of an aircraft over a hostile terrain. Since then, a multitude of stealthy aircraft have been produced or modified to incorporate stealthy materials or structures. Perhaps the most problematic aspect in stealth aircraft is masking the rotating fan or compressor blades from the enemy radar (Danitis, 2003). This is necessary because of the fact that rotating metallic fan blades are an excellent radar reflector and will help the enemy spot the target. One common solution (Abhinav, 2007) is to use a serpentine intake or S-duct system which obstructs the direct line of sight to the engine eliminating the problem. However this technique has proved to be challenging due to the fact that a fighter aircraft would require shorter intake ducts – in order to save weight while the serpentine bends cannot be too sharp in order to avoid excessive flow unevenness. This meant the introduction of boundary layer control techniques in order to eliminate parasitic vortices emerging along the S-duct (Rabe, 2003).

In the current paper we investigate the usefulness of a modified supersonic intake not unlike the one found in the Rockwell-Boeing B-1B supersonic bomber. Although the differences between the original and modified versions of the aircraft are clearly visible in terms of performance reduction, see Table 1, we seek to better understand the limitations and advantages of the new intake system used by the B-1B.

Table 1 Comparison between B1-A and B1-B

Variants	Maximum Mach No	Reduced RCS
Rockwell B-1A	2.2	No
Rockwell B-1B	1.25	Yes

2. THE COMPUTATIONAL FLUID DYNAMICS TEST

2.1 The mathematical model. For this particular test, we chose a Reynolds Averaged Navier-Stokes (RANS) method, the k-epsilon turbulence model. This choice was motivated by the fact that RANS methods are generally quicker to converge than Large Eddy Simulations (LES) techniques which, because of their nature are more labor intensive

(FLUENT USC, 2005). The viscosity model, k-epsilon, is one of the most popular in the literature due to its fewer model constants (by comparison to other two equation turbulence models such as k-omega). The lower number of model constants leads to a lower probability of erroneous case modeling therefore being more reliable.

2.2 The case setup. The geometry was modeled after the above mentioned intake system, Fig.1 shows the computational domain, geometry and computational mesh. With this simulation the turbulence model was k-epsilon standard, all the other relevant parameters are shown in Table2.

Table 2 Boundary conditions for the CFD tests

	Test 1	Test 2
X-velocity [m/s]	375	550
Ambient pressure [Pa]	11325	11325
Ambient temperature [K]	205	205
Fan intake pressure [Pa]	3325	3325
Wall rugosity [μm]	200	200

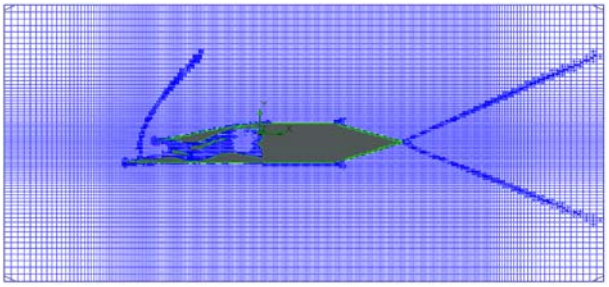

Fig. 1 The CFD Mesh with adaptation (550m/s – Mach 2.2 case)

The airfoils were initially modeled after the NACA 4 series as follows:

1.The front airfoil NACA 3417

2.The leading part of the aft airfoil NACA 2316-83 and the trailing part of the aft airfoil NACA 5411.

A useful observation is that at the Mach 1.25, there is no justification for using a two ramp intake system since the second ramp will either have to be minuscule in length or have a very small angle.

2.3 Results

Due to the Coandã Effect, the serpentine airfoils are accelerating the air, as shown in Fig.2 – in this case beyond the speed of sound, Fig.3 resulting in shock waves which mechanically stresses the airfoil structures.

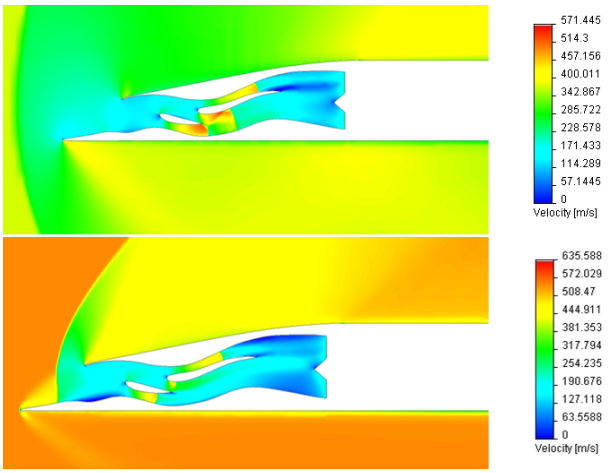

Fig. 2 The velocity plots for the Mach 1.25 (up) and Mach 2.2 (down) case.

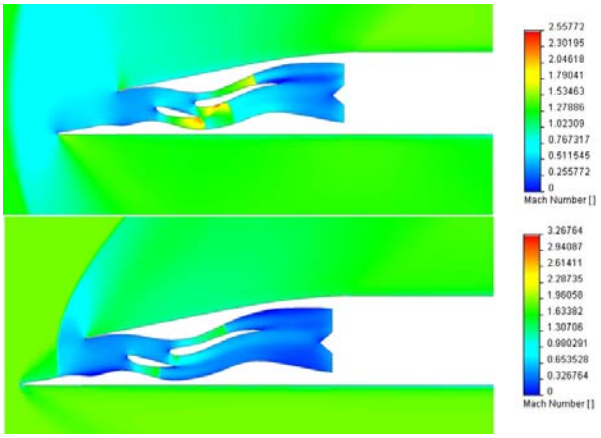

Fig. 3 The Mach number plots for the two cases. Both cases show supersonic flows on the positive curved airfoil guide vanes

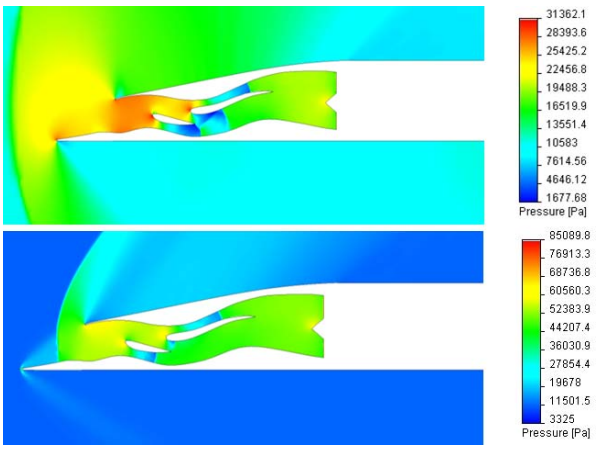

Fig. 4 The static pressure plots for the Mach 1.25 (up) and Mach 2.2 (down) case

Also as a result of the acceleration, the dynamic pressure is not converted to static pressure at the same level as it would in a conventional intake thus lowering the turbine engine's performance. Figure 4 shows that both cases have largely homogenous pressure fields however the values in front of the compressor are lower than those measured in front of the guide vanes. This indicates that the static pressure is re-transformed into dynamic pressure as a result of passing the vanes.

Another key observation is that the total pressure drops as a result of the drag induced by the airfoil surfaces leading to lower engine efficiency and higher fuel consumption.

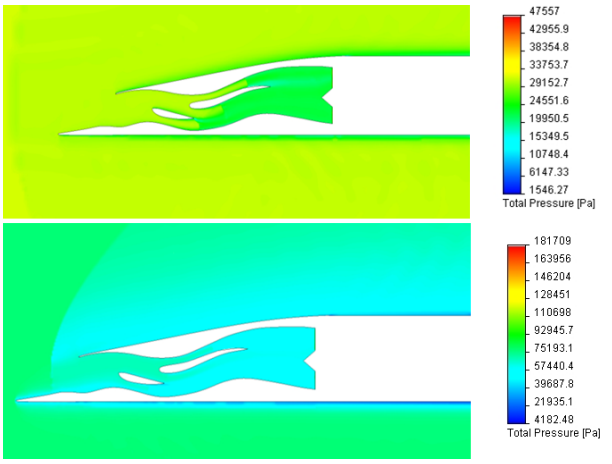

Fig. 5 The total pressure plots for the two cases

As seen in Fig. 5, the total pressure losses are slightly higher in the Mach 2.2 case hence the decision to limit the maximum velocity to just above Mach 1.25 is justified in the B-1B case. The wake trail of the second airfoil is quite long and as a result the transition from the rectangular section of the intake system to the circular section of the engine must be made longer in order to avoid excessive stresses to the fan rotor. However this will not fully eliminate the unevenness in the velocity and pressure fields.

3. DISCUTIONS AND CONCLUSIONS

A Computational Fluid Dynamics investigation has been carried out in order to assess the feasibility of modifying a supersonic intake for use in a stealth aircraft. The method chose to mask the direct view of the compressor blades was a serpentine intake with airfoil shaped guide vanes.

It was found that the guide vanes have a negative impact on the airflow to the engines resulting in limitations in use.

1. Because of the curved shape, inherent to the serpentine surfaces, air is accelerated under the Coandã Effect, and in some cases reaches supersonic speeds which results in shock waves.

2. As a result, the static pressure immediately ahead of the engine is lower than the one encountered in a similar conventional supersonic intake. This is a combined result of the static pressure being converted back into dynamic pressure because of the Coandã Effect acceleration and also due to the fact that the total pressure of the airflow is lowered by the frictions induced by the presence of the guide vanes.

3. The presence of the guide vanes generates aerodynamic forces and moments which have a negative impact on the structure of the engine nacelle by mechanically stressing it.

4. The drag induced by the guide vanes lead to a low overall efficiency of the engine by inducing enthalpy losses.

5. The velocity and pressure fields are uneven which leads to asymmetric stresses on the compressor rotor and, in time, to higher mechanical degradation trough metal fatigue.

As a result of these findings, the following recommendations have been expressed:

1. Due to the fluid accelerations inside the intake serpentine, the maximum air speed must has been limited, in the B-1B case as low as Mach 1.25. The simulations however show that the performance of the intake is actually acceptable in the Mach 2.2 case, i.e. the total pressure losses across the intake are approximately 1.5 higher than the Mach 1.25 case. Also the dynamic pressure is better transformed into static pressure. One may interpret that this is a result of the intake ramp which was specifically designed for this Mach number, hence the air flow in front the serpentine is better managed.

2. At the 1.25 Mach number, the double movable ramp intake system is not justified.

3. The use of a variable stator in front of the compressor rotor might be used to raise the efficiency of the engine by converting the high dynamic pressure of the air into static pressure. Also this stator would help even out the velocity and pressure fields reducing the mechanical stress on the rotor.

4. The use of circulation control could prove useful in reducing the wakes of the airfoil shaped guide vanes, hence improving the airflow to the engine.

The conclusions are that the airfoil serpentine intake is feasible for the use in supersonic aircraft, however the use of it leads to efficiency losses due to guide vane drag and flow unevenness..

4. ACKNOWLEDGMENT

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ENERGY MODEL OF SENSOR NODES IN WSN

Dan LOZNEANU*, Gheorghe PANA*, **Ecaterina-Liliana MIRON****

*"Transilvania" University, Brasov, Romania, **"Henri Coanda" Air Force Academy, Brasov, Romania

***Abstract**: Wireless sensor networks (WSN) are currently an area of great interest in research, industry and academia. They are no longer just an alternative, but are used even where wired communications are possible. Currently, energy models for the characterization of the nodes used in WSN cannot generate an accurate energy estimation that can be used to design these networks. Requirements like long service life with minimum energy represent the key to implementing new solutions.*

***Keywords**: wireless sensor nodes, energy, model.*

1. INTRODUCTION

The potential of this technology is now easy to see with all the inherent difficulties posed. Rapid advances in microelectro-mechanical systems (MEMS) and radio frequency (RF) have allowed the development of microsensors that can be interconnected in the network with lower power consumption at a smaller price. A WSN consists of hundreds to thousands of nodes that are interconnected via a wireless environment.

Sensor Networks represent an improvement over traditional sensors, which are prepared in terms of space in two ways (Intanagonwiwat, Govindan, Estrin, 2000):

- Sensors that are placed at great distances from the source of the signal which is acquired are large and complex techniques are used to distinguish the source from the ambient environmental noise.

- Several sensors are placed as nodes of information acquisition. These nodes collect data and transmit them to a data concentrator which analyzes and processes data.

To achieve these networks, the communication protocols need techniques used in ad hoc networks, and even if several such ad-hoc protocols have been studied, simulated and implemented they are not suitable for WSN, which may have a number thousands or millions of nodes, and some of the differences in the needs of the WSN networks are ad hoc (Perkins, 2001):

- Sensor nodes are placed with high spatial density and their number is several times higher compared to ad hoc network.

- These nodes are subjected to increased opportunities for error.

- WSN topologies are changed frequently.

- Broadcast type communication is needed (ad hoc networks are based on point to point communications).

- These nodes do not must have to have a globally unique identifier due to increased overhead and large number of sensor nodes.

One of the major constraints of these networks, on which the work of this paper is directed, is the low energy requirement, especially if the implementation orientation is toward the use of non-renewable energy sources and irreplaceable ones. For this reason, the design of WSN nodes should be especially directed toward energy conservation in terms of hardware, operating system and in terms of communication protocol the efficiency bit/Watt must be highest while respecting the requirements of that system.

2. WIRELESS SENSOR NODES ARCHITECTURE

At the design stage when the components of a wireless node are chosen, the decisive

factors are the size, cost and energy. Computational power and communication in general are considered to be of acceptable quality. To achieve a correct model which can be used in developing and implementing solutions modeling and correlation of all the blocks of a sensor node is necessary. A WSN node integrates the sensor, signal processing, data collection and data storage, information processing, wireless communication and power source. A typical micro-architecture is shown in Figure 1.

In general, each node consists of four components:

- Power supply - minimum stage consists of a DC / DC converter, the system can optionally have the following components:
  - Battery;
  - Renewable energy source.
- Sensor unit - consisting of sensors, actuators and A / D converter;
- Processing unit - may be a micro-controller (MCU) or a microprocessor (like Intel Strong ARM, Microchip and Atmel AVR);
- Communication unit - consists of a short range RF circuit, which carries out data transmission and reception.

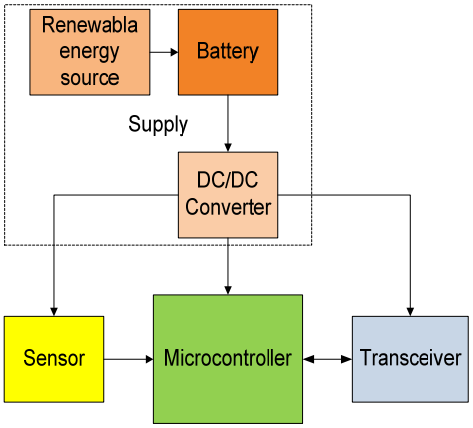

Fig. 1 Architecture of a wireless sensor node

There is a wide range of hardware components that are available on the market and which fit within the range of low energy products, therefore it is very important to establish detailed specifications nodes, which then leads to a detailed study of possible physical implementations

3. GLOBAL ENERGY MODELS FOR WSN

A WSN The current models are made with very much effort for modeling protocols in these networks, and are implemented on the basis of traditional energy models and generate inaccurate results with. Some of the platforms currently available are: OMNet, TOSSIM, PowerTOSSIM, SensorSim.

Energy modeling of WSN nodes is traditionally based on the theoretical energy consumption of existing platforms or analysis modules implemented. By this method a correct modeling in terms of energy consumed by a sense node cannot be achieved accurately. Current trend study of the literature leads to an overwhelming diversity. Currently there is not any standard research process to meet all requirements of such networks.

In paper (Shnayder *et al.*, 2004), was made an energy model based on measurements of execution time for each basic block of instructions, so the model works on the structure of a finite state machine, but this model does not account for the transition state frequency change clock or switching between sleep mode and active mode or idle.

Accurate Prediction of Power Consumption (AEON) is a model proposed in Landsiedel *et al.* (2005), which is focused on prediction of energy consumption as a whole and the network node from which it belongs. The model presented takes into account all possible states of operation of the controller and transceiver, and sensor is considered only for the current active state. The results obtained by them to measure energy consumption of different nodes, following the calibration of the system revealed a variation of 5% of current consumed by different nodes. Differences in estimations of energy consumption for the controller between models AEON and Tossa Power are at 5700%, and in paper Landsiedel *et al.* (2005) was found a lack of accuracy of the abstract model of components.

A global model for defining the sensory nodes in WSN is proposed to be achieved in CAPNET project in December 2010 in which it is assumed that all nodes can be modeled

independently with an application made in Simulink. In the article *Power/Energy Estimator for Designing WSN Nodes with Ambient Energy Harvesting Feature* (Ferry *et al.*, 2011) is proposed the implementation of a power estimation model to determine the WSN nodes autonomy through Functional Level Power Analysis (FLPA) methodology.

4. PROPOSED ENERGY MODEL FOR EVALUATION OF WSN NODES

The fact that most energy models studied are made based on measurements made on practical sensory nodes, and these models conform only to the components used in the implemented hardware configuration and operating algorithm on that type of nodes, these models are not portable, and can be used only for simulation and evaluation of sensory node type for which they were created. For WSN applications are very diverse, and possible applications are endless, so it is necessary to implement a global energy model, generic and portable.

4.1 Energy criterion of renewable energy sources. The general current consumption profile of a sensor node is similar to that in Figure 2, the power consumption during states of sleep and active states can be mediated over time. For a node to operate autonomously sense the average energy scavenged must be greater than or equal to the energy consumed by the node. Average energy (E_{avg}) consumed, is described by the relationship:

$$E_{avg} = n \cdot t_a \cdot P_a + m \cdot t_{sl} \cdot P_{sl} \quad (1)$$

Where P_a is the power consumed by the node in its active state during t_a and n is the rate of occurrence, and P_s that is the power consumed by the node in its inactive state and has the occurrence rate m and lasts for a period equal to t_s.

Given the diversity of energy collection methods, and the wide range of application profiles it is not possible to create a generic model, however, the essential criterion is that the energy stored (E_{st}) in the node must be at least equal with the energy used for its operation in the time interval t_2-t_1.

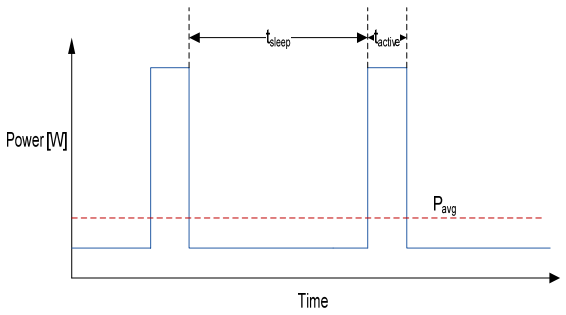

Fig. 2 Generic energy profile of a wireless sensor node

$$E_{st} \geq \int_{t1}^{t2} (P_{cons} - P_{scav})dt \quad (2)$$

where P_{cons} is the power consumed by the sensory node in the time interval t2-t1 and P_{scav} is the power collected and stored power in the same timeline.

4.2 The DC-DC converter energy model. Because it is necessary to use a DC-DC converter, which helps to solve the general problem of battery voltage variation with alteration of capacity due to fixed output voltage, energy modeling of this block is included in this model.

An important technique in power management is introduced by using this block, namely DVS (Dynamic Voltage Scaling). Through this technique is low voltage of the microcontroller, because with lower clock frequency, minimum voltage necessary to ensure its operation and current consumption decreases the microcontroller remains relatively constant. This method leads to a reduced power consumption in sleep states of sensory node.

An important feature of DC-DC converters is that regardless of domestic architecture, the efficiency of these circuits varies depending on the most current consumed and then depending on supply voltage.

Given the diversity components on the market, the best solution is to create a matrix $\eta_{DC-DC}(V_{in}, V_{out}, I_{out}, t)$, from which the values of the converter efficiency are extracted during the simulation of the behavior in time, copesponding to the values of the current

through the load, voltage at the input and at the output of the DC-DC converter.

4.3 The energy model of the control unit and information processing. The micro-controller is the component of a wireless sensor node, which is designed to control node sensory states, to process information, realize transfer tasks and traffic control over the wireless network. Generally, the energy consumed by the microcontroller in a time t, can be described as the sum of energy consumed in all possible functional states of the microcontroller and the amount of energy consumed in all states of transition; in this energy model the proposed relations are:

$$E_{\mu C}(t) = \sum_{i=1}^{n} E_{st,\mu t,\,i}(t) + \sum_{j=1}^{m} E_{tr,\mu r,\,j}(t) \quad (3)$$

$$E_{\mu C}(t) = \sum_{i=1}^{n} P_{st,\mu t,\,i} \cdot T_{st,\mu t,\,i} \cdot p_{st,\mu t,\,i} + \sum_{j=1}^{m} P_{tr,\mu r,\,j} \cdot T_{tr,\mu r,\,j} \cdot p_{tr,\mu r,\,j} \quad (4)$$

$$t = \sum_{i=1}^{n} T_{st,\mu t,\,i} + \sum_{j=1}^{m} T_{tr,\mu r,\,j} \quad (5)$$

$$\sum_{i=1}^{n} p_{st,\mu t,\,i} + \sum_{j=1}^{m} p_{tr,\mu r,\,j} = 1 \quad (6)$$

where:

$E_{\mu C}(t)$ - the energy consumed by the microcontroller during t;

$E_{st,\mu t,\,i}(t)$ - the energy consumed in the functional state i;

$E_{tr,\mu r,\,j}(t)$ - the energy consumed in the transitional state j;

$P_{st,\mu t,\,i}$ - power consumption in the functional state i;

$P_{tr,\mu r,\,j}$ - power consumption in transitional state j;

$T_{st,\mu C,i}$ - the duration in functional state i;

$T_{tr,\mu C,j}$ - the time required for the transition state j;

$p_{st,\mu t,\,i}$ - probability of functional state i;

$p_{tr,\mu r,\,j}$ - probability of transition j;

n - number of states functional block;

m - number of transitional states of the block.

4.4 The communication unit energy model. The transceiver unit of communication is used for exchanging information between nodes of WNS. Because full-duplex communication is not required, data transmission and reception are achieved by sequential processes of the network terminal equipment, and practical considerations transmitter and receiver are implemented in the same functional block on the same chip.

In order to offer the possibility of simulation for this block, the approach is similar to that described for the microcontroller, and the energy consumed is calculated by the following relations:

$$E_{trsv}(t) = \sum_{i=1}^{n} E_{st,trsv,i}(t) + \sum_{j=1}^{m} E_{tr,trsv,j}(t) \quad (7)$$

$$E_{trsv}(t) = \sum_{i=1}^{n} P_{st,trsv,i} \cdot T_{st,trsv,i} \cdot p_{st,trsv,i} + \sum_{j=1}^{m} P_{tr,trsv,j} \cdot T_{tr,trsv,j} \cdot p_{tr,trsv,j} \quad (8)$$

$$t = \sum_{i=1}^{n} T_{st,trsv,i} + \sum_{j=1}^{m} T_{tr,trsv,j} \quad (9)$$

$$\sum_{i=1}^{n} p_{st,trsv,i} + \sum_{j=1}^{m} p_{tr,trsv,j} = 1 \quad (10)$$

where $E_{trsv}(t)$ represents the energy consumed by the communication block during t.

4.5 The sensor unit energy model. Energy consumption of any type of sensor can be generally described as:

$$E_{sns}(t) = \sum_{i=1}^{n} E_{st,sns,i}(t) + \sum_{j=1}^{m} E_{tr,sns,j}(t) \quad (11)$$

$$E_{sns}(t) = \sum_{i=1}^{n} P_{st,sns,i} \cdot T_{st,sns,i} \cdot p_{st,sns,i} + \sum_{j=1}^{m} P_{tr,sns,j} \cdot T_{tr,sns,j} \cdot p_{tr,sns,j} \quad (12)$$

where $E_{sns}(t)$ - the energy consumed by sensory block during time t.

4.6 Correlation, simulation of sensor blocks with energy models and comparison with experimental results. To describe the energy behavior of a sensor node is needed correlating behavior of its constituent blocks, because the microcontroller is in active state

whenever at least one of the other two major blocks, and the sensor transceiver are active.

General architecture of wireless sensor nodes is designed around a single power supply, which for the periods in which transceiver and sensor are not used, when they are either stopped by electronic switches, or set into sleep state, it is ideally to be set to generate a lower output voltage through DVS technique because the energy efficiency of the microcontroller will increase during these periods of sleep states. Energy consumed by sensory node will be calculated by correlating the results obtained by previous calculations and will be represented by:

$$E_{node}(t)=\sum_{k=0}^{t}\frac{E_{\mu C}(k)+E_{trsv}(k)+E_{sns}(k)}{\eta_{DC-DC}(V_{in},V_{out},I_{out},k)} \quad (13)$$

To validate the model that takes into account energy consumption during transient states of the wireless sensor nodes components, we used a CC1100 transceiver, which communicates to 868MHz with MSK modulation type and a Microchip Extreme Low Power microcontroller, PIC18LF4622, running at a frequency of 8MHz in active mode.

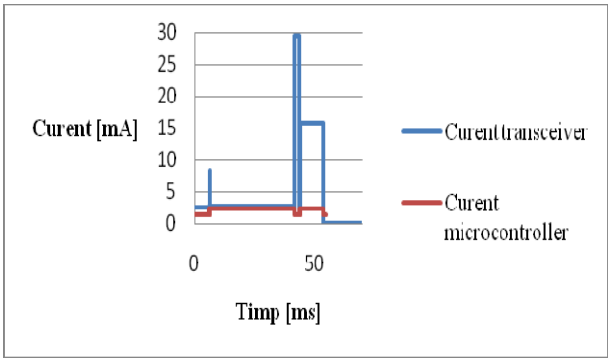

Fig. 3 The result of current consumption simulation for CC1100 and PIC18LF4622 during a packet communication

The simulation results shown in Fig.3, presents the behavior of the radio module in a wireless node. So, by this method of calculation the result obtained is similar with the waveform obtained by measuring the current consumed by the same transceiver and/or microcontroller in Fig.4.

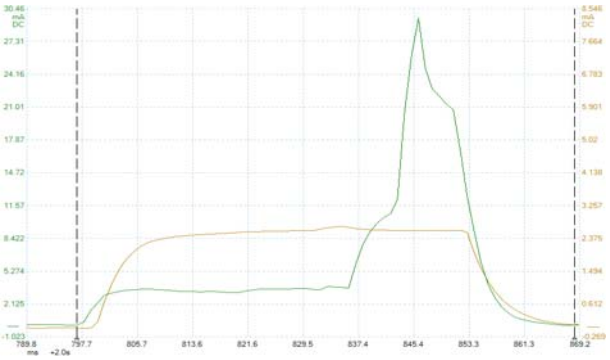

Fig. 4 The result of measured current consumption for CC1100 and PIC18LF4622 during a packet communication

Table 1 Experimental results compared with simulation results for microcontroller and transceiver

Average current[mA]	Sim	Exp	Err
µC	1,96	1,94	1,00
Transceiver	6,10	6,19	-1,52
Total current	8,06	8,14	-0,92

The results of calculation for energy consumption model of a wireless sensor node presented in Table 1, shows that the proposed modeling method generates less than 2% deviation from the results obtained by measuring the two components of the current node. It may be noted that this model generates a global 1% accuracy from experimental results.

5. CONCLUSIONS

Unlike current version of the simulation model for calculating the energy consumption of a wireless sensor node, actual model does not provide the only the energy consumption of the nodes based on measurements made only to meet the hardware and operating algorithm of a type of node, but this proposed model is a mathematical approach for each part of the wireless sensor node, which is adaptable to any sensor node that will be or has been developed. Because WSN applications are very diverse, and possible applications are endless, it is necessary to implement a global energy model, generic and portable.

Simulation with the proposed model for the microcontroller and transceiver blocks and the measurements made have brought out that the

deviations decrease to levels below 1% by using this model that takes into account the transitional stages of operation and thus it is made an improvement of more than 2% compared to the models that do not take into account the transitional stages of operation for the building blocks of a wireless sensor node.

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ORGANIZATIONAL MANAGEMENT OF EMOTIONS AT WORK: MOTIVES AND FORMS

Camelia TRUȚĂ

"Transilvania" University, Brasov, Romania

***Abstract**: Inoculation of the appropriate form of emotional display in employees was, for a long period, a formal control characteristic of organizations. Organizations regulate emotions employees should display and appropriate intensity of those emotions through explicit feeling rules, emotion scripts or through socialization process and organizational rituals. Certain organizational contexts impose specific forms of emotions regulation in employees, either as displaying required emotions or as suppressing undesired ones. The specific forms of organizational management of emotions at work and the motives for which organizations regulate employees' emotions are analyzed. We argue that the regulation of emotion for commercial purposes is pervasive. In the final part of the paper, we will discuss ethical implication of organizational management of emotions at work.*

***Keywords**: emotion management, emotional rules, organizations.*

1. INTRODUCTION

According to Hochschild, approximately two thirds of nowadays jobs involve emotions as part of employees' work (Hochschild, 1983/2003:7). The author refers not to emotional responses of individuals to particular events, but to emotions that are experiences and displayed as part of job requirements. In this context, we cannot longer speak of rational organization. We must approach the emotional organization.

The emotional organization place employees in the centre of the organization and consider emotion the core of peoples' actions and interaction (Fineman, 2003:2). All organizations are emotional arenas in which emotions shape events, and events shape emotions. The organization in which we work regulates our emotions, especially our displayed emotions. Employees should manage their emotions according to strong social scripts, which specify that displaying the genuine feeling is, sometimes, risky for obtaining profit or for attaining organizational objectives.

In the workplace, we are all, in different ways, managers of emotions (Fineman, 2001: 234); the tension between genuine feeling and displayed emotional expressions is an unchanged characteristic of social organization. Inoculation of the appropriate form of emotional display in employees was, for a long period, a formal control characteristic of organizations (Gibson, 2008:268).

Organizations regulate the emotions employees should display and the appropriate intensity of those emotions. Appropriateness of displayed emotions is regulated through explicit feeling rules (that take the form of organizational scripts) issued by agents endowed with power (such as the teacher, the manager, significant others), or by informal rules transmitted during socialization process or during organizational rituals (Fineman, 2003: 22). A firm control of employees' emotions may lead to unexpected consequences, such as lack of trust, tension, emotional exhaustion and organizations must intervene for reducing them.

2. HOW ORGANIZATIONS MANAGE EMOTIONS? – EMOTION RULES AND ORGANIZATIONAL SCRIPTS

Hochschild first used the term "emotional rule" to describe the norms and standards that rebuild the inner experience in cultural, social or organizational contexts (Hochschild, 1983/2003:7). We know these rules from the manner in which others, or even us, respond to the interferences of displaying emotions.

Formal or informal expectations to display a certain emotion are, generally, a function of the social, occupational or organizational norms (Mann, 2004:349). In some cases, emotional rules are explicitly stipulated in written regulations or codes of conduct for employees (most cited examples are those of Disney's employees) (Fineman, 2003:32). Examples of explicit prescriptions are: 'Don't put your client in an uncomfortable situation!', 'Always look the client into the eyes!', 'Always smile to the client!', 'Say <Thank you> to each client!', 'Show patience and fairness in solving clients complaints'. Emotion management is, consequently, an essential part of employees' work.

Emotional rules offer behaviour standards and are associated with ethic and cultural aspects of emotions. Emotion rules reflect power relations and, therefore, are techniques to discipline individual differences on emotional display and communication (Mann, 2004:351). These rules refer to specific language, define emotional areas, describe the attributes of a valuable person, and describe traps that should be avoided and purposes to reach. The presence of emotional rules in an organization increases the probability that the employee will actively regulate his emotional expressions. In public services jobs, emotional rules mostly assume displaying of positive emotions. Emotional rules in certain organizational contexts, such as the military context, firmly suppress emotions that could threat the power hierarchy. Those emotions considered to serve military purposes are encouraged (screaming angry in contact with the enemy to encourage your colleague or to cheer them during marches, for example).

In all organizational contexts, there are settings or physical areas governed by other emotional rules than the explicit organizational ones. These are places in which organizational control, either direct or through surveillance, is reduced and the informal norms about the appropriate display of emotion govern. The physical architecture shape, in some point, the emotional architecture of the organization (Fineman, 2001:223) (the cabin crew in a plane, the cafeteria in a school, the parking of an organization are such emotional areas in which employees can express genuine emotions). However, none of these contexts lacks emotions. A much subtle way of controlling emotions in organizations is training program or socialization process. For teachers, lawyers, medical doctors, psychiatrists, managers, social workers, for example, the training process often refer to the idea of being professional when interacting with clients. Specialists in these professions must display seriousness, understanding, self-control, detachment, empathy when interacting with their clients, regardless of what they genuinely feel. They learn, through imitation or reinforcement that displaying such emotions is a professional behaviour.

One of the most common and simple form of organizational management of emotions is surveillance (Fineman, 2003:34). There are several ways in which employees' emotions are regulated through surveillance, according to specificity of work. The mysterious client (in tourism agencies, for example), hidden surveillance cameras (in shops), random monitoring of telephones (in call centre), satisfaction questionnaires for the clients are some of the methods organizations may choose to use in order to manage their employees' display of emotions. Those who do not succeed to express and displays the required emotions risk sanctions.

3. WHAT IS BEHIND ORGANIZATIONAL MANAGEMENT OF EMOTION?

The main reason for organizations to manage their employees' emotions is the economic one. If employees succeed to create

a positive and comfortable experience for the customer, the latter will probably repeat his visit and will buy again. Consumer behaviour studies show that it is less probably for a customer to return to an organization that did not treat him specially or did not succeed to create the impression of a special attitude towards him (Fineman, 2003:33).

Another motive organizations claim to justify management of employees' emotions refers to reduction of negative consequences of emotional experiences on employees. Several studies on emotional labour suggest that the most important consequences of regulating express emotions in the workplace are associated in employees with burnout and poor job performance (Brotheridge, Grandey, 2002:19). At this level, organizations may intervene in several ways.

Possible intervention strategies to prevent destructive emotions in the workplace are similar to those adopted for the management of stress: primary intervention (reduction of destruction emotions and stress), secondary interventions (management of destructive emotions and stress), and tertiary interventions (counselling programs for employees) (Cooper, Cartwright, 2001:270).

Primary intervention consists of measures for reduction or eliminations of sources of negative emotions, sources related to working environment. By reducing or eliminating these sources, the negative impact of emotions on employees is also reduced. Rebuilding work tasks, changing the design of the work environment, flexible working schedules, participative management, career development programs for employees, social support and feedback, cohesive work teams, sharing rewards are some of the most efficient strategies organizations may adopt in order to reduce the impact of emotional rules on employees. Primary interventions strategies are, often, means for changing the organizational culture.

Secondary interventions aim to promptly identify and manage destructive emotions by increasing employees' level of acknowledgement and improving their abilities to manage emotions.

Acknowledgement activities and abilities training programs destined to improve relaxation techniques, cognitive coping abilities, changing lifestyle or work-style abilities (time management programs, training assertiveness programs for example) have an important role in developing individuals' physical and psychological resources. These programs offer support for coping with work stressors that cannot be changed. The main role of secondary prevention is to reduce the negative effects by reducing consequences rather than sources.

Tertiary interventions focus on treatment, rehabilitation and recovery of employees with major health issues that resulted from experiencing destructive emotions. Usually, interventions at this level imply counselling services for employees with work or personal problem, implementation of complex systems designed to facilitate and monitor the rehabilitation process.

According to Murphy and Cooper, secondary and tertiary interventions are the most implemented ones by organizations, because (Cooper, Cartwright, 2001:272): there are many published empirical studies on the benefits of these types of interventions programs; those implementing secondary and tertiary intervention value more changes in individuals than changes in organizations; organization consider that it is much easier and less conflicting to change individuals than introducing extensive and expensive organizational development programs which results are uncertain. Secondary and primary interventions have an important role in preventing destructive emotions, but do not offer a solution unless associated with intervention on stress sources.

Not always managers and organizations resort to solutions that are extensive and, most probably, expensive. Some managers found a much simpler solutions; they present emotional rules as forms of rewarding the employees. For example, several supermarkets offer primes or bonuses to their employees, if they have had a friendly behaviour towards the consumer (Fineman, 2003:34). Such examples demonstrate that shaping employees' emotions for commercial purposes is omnipresent.

4. ETHICAL IMPLICATIONS OF ORGANIZATIONAL MANAGEMENT OF EMOTIONS

When analysing the ethical implications of emotional control made by organizations, one must take into account several points of view. For some authors, organizational management of employees' emotions is a new form of exploitation and alienation (Guy, Newman, Mastracci, 2008:157). Their arguments is that most employees performing emotion management under the control of the organizations work in jobs which require low skills and they will probably do not change their job. When emotion management is done by direct or indirect surveillance (video cameras, random monitoring of phone calls), one must question the correctness of these practices. What is organization responsibility regarding unintentional consequences of these practices (stress, suspicion, lack of trust)?

Other authors argue that control over emotional display of employee could be justified in contexts in which employee manage their emotions in order to satisfy or to help the client (such as educational or medical context) (Oplatka, 2009:63).

For a long period, emotions at work were considered disruptive, a sign of weakness, a deviation for the sacred rationality of institutions. Despite that, management of emotion at work is a significant aspect in many professions and organizations and, more and more, is considered a core component of professional identity.

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UNDERSTANDING INFORMATION MANAGEMENT: AN ANALYSIS UPON WEB-BASED INFORMATION CREDIBILITY

Cezar VASILESCU

Regional Department of Defense Resources Management Studies, Brasov, Romania

Abstract*: The plausibility of Internet information is a challenging and actual analysis subject. This paper analyses what the term credibility means in an online environment, the factors that influence the credibility assessment of online information and the skills Internet users need to undertake such an evaluation. The paper also offers recommendations and proposes strategies to put in practice online credibility testing methods needed to locate credible, relevant, and useful information on the Internet.*

Keywords*: Internet credibility, trust assessment, information verification.*

MOTTO: "Of course it's true; I got it on the Internet."

1. INTRODUCTION

Beside the traditional sources of printed information available since the typographies were invented, the Internet integrates more and more in our lives as an important source of information. Most of people judgment processes and decisions are influenced by web-based information easily available online. Digitization and Internet related technologies decreased the cost of information spreading while increasing accessibility to the information.

The wealth of websites raises the issues of plausibility and quality of the information found online. Unlike traditional print publishing, digital information might be created and posted online anonymously and may be easily altered or plagiarized. The search for information never stops and since all of it has the same level of accessibility to Internet users one could think that all authors (web sites, blogs) have the same level of credibility.

Before attempting to assess the relative level of online information credibility, it is appropriate to consider exactly what the word *credibility* means. It is utilized in a variety of domains, from business, marketing and information science to journalism, sociology and linguistics. We can start defining credibility by citing its Latin root *credere* - which means "to believe". The Merriam-Webster dictionary mentions that credibility means *"the quality or power of inspiring belief"*. A second definition of credibility refers to *"the objective and subjective components of the believability of a source or message"* (Wikipedia).

According to Tseng and Fogg (1999:41-42), there are four types of credibility:

a. presumed credibility - belief based on general assumptions;

b. reputed credibility - belief based on a reference from a third party;

c. surface credibility - belief based on what we find on simple inspection;

d. experienced credibility - belief based on first-hand experience.

In attempting to determine the level of credibility/believability of web based information, it is highly recommended that users consider all of these types of credibility. In practice, surface credibility is the prime criterion for most users due to the fact they use a search engine that retrieves lots of results.

Users tend to consider the first sources retrieved. In those few seconds before clicking on the next site retrieved, the appearance and design of a website is decisive in judging the

credibility and value of information - *"…looking good is often interpreted as being good - and being credible"* (Fogg *et al.*, 2002:31). A study on websites credibility revealed that 46.1% from the total number of participants mentioned design look as the decisive judging factor. They also add credibility to the information based on the search engine they are using (presumed credibility), reputed credibility if the website belongs to a reputable organization or known person, and experienced credibility if they had previous positive experience with the website.

2. PLAUSABILITY OF INTERNET INFORMATION

The plausibility of Internet information is a challenging and actual analysis subject. Its challenging nature derives from the limitations induced by: the size of the problem analyzed (the volume of the www); the increasing speed of Internet information growth and change; the fact that the web is a self-sustaining reference system (we rely on other information from the Internet to judge the credibility of what is of interest for us) and the rapid rate of information dispersion.

For understanding the different plausibility degrees of web-based information, an analysis of search engines plays an important role. Search engines like Google or Yahoo are lately major players in information search technologies and tend to substitute more and more traditional sources of information like printed papers form libraries and book stores. A 2004 statement *"Let us accept that this (Internet driven) change is profound, accelerating, transforming and unpredictable"* (DeRosa, 2004) is more contemporary than we like to admit. All of these changes, however, have led to another, more troubling, statement, *"Of course it's true; I got it on the Internet*".

"92% of Internet users say the Internet is a good place to go for getting everyday information" (Fallows, Rainie, 2004). It's clear that those users utilize Internet frequently, for significant purposes in order to be informed or just to find certain information to meet immediate curiosities. The features of search engines are constantly changing in order to improve the interface, algorithms and to provide a better user experience. Early search engines like AltaVista were based on text relevance and link analysis to return results matching the key words from the search engine's query-field. The new Web 2.0 search technologies are using many different methods of information retrieval, because the search process became more complex, dealing with text, video and sound files embedded in web pages.

The search engines task got even harder just because the Internet includes not only the Web (html pages) but also a wide variety of digital information in formats including emails, blogs, wikis, RSS, podcasts, streaming audio/video, photos and videos, etc. accessible through personal communication devices. The credibility of the information available on the Web is a major issue for all sources of electronic information, regardless of the format or distribution path. It is a fact that the quantity scale of available information is huge, but the prevailing perception of users is that the information quality could be often improved.

Most Internet users rather resort to a search engine than a specific website in their quest for particular information. The limited time available and the feeling that something better is always on their fingertips leads to the following behavior: most searchers use fewer than three query terms, do not look past the first few results (or view only the first search engine results page), do not use plus, minus signs (or Boolean operators), and do not use the advanced search features (Lewandowski, Hochstotter, 2008:351).

The final goal should be not only to index millions of websites but also to provide search results from sources that are trustworthy. Web search engines routinely retrieve millions of items, but are these items credible, relevant, and useful? A common situation on Internet is the availability of false, inaccurate or outdated information. Additionally, users tend to ignore plausibility issues and make little or no attempt to crosscheck the accuracy information from one site on other websites. This leads to the need to somehow categorize the sources of web-based information in

plausible, less plausible and false. Unfortunately it is not possible to regulate, filter, eliminate, or ban all misinformation on the Internet, so the burden to discern "white from black" leans on users' rationality.

3. THE USERS AND WEB-BASED INFORMATION CREDIBILITY

In most cases, the background or expertise of users affects the way they evaluate the credibility of information. Experienced Internet users are normally more critical on the believability of the information found on a certain website, while less experienced users often accept the trustworthiness of any information and made almost no attempt to verify the accuracy of it. The issue is how users can effectively and efficiently assess the credibility of the information they retrieve from search engines. Three main components affect this ability (Byerly, Brodie, 2005:4):

(1) *Skills* - including information literacy and related literacies that users must possess to be effective in an information environment;

(2) *Tools and technologies* - that are designed to allow users to navigate information; and

(3) *Institutions* - such as libraries and schools that transfer these skills and prepare individuals to be critical thinkers and consumers of information.

Developing the skills to evaluate Web-based information credibility is crucial for Internet users. These skills are more or less the same as for evaluating information found in other sources of communication. To evaluate web-based information users could use the checklist approach using the following criteria (Harnack, Kleppinger, 2003; Metzger, 2007):

Table 1 Criteria of evaluation

1.	Authorship / Authority	Who is the author and what are his credentials; May be assessed by noting who authored the site and whether contact information is provided for that person or organization, what the author's qualifications, and affiliations are, and whether the Web site is recommended by a trusted source.
2.	Coverage or Scope	Refers to the comprehensiveness or depth of the information provided on the site.
3.	Objectivity/ Knowledge	Seek out other sources to see if the author has considered enough alternative views.
4.	Accuracy	Refers to the degree to which a Web site is free from errors, whether the information can be verified offline, and the reliability of the information on the site.
5.	Currency	Refers to whether the information is up-to-date. When the site was last updated?

Here are some examples regarding the above mentioned criteria:

- *Currency*: "Does the site provide information about when the information was posted or updated?"

- *Accuracy*: "Does the web site list contact information such as a phone number or address?"

- *Objectivity*: Consider whether the views represented on a site are facts or opinions

- *Authority*: Check to see who the author of the web site is; Verify the author's qualifications or credentials; Check to see whether the contact information for the author or organization is provided on the site and look for an official "stamp of approval" or a recommendation from someone you know.

The degree to which Internet users follow the recommended criteria to evaluate the credibility of the information they find online was analyzed in several studies (Metzger *et al.*, 2003). One of the most puzzling findings was that users are not always willing to check the accuracy of web-based information. They obtain higher scores on actions that are easiest to perform and that require their opinion and lowest on the recommendations that are more time consuming and require effort to perform.

4. CONCLUSIONS

The checklist approach to credibility assessment is more an academic theory and is not examining what factors people really use to determine online information believability.

In practice, the main criteria to estimate the believability stress on the identity of the source and quality of the data presented on a website. People heavily rely on design elements that appear to be also a primary factor in making credibility judgments. The judgment is based on whether:

- the source is an official authority
- the page cite scientific references
- the site is professionally designed and easy to use, and
- the site is written in a language easy understandable.

Another finding was that different users use different processes at different times in order to evaluate the credibility of online information.

User motivations additionally influence the degree to which users critically evaluate online information. Of course not all websites need a thorough examination, which ultimately depends upon the purposes and intent of the user of the information. Clearly, when people are motivated due to personal factors (willing to understanding some issues) they are likely to pay put more effort in evaluating the information. Users will go beyond the design of the web page to examine the information content and its author or source, taking a more rigorous approach to credibility assessment. Users who are less motivated to find credible information may not analyze credibility at all.

In conclusion, the analysis upon web-based information credibility shows that in general credibility assessments should not be left to the latitude of users, because they will not exert enough effort to verify the credibility of such information. A possible solution could be the development of automated tools that make the assessment for users, in conjunction with a training offering on how to use those tools or systems.

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THE PSYCHOLOGICAL AND STATISTIC INSTRUMENTS USED TO MEASURE CAPACITY TO EASILY REFUSE DOING SOMETHING THEY DISAGREE ABOUT – THE BASIS OF LEADERSHIP

Daniela BELU

"Henri Coandă" Air Force Academy, Brasov, Romania

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. CAPACITY TO EASILY REFUSE DOING SOMETHING THEY DISAGREE ABOUT

Neurolinguistic programming therapists call the inner coherence of persons with leadership skills congruence. The perfect harmony between a person's identity/ convictions/feelings/behaviour indicates the level of inner coherence/congruence of that person's psychic.

The measure of leadership is indeed the fact that the leader is not content to merely defend certain ideas, but will also materialize them in his/her behaviour, by virtue of his talent to make/build/ put to application the world of values/beliefs/aspirations from within his/her mind. Coming out in favour of a thing he/she profoundly believes in, thoroughly developing a project without giving in to obstacles, finding solutions to concrete problems around him/her, that not only affect him/her but those around as well, respecting people and activities starting from the organization of the work and the observation of labour norms are all forms of expression of the inner coherence, easily perceivable in all the gestures/words of a person endowed with leadership skills, who will never cheat, "no" meaning "no", and doubts being expressed with convincing arguments because there are justified/supported/ "elaborated".

At the level of the organization, the selection for managerial positions must necessarily be made relying on a battery of psychological tests, with the purpose of employing people with leadership skills, so that any manager, regardless of his hierarchical level, may be a natural leader, which would translate into:

- The fact that the person in question will constrain no one to behave according to a pre-established scenario suiting his/her personal needs, but will rather impose the observation of the internal organization regulations of the company, the application of the labour norms, of the country's laws and of the principles of Christian morals, by the methods acquired from the management knowledge.
- The fact that the person is self-confident;
- The fact that the person is genuine;
- The fact that the person will act according to his/her own values and, by way of consequence, will do what he/she preaches and would not have a problem saying what he/she does.

As regards the increase of the mental congruence of any employee of a company, it

is important for the process of self-development, in terms of the individual's mental maturity, to consist of the following aspects:

- To work, relying on what we ourselves can do (and not on what others could do to help us, or worse, by obligating/deceiving those who depend on us in order to use them);
- To eliminate the 'to be perfect' imperative that the school / educational system has long forced on generations up to this day and that organizations have sustained by cultivating the 'fear of criticism and rejection'
- To learn optimism together with and alongside: 1) the disappearance of the obsession of being perfect (or better yet of appearing perfect) and 2) the diminishing of the stress generated by the fear of being regarded as an impostor.
- To discover skills/passion/things that may support optimism and the individual's state of happiness.
- To reorient the imperative of perfection towards skills/passions/things that support optimism and the individual's state of happiness.

A leader is a happy person, and the source of his/her capacity to the reach this state of mind is in fact the harmony he/she permanently finds himself/herself in, with what he/she thinks and does, the congruence of his/her psychic having the wonderful gift of carrying others away in his positive dynamics.

This harmony between the thoughts/emotions/actions of an individual, the congruence, is a marker of the psychical maturity and a state where the ideas form a natural and creative chain, and the emotional experiences are calm, having a self-appreciative inner tranquillity. Under these terms, all actions of the individual are effective, consuming an extremely small amount of energy, but with maximum results.

The fact that some people are more congruent than others are poses two problems that need to be solved:

1. The occupation of leading positions, regardless of the hierarchic level, by people who are psychically congruent.
2. The increase of mental congruence within the individual, as a side of personal development of any employee of the organization.

Cognitively speaking, all employees comprehend and are capable of explaining several things, but not all people are able to apply them in other actions other than those adequate to their biological age.

These methods of increase of the mental congruence will materialize in the personality of the employees of a company in:

- physical and psychical relaxation;
- expression of the personal emotions and opinions;
- honest recognition that the individual 'does not know', 'does not have what it takes', 'lacks the theoretical/practical knowledge' required to solve a problem;
- the choice of simplicity in the relations with the others, renouncing the 'confrontation' with the fellow-creatures and instead choosing to 'offer our values/beliefs', while expressing themselves clearly/ bravely/honestly, using metaphors to allow comprehension and to help those around feel intelligent/relaxed/respected, in their capacity of interlocutors.

2. CASE STUDY: 2008-2009 SURVEY

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 have been collected by the filling out of the form presented in Figure 1, containing the items of the psychological tests combined, aiming the dimensions that measure the magnetism of the personalities of the subjects from within the two groups.

A battery of psychological tests has been prepared, containing the adapted variants of the comp onents below:

Psychological test

- evaluates the „congruence -4- capacity to say 'NO' dimension
- The bibliographic source of origin is the 'Corpus of psychological tests to get to know yourself better', by Gilles D'Ambra, Litera International Publishing House, 2008, page 79.
- The evaluation scale is of 4 points distributed as below:

Table 1 The evaluation scale

1	2	3	4
Incapable of saying NO	Finds it difficult to say NO	Says NO and is adaptable when necessary	Says NO and finds it difficult to adapt if necessary

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 items below:

1. At a party a man/woman is insistent trying to converse with you:
a) You resist hoping he/she will eventually leave.
b) You leave, making an excuse.
c) You elegantly (but firmly) send him/her away.

2. You think of your best friend:
a) That he/she looks sexier than you do.
b) That he/she is like you.
c) That you have no reason to envy him/her.

3. Your boss gives you extra-work:
a) You do not dare say no, too bad for your weekend.
b) You turn it down explaining that it is not listed in your job specification.
c) You explain that you already have many tasks and that, if you accept, your work will be affected.

4. The sales-women in the stores:
a) Are capable of selling you old products from last year's discounts.
b) You do not stand to be patronized.
c) You do not hesitate to make them unfold many things, even though you are not certain you will buy them.

5. You sometimes do certain things by yourself, such as:
a) Going to the cinema.
b) Dining out.
c) Going on holiday.

6. After a romantic dinner, your partner no longer contacts you:
a) You think you have done something he/she did not like.
b) You think to yourself that he/she has his/her reasons.
c) You call him/her and give him/her a piece of your mind.

7. Generally, in relation with others:
a) You often wonder what they see in you.
b) You don't care about what they think of you.
c) You often feel as if the others were underestimating you.

8. When your best friend makes a scene, you are convinced that:
a) You will never see him/her again.
b) You will stay upset for a long time.
c) It will all be forgotten in a few days.

9. Compliments have the tendency:
a) To generally disappoint you.
b) To make you feel bad.
c) To delight you.

10. In what work is concerned you are convinced:
a) That many things are ignored/tolerated.
b) That you deserve more.
c) That you are appreciated at your full value.

11. You often tend to:
a) Start working.
b) To poke your nose into other peoples' business.
c) To make a blunder.

12. Your current lodging:
a) You lover (or your parents) has/have chosen for you.
b) You have chosen yourself.
c) It was your choice too.

13. You dream to become or you already are:
a) A clerk.
b) Employee in the private sector.
c) Your own boss.

14. The office or home burdens:

a) Are almost always on your shoulders.

b) You pull tricks, avoiding them in order to do your best.

c) You do your job, nothing more.

15. Everything goes smoothly in a couple when:

a) They do everything together.

b) Each of them does what he/she wants when he/she wants.

c) Each of them has his/her personal pleasures and activities.

3. INTERPRETATION OF THE ANSWERS

0 points are calculated for each 'a' answer, 1 point for 'b' and 2 points for 'c'. The subject will fall under the category determined by the score obtained by summing up the score.

Score < 8 points. The dependent type

- Characteristics: does not think for himself/herself / cannot understand his/her needs / depends on the group / is part of the manoeuvre mass / is willing to do the dirty jobs and difficult tasks just to be accepted by the people around.

- On a scale measuring the individual's congruence through his/her capacity to make decisions on his/her own and to say "no" when disagreeing, the subject scores 1 point.

8 points ≤ Score ≤ 14 points. The polite type

- Characteristics: it is difficult for him/her to make decisions on his/her own / it is very important to him/her not to differentiate from those around, and to this end he/she is willing to even neglect his/her own needs, even though he/she is sorry afterwards / is a soft person / is easily disheartened at the first remark received / is easy to deceive.

- On a scale measuring the individual's congruence through his/her capacity to make decisions on his/her own and to say 'no' when disagreeing, the subject scores 2 points.

15 points ≤ Score ≤ 22 points. The adaptable type

- Characteristics: is capable of making decisions on his/her own; when necessary, he/she can renounce his/her own needs / subordinates when there is no other way, acting as a person who depends on the others' opinion / makes compromises.

- On a scale measuring the individual's congruence through his/her capacity to make decisions on his/her own and to say 'no' when disagreeing, the subject scores 3 points.

Score > 22 points. The independent type

- Characteristics: this type always makes decisions on his/her own / does not make compromises / cannot be made to obey unless he/she decides so himself/herself.

- On a scale measuring the individual's congruence through his/her capacity to make decisions on his/her own and to say 'no' when disagreeing, the subject scores 4 points.

4. THE STATISTIC INSTRUMENTS USED TO MEASURE THE PROBABILITY OF ERROR OF THE RESULTS

$$\text{Average} = \frac{\left[\sum(\text{value} \cdot \text{number of subiects})\right]}{\text{Sample group}} \quad (1)$$

$$\text{Standard deviation} = \frac{\sum(\text{value} - \text{average})}{\text{number of value} - 1} \quad (2)$$

$$\text{Variance} = \frac{\left[\sum \text{values}^2 - \left(\sum \text{values}\right)^2 \Big/ \text{number of values} - 1\right]}{\text{number of values} - 1} \quad (3)$$

The "t" test is applied in its form in which two averages calculated in two separate, independent groups are compared by applying the formula:

$$t = \frac{\text{avarage of sample1} - \text{avarage of sample2}}{\text{SCd} \cdot \sqrt{\frac{1}{\text{Sample group1}} + \frac{1}{\text{Sample group2}}}} \quad (4)$$

$$\text{SCd} = \sqrt{\frac{\text{DSgr1} \cdot (\text{Sgr1} - 1) + \text{DSgr2} \cdot (\text{Sg2} - 1)}{(\text{Sgr1} + \text{Sg2}) - 2}} \quad (5)$$

$t_{calculated} \leq t_{critical}$ - the null hypothesis is accepted

$t_{calculated} > t_{critical}$ - the null hypothesis is rejected

Note:

Standard deviation = Sd;

Standard common deviation = SCd;

Sample group=Sgr;

Deviation Sample group=DSgr.

The 't' test is applied in its forms comparing the average calculated in a single sample.

$$SD = \sqrt{\frac{\sum values^2 - (\sum values)^2 / Sgr}{Sgr - 1}} \quad (6)$$

$t_{calculated} \leq t_{critical}$ - the null hypothesis is accepted

$t_{calculated} > t_{critical}$ - the null hypothesis is rejected.

5. CONCLUSIONS OF THE HYPOTHESIS VERIFIED WITHIN THE 2008-2009 STUDY

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.

The hypothesis we aimed to verify is:

Do the majority of the subjects express psychological congruence through their capacity to always make their own decisions, in both groups, or not? This hypothesis may have the significances below:

- The null hypothesis: 'to always make their own decisions, to comply while being fully aware, when they decide so, to easily refuse doing something they disagree about'.

- Rejection of the null hypothesis: 'they lose their self-confidence at the first observation; they do not know what they want, they need to be told what to wish for, and are incapable to refuse someone, or find it very difficult to do so'.

Table 2 The final results

Capacity to say 'NO'		
Sample 1 (13)		
Score	Number of respondents	%
3	12	92,3%
2	1	7.69%
Sample 2 (24)		
Score	Number of respondents	%
4	7	29,16%
3	16	66,66%
2	1	4,16%

Congruence through their capacity to say 'NO' in sample 1:

$-t_{calculated} = -(-13,994009) = 13,994009$

$t_{critical} = 7,26$

$-t_{calculated} > t_{critical}$ - We therefore conclude that a risk of error of 0,001%, is in sample 1 - Rejection of the null hypothesis: 'they lose their self-confidence at the first observation; they do not know what they want, they need to be told what to wish for, and are incapable to refuse someone, or find it very difficult to do so'.

13,994009> 7,26

Congruence through their capacity to say 'NO' in sample 2:

$-t_{calculated} = -(-6,9115314) = 6,9115314$

$t_{critical} = 5,63$

$-t_{calculated} > t_{critical}$ - We therefore conclude that a risk of error of 0,001%, is in sample 2 - Rejection of the null hypothesis: 'they lose their self-confidence at the first observation; they do not know what they want, they need to be told what to wish for, and are incapable to refuse someone, or find it very difficult to do so'.

6,9115314>5,63

Sample 1: Average = 2,923; Standard deviation = 0,2774887

Sample 2: Average = 3,25; Standard deviation = 0,5316094

$-t_{calculated} = -(-1,7917808)=1,7917808$

$t_{critical} = 1,69$

$-t_{calculated} > t_{critical}$ - With an error risk of 10% we conclude that 100% in Sample 1 and 70,82% in Sample2 - Rejection of the null hypothesis: 'they lose their self-confidence at the first observation; they do not know what they want, they need to be told what to wish for, and are incapable to refuse someone, or find it very difficult to do so'.

1,7917808>1,69

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DECISION-MAKING SUPPORT APPLICATION REDUCING THE MILITARY AIR TRAFFIC CONTROLLER`S ERRORS WHEN DEALING WITH THE AIR THREAT

Pavel NEČAS*, **Tomáš SCHÓBER****, **Jaroslav UŠIAK*****

*Armed Forces Academy of General M. R. Štefánik, Liptovský Mikuláš, Slovak Republic,
** CGCI (Central ground-controlled interception), Operation Centre Zvolen, Slovak Republic,
*** The Mathias Bel University in Banská Bystrica, Slovak Republic

***Abstract**: For military air traffic controllers is time always the biggest enemy when solving an extraordinary or threat situation. People need enough time to analyse, decide and to spread important information to another site. The decision process always suffers from lack of time and obviously brings human errors which can lead to accidents or even fatalities. This article deals about human factor and points out that software decision-making support aids are necessary for military controllers and authorities responsible for weighty decisions.*

***Keywords**: error, threat, attribute, decision-making process, military air traffic controller.*

1. HUMAN ERROR

While the number of aviation accidents attributable solely to mechanical failure has decreased markedly over the past decades, those attributable at least in part to human error have declined at a much slower rate. Given such findings, it would appear that interventions aimed at reducing the occurrence or consequences of human error have not been as effective as those directed at mechanical failures. Clearly, more emphasis must be placed on the genesis of human error as it relates to accident causation.

The human-factors programme is a long-term and never ending effort, with the aim of improving safety to higher levels. It is the primary and permanent goal both for civil and military aviation. Human error is a causal or contributing factor in the majority of aviation occurrences. All personnel commit errors, although there is no doubt they did not plan to have an accident. Errors must be accepted as a normal component of any system where humans and technology interact. They are a natural bi-product of virtually all human endeavours. Errors may occur at the planning stage or during the execution of the plan. Errors lead to mistakes – either the person follows an inappropriate procedure for dealing with a routine problem or builds a plan for an inappropriate course of action to cope with a new situation. Even when the planned action is appropriate, errors may occur in the execution of the plan. On the understanding that errors are normal in human behaviour, the total elimination of human error would be an unrealistic goal. The challenge then is not merely to prevent errors but to learn to safely manage the inevitable errors.

One of the more common error forms, decision errors, represents conscious, goal-intended behavior that proceeds as designed; yet, the plan proves inadequate or inappropriate for the situation. Often referred to as “honest mistakes” these unsafe acts typically manifest as poorly executed procedures, improper choices, or simply the misinterpretation or misuse of relevant information.

In contrast to decision errors, the second error form, skill-based errors, occurs with little

or no conscious thought. The difficulty with these highly practiced and seemingly automatic behaviors is that they are particularly susceptible to attention and/or memory failures.

As a result, skill-based errors such as the breakdown in visual scan patterns, inadvertent activation/deactivation of fundamental application, forgotten intentions, and omitted items in checklists often appear. Even the manner (or skill) can affect safety

2. THE NEED FOR DECISION SUPPORT TOOLS

The performance of the human element cannot be specified as precisely. We should also take into account the fact that incidents rarely, if ever have a single cause. They usually occur as part of a sequence of events in a complex situational context. Even if not altogether avoidable, human errors are manageable through the application of improved technology, relevant training and appropriate regulations and procedures.

Air defence decision making process has severe (possibly catastrophic) consequences for errors. It is a complex task accomplished by a team of highly skilled personnel. It requires mental integration of data from many sources.

Air defence personnel is responsible for all aircraft in their surveillance area and must maintain awareness of available resources, monitor audio and verbal messages and prepare situation reports. Although almost all of the control centres has a high tech equipment, critical data are still manually recorded on a desk, whiteboard or notepad. In this environment, it can be difficult to for Air defence team members to notice or identify key pieces of information that may enable them to better understand the tactical situation. Air defence personnel in real-world are working under conditions which comprise dynamic, fluid situation; time pressure; high-risk multiple decision makers; shifting and competing goals; action feedback loops and situations with uncertain and incomplete data.

3. DECISION-MAKING SUPPORT APPLICATION

A Decision-making support application (DMSA) is a computer-based software application for military air traffic controllers (MATC) that supports and speed-up decision-making activities especially concerning the threat situation. DMSAs can serve on every MATC positions and help to take necessary steps against the menace, which may be rapidly changing and not easily specified in advance. The goal of this support tool is to present decision support information in a format that minimises any mismatches between the cognitive characteristics of the human decision maker and the desing and response characteristics of the decision support system. DMSA creates as an outputs transformed data generated by algorithm based on user criteria. DMSA offers focusing attention on high priority contacts (and alerts), as well as on missing data and enabling the decision maker to use more data than are typically used in common systems (compared to normal values). Common systems used by MATC require the user to retain previous contact data in memory to compare with the most recent values for critical parameters.

These systems also require the user to rely on recall of vast amount of information from training and experience. Presenting all known data on a contact in a synthesized way should reduce working memory requirements and facilitate recognition. Additional features offered by DMSA include displaying the complete kinematic contact history, presenting graphic displays of location an its prediction, highlighting missing data, providing alerts and providing assessments of current contact identity that go beyond what existing systems now present. The systems like DMSA are widely used in civilian air transport but in military are missing and desperately necessary. The DMSA should be flexible, easy to operate and with real time dissemination of info. Each MATC position as Tower, Radar, CRC and National authorities should have their own setup focusing on the specific cues.

4. PROCESS

The environment is permanently scanned for attributes relevant to the active template. All data are collected from primary and secondary surveillance radars, intelligence info and other units contributing to system. The set of available attributes to be evaluated are then selected from the input. Finally, the perceived data are compared to the expected data (e.g. deviance from flight plan).According to foreign studies and empirical domestic research there were identified up to 15 attributes, but not all of them are described as critical. The list of major of them is following: (order is not fixed and can be varied depending on MATC position and location): Country of origin; Intel report; IFF mode; Deviation of Flight Plan; Altitude; Speed; Civilian / Military; Suspicious behaviour of aircraft crew; Radar signature (where primary radar info is available); Number and type of aircraft, ordnance; Maneuverability of aircraft.

Beside these attributes the tool should offer various alert signalizations depending on the unit designation and geographical position and many options concerning safety lines and ranges setting. The most applicable are: Short Term Conflict Alert (STCA); Minimum Sector Altitude Warning (MSAW); (Predicted) Horizontal and vertical violation of prohibited areas; Deviation of flight route / flight plan.

During the DMSA evaluation was observed that: The attributes were weighted differentially depending on each position and evaluator`s skills and experiences; Air defence personnel did not rely on all data and was influenced by conflicting data in specific attributes rather than the overall pattern of data.

Overall threat level was not related to the number of attributes that were evaluated during threat assessment, but was related to the degree of fit of observed data to expected data ranges in the evaluator`s active template.

5. GRAPHIC INTERFACE

The display is designed to present the relevant data necessary for a commander to evaluate all likely explanations for what a potential target might be and what it might be doing. There are various display modes of DMSA – graphical, numerical, or combination of both. Experiences show that graphical mode was preferred on every tested position, because number could implied a false sense of accuracy. Its main advantage is that a large amount of parametric data should be portrayed graphically for rapid assimilation by the user. The user can see, at a glance, a synthesized picture of the contact's behaviour. Graphic presentation should reduce the amount of mental computation required to perform tasks and allow users to spend less time searching for needed information. Graphic also allow users to omit steps that are otherwise necessary when performing a task without a graphic. An example of this advantage is that to determine whether the aircraft is within the range to reach the airport, there is no need to recall the specific range values and then compare them with the aircraft`s current range. Instead, the user can determine if the aircraft is within its launch range by a quick glance at the display. Generally, graphics help users save time when searching for needed information when several related dimensions of information are encoded in a single graphical object.

6. INTERFACE GUIDELINE SUGGESTIONS

The window should contain an indication of threat rating, threat prediction and history and a comprehensive list of attributes. Users could drag the window anywhere on the screen, but normally it will be hooked close to the track. Each threat evaluator can accommodate the number of displayed attributes, add or remove them according to own discretion. However, the main (critical) attributes will be displayed permanently. Threat ratings should be displayed with verbal descriptors (e.g. high, medium, low) rather the numbers of percentages. The utility showing threat rating history is giving feedback on a proposed threat assessment interface and enables better sense of track history.

Threat assessment window have to provide a list of all relevant attributes. A

comprehensive list avoids several biases and is consistent with user preferences regarding verification and confidence. In addition, the full list should help avoid over-reliance on only a few attributes. For some of them, the corresponding data values (e.g. speed, altitude, distances) should also be displayed. Each attribute should have a graphic frequency indicator that shows how far the data value deviates from the attribute's expected value. This method of display would help avoid familiarity biases, over-reliance on a subset of cues. Displaying attributes in order of preferred use would not overcome user's reliance on the first few ones, or the influence of a change to one of the high-weighted.

6. CONCLUSIONS

Perhaps because air threats are rare events only few organizations are prepared when one occurs. The situation in the Army, respectively the Air Forces is not an exception. Many organizations, airliners and airports do not have effective plans in place to manage events during or following an emergency or crisis. Managing of a crisis situation depends on successful handling the first few minutes. So errors occurred right in the beginning of the decision making process are then very hard to eliminate and could lead to fatal consequences.

Human is the last, most important, but also generally the weakest element in decision-making process. According to all available and relevant information he must make the final statement and, of course, bear the consequences. Due to the multi-tasking, tempo, integration demands and short term memory requirements, the task of the Air defence decision maker can be characterized as challenging between normal and extreme conditions. That is the reason why automated help tools like the DMSA are now becoming indispensable (neoceniteľnými) in modern air traffic management. The intension is to aid the decision maker by providing information in a way that will minimize the need to maintain information in working memory, reduce information processing demands, help focus attentional resources on the highest priority contacts, help make decisions under stress and support higher levels of situation awareness.

This article discussed about human errors as an irremovable part of air traffic management and the development of guidelines for displaying threat information to decision makers. The DMSA is set to conform to the expectations of so-called primary decision makers responsible for the first steps of threat recognition and to carry out adequate measures and also for the final (strategic) decision makers (national authorities) to take weighty decisions. It displays the data that they need, in order in which they use it, thereby contributing to their rapid assimilation of the information. All the features of DMSA should help users avoid common decision-making biases and reduce the likelihood of misses and false alarm errors.

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MODELLING THE AIR TERRORIST PROFILE AS A SYSTEM

Cătălin CIOACĂ, Cosmina-Oana DRĂGHICI

„Henri Coandă" Air Force Academy, Braşov, Romania

***Abstract**: In this paper, the multidisciplinary approach of the systems theory offers solutions to prevent future terrorist attacks starting from various potential attackers profile analysis of the air, civil and military transport system.The model developed is particularly useful in assessing terrorist threats, in identifying vulnerabilities in the system, in developing capabilities for rapid assessment of different risk scenarios of attack, anticipation of possible attacks, in other words, increasing the effective air transport system security.*

***Keywords**: air transport system, terrorist profile, security.*

1. INTRODUCTION

The air transport system (ATS), part of the national critical infrastructure, has grown fast in recent years. According to a Boeing study regarding the number of transport aircraft, a continuous increase from 17,500 aircrafts in 2005 to approximately 36,000 in 2025 is expected. This development is subject to some challenges, the most important being in the field of safety: without safety development, a major loss per week in the subsequent years is projected; the present economic context imposed budgetary constraints that were felt by reducing safety costs.

Any disruption of the stability of the overall transport system will leverage: the decrease of passengers` safety, the reduction of air transportation demands, airline industry losses and, ultimately, the disruption of economic stability (U.S. Patriot Act, 2001:75).

For these reasons, ATS has been and will remain a preferred target of terrorist attacks. The potential success of such an action would mean, in addition to human losses and material damage, a strong psychological impact. The size, complexity and geographical layout of ATS make the fight against terrorism a process with global implications that is difficult to manage. The proved failures (Table 1) in rendering a prompt answer, efficient in case of terrorist actions can be interpreted as a sign of weakness and may lead to new and spectacular attempts (Anastasiei, 2011:2-4).

Table 1 Aviation incidents

Year	Number of incidents	Number of victims
1990	0	0
1991	0	0
1992	0	0
1993	1	0
1994	1	0
1995	0	0
1996	1	127
1997	0	0
1998	0	0
1999	0	0
2000	1	0
2001	5	3020
2002	0	0
2003	1	21
2004	0	0
2005	0	0
2006	1	0
2007	3	0

2. TERRORISM SYSTEM

2.1 Organizational profile. Unfortunately, the evolution of society as a whole brings new

and important advantages for terrorist groups. Whether targets are found in countries that encourage terrorism or in a democratic world, the ease of movement and information enables them to choose the time, place and purpose to strike and move on. Thus, terrorist groups are themselves a moving target that is difficult to combat, requiring the ability to anticipate how and where the evolution takes place in time, while understanding the mechanisms that make these changes occur. With such an understanding, safety specialists may be able to anticipate where and how a terrorist group is likely to act.

Knowing the organizational profile of such groups on the basis of information available that is often difficult to obtain, can help in planning the fight against terrorism in three phases (Fig.1).

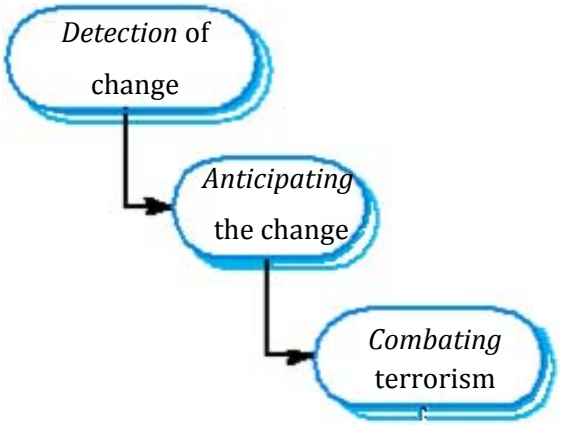

Fig. 1 Phases to counter the terrorist groups adaptation efforts (Source: RAND MG331-4.1)

Detecting the efforts of terrorist groups before they are fully realized and used in an attack represents the challenge of the first phase. The ability of a group to gather information and resources necessary for an attack determine its chances of success. Thus, by understanding these processes, the threat level of actions to be undertaken and the success rate may be anticipated. With a sufficiently detailed understanding of the learning processes necessary for adaptation and operation of terrorist attacks, the counter measures of action can be designed. The difficulty to capture all the elements that determine the evolution of terrorist groups is recognized. Also, random and unpremeditated changes, arising from specific circumstances, will make the possibility of accurate prediction more difficult. (McCornick, 2003:17-23). The threat of terrorist groups is not based on what they intend to do, but rather on the success of intentions.

2.2 The Attacker Profile. Drawings, diagrams and charts will be separated by a free space from the text and printed as close as possible to the first reference. Their width will not exceed that of the column they belong to. Should this be impossible to achieve then they will be printed across the whole breadth of the page either at the top or the bottom of the page. Reality has proved that terrorists who represent a significant threat are rational and intelligent. Without the latter attribute we could not discuss about the impact of asymmetric conflicts.

The characteristics of terrorist groups provide information about possible types of attacks, information that are particularly useful for decision makers responsible for aviation safety systems in allocating resources to increase the response capacity of the system. Thus, three theoretical profiles of terrorism have been identified (Jiemenez, 2009:7-11) based on four parameters:

1. funding source
2. technical capabilities
3. fear of failure
4. desire for innovation

These profiles are: the „echo-terrorist" group; „the lonely wolf" group and the „state versus state" group. The capture of various potential behaviors is suggestively shown in table 2.

Table 2 Map of attackers profile

Descriptors/ Profile	**Resources**	**Technical capabilities**	**Fear**	**Innovation capacity**
Echo-terrorist	■	■		■
The lonely wolf			■	
State vs state	■	■		

After identifying the theoretical profile, consequences can be determined based on the allocation of indices for relevant components of each built scenario. Although the information necessary to accomplish a full and accurate profile of the attacker are relatively difficult to obtain, once the map of threats completed, the authorities responsible for aviation safety need to focus efforts and to allocate the necessary resources to counter the possible threat. For example, positioning the "lonely wolf" group on the map of indicators as having low technical capacities and financial resources, could be interpreted in terms of risk of attack as being of high probability using explosives, at the expense of advanced technical systems.

The use of proactive approach based on building models of attack in conjunction with the attacker's profile, in addition to the advantage given by the achievement of an adequate assessment of potential risk, avoid the need to obtain sensitive safety information.

2.3 Terrorism as system. Tackling terrorism using systems engineering, emerged as a possible solution offered by International Council on System Engineering (INCOSE) to reduce or eradicate terrorism after September 11 attacks. Systems engineering capability to analyze and evaluate all aspects of complex socio-technical problem in a multidisciplinary approach recommends the use all specific instruments (principles, techniques and methods) to understand the physical structure and functioning of the act of terrorism.

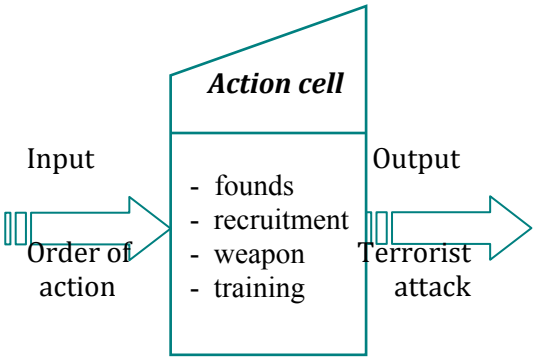

Fig. 2 A process model of the terrorist system

The system, as defined by some experts (Zadeh, 1969:73), represents a lot of input-output pairs. A system is determined by the continuous exchange of matter, energy and environment information (Mureşan, 2004:11-15), a result of functional interaction between components. As a result, processes that occur in a terrorist group can be modeled as an open system, in which the relationship between inputs and outputs is achieved only through the transmission system (Fig.2). To illustrate the interaction between the terrorist group and organizations meant to combat terrorism, a system with close loop control mechanism is built in order to reduce the consequences and to eliminate factors that make possible terrorism proliferation (Fig.3).

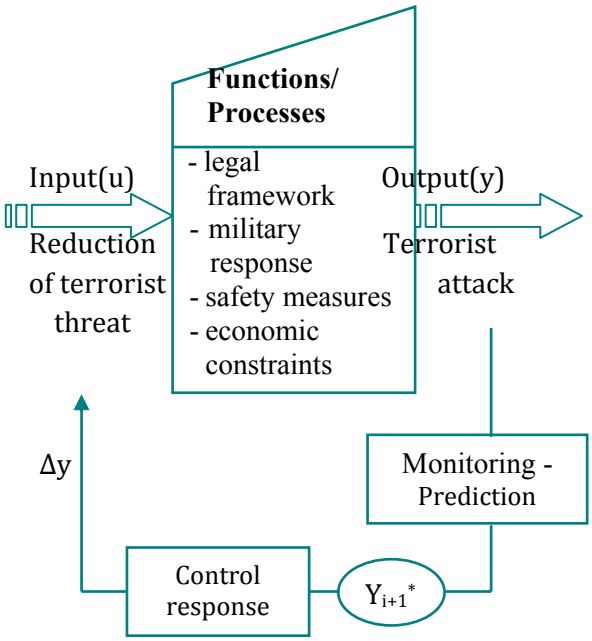

Fig. 3. A process model of the antiterrorist system

Besides the four basic components (inputs, outputs, processes, control mechanism), external constraints and the relations between elements/subsystem components are very useful for analysis. The simplified model shown in figure 3 shows at least some essential advantages in its efforts to counter the terrorist phenomenon deriving both from the stages of the life cycle of terrorist attack

1. preparation – legislative framework, security measures, constraints, etc.
2. development (the attack) – military response
3. conclusion – the legislative framework

and from understanding thinking processes of attackers and the attacked.

The use of feed-before has the role of analyzing the y output value evolution tendency and of anticipating the y_{i+1}^* value. Calculation of control ($\Delta y = y_i - y_{i+1}^*$) is accomplished by the control block. The allowed multidisciplinary approach by engineering systems to fight terrorism has the advantage of communicating the system problems (legal, technical and economic) in an understandable manner (Mackey, 2003:3-5). System engineering process is essential in the whole life cycle of it and the main specific activities must be repeated every time there is a new requirement/challenge for the system (Maloş, 2005: 27-34), in a creative way to meet the initial goal.

3. CONCLUSIONS

The multidisciplinary approach is useful in order to understand the functional architectures of the terrorist action. In this context, the discipline of systems engineering may assist in designing a behavioral model, as a possible solution for reduction and eradication of international terrorism.

Evaluating the behavior of terrorist groups from a system perspective could provide a better management policy to combat terrorism.

Directions for future research move towards building a complex simulation framework to describe how the aviation system functions in terms of extreme events and the main stages of implementation can be summerized as follows: the identification and description of possible states of the system, of the system entries and of the relations between system components in terms of probability distributions; the simulation achievement by generating random varables that describe events; the process repetiton for different alternatives and configurations (scenarios).

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ENTREPRENEURSHIP COMPETENCES ACQUIRED DURING PRACTICAL PLACEMENT. QUALITATIVE ISSUES

Marcela Rodica LUCA

"Transilvania" University, Brasov, Romania

***Abstract**: The paper presents a part of a larger research concerning the contribution of practical placement to the acquisition of entrepreneurial competences. The participants were 182 academics, employers and graduates from 22 countries who answered a questionnaire concerning two parts: the first dealing with the evaluation of the level of importance and of the level of achievement of entrepreneurial competences and the second with the opinions of the participants concerning the entrepreneurial culture of the hosting companies, the ways these companies ensure the development of entrepreneurial competences of the students hosted in practical placement, the changes needed in the university curricula in order to increase entrepreneurship and employability of the graduates, the role of the enterprises in developing entrepreneurship via practical placement.*

***Keywords**: entrepreneurship, competences, entrepreneurial education, practical placement, higher education, employability.*

1. INTRODUCTION

Entrepreneurship is becoming more and more important for the economies of a country because it creates technological progress, jobs, wealth, and shapes the global cultures (Ireland, Webb, 2007). As an economic behaviour, entrepreneurship is related not only to the founders of great companies but characterizes all individuals that create jobs for other individuals in small and medium size enterprises. From this point of view, there is a distinction to be made between entrepreneurship and self-employment, the latter being considered rather a lifestyle.

Large enterprises need on a smaller scale the entrepreneurship of all their employees, but for medium and small size companies, which employ most of the graduates, it is vital for all the employees to be entrepreneurial and contribute to the company's survival on the market. Universities are concerned with the entrepreneurial education because this increases the employability of their graduates as well as the probability that they open an independent business at the end of their studies. There are study programs dedicated to entrepreneurship in the majority of European and American universities, but it seems that it is not enough and that entrepreneurial education should be generalized, i.e. included in all study programs, in general and higher education. Thus education enables individuals to become proactive, independent and self-reliant as actors in the economy. In the frame of the partnership between university and the hosting company/ organization, practical placement is meant to complete the education provided by the university with a fresh breath of real-life, to provide learning situations that empower future professionals to adapt quicker to the requirements of work.

For the students, practical placement is an opportunity to learn hands-on the day-to-day problems of an enterprise and to acquire the practical skills needed to adapt to the professional life. But does practical placement teach them anything about entrepreneurship? Do the hosting companies promote an entrepreneurial culture? The obvious answer is yes, if the company is a business-oriented one. In many organizations that host students in practical placement entrepreneurship is not a priority – such as in administration.

The European Union is concerned about the change in mentality needed for making Europe more competitive in the global economy and considers that entrepreneurial education has to be generalized at all levels (ETF, 2008). Several European funded projects addressed the issue, but there is an increasing need to generalize entrepreneurial education (EEE, 2006). The EUE-Net (European University-Enterprise Network) project (2008-2010) promoted an international research meant to identify the way practical placement of the students contributes to the acquiring of the entrepreneurial competences (EUE-Net, 2003/2007).

2. METHOD

The research conducted in the frame of EUE-Net project during 2010 consisted of a survey based on a questionnaire referring to the entrepreneurial competences and to the opinions of the respondents – academics (68), graduates (79), and employers (35) from 22 countries – on issues related to the university-enterprise partnership in developing entrepreneurial competences.

The questionnaire consisted in demographics and 23 specific items organized in two distinct parts: the first dealing with the evaluation of 14 competences on two 5 step scales – one referring to the level of importance and the other to the level of achievement of the respective competences; the second part consisting in 7 open-ended questions.

The questionnaires were filled-in anonymously either on-line, in a dedicated database on the website of the project, either in .doc format and sent to the research team. The on-line and the .doc versions were identical. The sample was a convenience one, based on the recruitment made by the partners of the project working in universities and enterprises in 22 countries.

The results from the first part (evaluation of the importance and achievement of the entrepreneurial competences) will not be presented here. The present paper will discuss the main topics identified in the answers to the 7 open questions. A detailed report on the whole research was published recently (Luca, David, 2010).

3. RESULTS AND DISCUSSION

The main topics will be presented and discussed for each question.

Q 17 – "Do the hosting company/ enterprise promote an entrepreneurial culture?" What respondents give as examples of "entrepreneurial culture" are rather aspects of organizational culture related to making the management more "human", a way of improving productivity, organizational climate, motivation, satisfaction, or well-being at work, not necessarily an entrepreneurial culture. For some respondents, entrepreneurship and employability overlap. Entrepreneurship means often joining an existing business, being fitted into the requirements of such a job, not necessarily creating one's own business. Large companies (the most frequent hosts of practical placement) promote initiative, autonomy, but not necessarily "small business entrepreneurship". There are "employee-specific entrepreneurial competences" specific to large companies which are different from those in independent entrepreneurship and small-size business. Some universities also encourage a sort of "internal entrepreneurship" for the academics (i.e. have an entrepreneurial culture) in order to renovate the didactical process, but this doesn't necessarily mean that the students' entrepreneurial spirit will improve as a result. Other universities have study programs dedicated to small enterprise management which prepare specialists for this sector.

Q 18 - "Do the hosting companies encourage employees to try new ideas?" Continually searching for novelty is an important feature of entrepreneurship, even if not for entrepreneurial behaviour only; it is rather a larger feature, related to creativity. Employees' initiative is important for the success and survival of any company, not only for those in small business. For larger companies, this is a part of company philosophy, something that is "natural" as long as the company defines itself as a learning organization. In order to stimulate the initiative and creativity of the employees, things are sometimes done formal: the participation of any employee in the process of innovation is facilitated by strategies, procedures, and adapted infrastructure. For some respondents, the key to promoting innovation with employees is simply money. Financial

incentives are useful for motivating people to come with new ideas. Students in practical placement can also be involved in this process and in some companies this is a regular practice. For them, it could be a first contact with real life in secure conditions of being only an intern.

Q 19 – "Do the hosting company/ enterprise foster and sustain innovation?" Fostering, sustaining, promoting innovation are synonyms for the same process of continuous renewal of the activities, processes, products of an organization. Mainly in the business area, innovation means keeping pace with the field and remaining competitive in a dynamic world.

- Employees are considered valuable resources in whom the wise company invests training and for whom it develops infrastructure, procedures and uses systems of incentives.
- For the universities is important to place students in enterprises that foster innovation, making of this a way of preparing well trained graduates.
- In some happy cases, students are part of this process and learn hands-on how innovation leads to business success and personal accomplishment.

However, some respondents consider that the hosting enterprises have no interest in sustaining innovation among students in practical placement. The reason is a simple one, in the opinion of an academic: "*because a company is not interested to develop the entrepreneurial culture of its employees, they will leave the company :)".*

Q 20 – "Please describe the way the company ensures the development of entrepreneurial competences and skills for the students in practical placement" The answers were structured on three categories of opinions, ranging from explicit development of entrepreneurship to total absence of such thing.

- The hosting companies explicitly develop entrepreneurial skills by: formally recognizing the individual's contribution and by teaching students how to take manageable risks and sometimes even about failing.
- The hosting companies implicitly develop entrepreneurial skills by: providing topics for bachelor and master thesis; by individual work or involvement in organizational projects, where (they) can work with more experienced employees; requiring projects that provide maturity, independence, intellectual ability, contacts with others
- The hosting companies do not develop entrepreneurial skills at all. Doing internships at medium or bigger sized businesses or at institutes, NGOs has nothing to do with entrepreneurial competences. Companies just accept students as ballast and they do not pay any attention to raising possible employees. Companies prefer the students to participate in the regular jobs that the company has already undertaken. Usually on practical placements interns are trained to be good employees, and not entrepreneurs.

Q 21 – "What are the changes you consider necessary for the universities operate in their curricula in order to increase the graduates' employability?" The main changes the universities should operate are related to several aspects such as: changes in vision of academia about the aims of higher education; changes in curricula concerning the competences and the contents taught; changes in teaching methods; a closer cooperation with the enterprises. The university should prepare the students for the practical placement and carefully and responsibly choose the hosting companies. Career centers should increase their role in preparing the students for the world of work in order to increase their employability.

Q 22 – What are the changes you consider necessary for the universities operate in their practical placement policies in order to increase the graduates' employability? Due to the fact that the employability of the graduates is becoming an increasing concern for universities, the respondents consider that some changes are needed at the level of practical placement policies. For example, practical placement should become compulsory for all study programs and be at least 1 semester long, on the basis of a long term partnership with hosting companies. Again the career centers are expected to play a role in organizing a centralized internship as well as providing support for the transitional stage to employment. Pedagogical aspects of the practical placement should be improved by:

- Motivating students to be useful and personally involved in the activities and results of the hosting company.

- Improving the training of supervisors from the university – valuing more the supervising teachers in terms of position and incentives and establish dedicated positions and specific training for teachers in charge of placement supervision.

During practical placement, university or teachers should control students' work and ask periodical reports about practical placement.

Q 23 – "Which could be the role of the companies/ enterprises in the development of the entrepreneurial competences of students?"

One idea gathered the quasi-general agreement of the employers: companies should be more involved in curriculum design by suggesting new study programs, subjects, teaching methods and by generally strengthening the university-enterprise cooperation. The new planed curriculum should define specific competences to be acquired during the practical placement. The preparatory phase of the practical placement should start at university, with the help and counselling of an entrepreneurship experienced person. Great expectations of academics towards the enterprises are to be considered too:

- Making entrepreneurial competences a standard part of any practical placement.
- Giving the students individual projects on which they can work before, during and after the placement.
- Organizing company workshops that improve entrepreneurial skills.
- Giving feedback to students at the end of practical training.
- Bringing specialists in university (for case studies and conferences).

The students, as mature educational partners have to play an important role in all these changes.

4. CONCLUSIONS

Apart from the increasing concern of university with employability, which is considered a key indicator of the quality of education, entrepreneurship will become an important issue in the next years. Nowadays, practical placement is considered to contribute to the increase of employability, but not necessarily of the entrepreneurship. Some companies promote entrepreneurship of the employees and students to be incorporated in this culture when in placement, but entrepreneurial competences are not targeted by the practical placement explicitly. In order to enrich the experience of practical placement, the partnership between universities and enterprises has to be strengthened. Universities have to operate changes in the curricula (by consulting the economic partners), making the entrepreneurial competences a part of the all study programs. They also have to improve the practical placement policies, procedures, follow-up and pedagogical issues.

5. ACKNOWLEDGEMENT

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THE GEOPOLITICAL DETERMINANTS OF ENERGY SECURITY

Pavel BUČKA*, Sylwia Wanda ZECHOWSKA**

*"Armed Forces Academy of gen. M. R. Štefánik, Liptovský Mikuláš, Slovakia, **Matej Bel University, Banska Bystrica, Slovakia

***Abstract**: In terms of energy security, geopolitics manifests in the dynamic and static factors of spatial distribution of energy resources, which in reality comes down to the interplay among the regional energy supply and demand centers and the manner in which the geographical contributors affect both state and non-state actors in their pursuit to achieve energy security goals. On account of the fact that the centers of supply and the centers of demand do not correlate, arises the issue of transit routes security. Yet another geopolitical determinant of energy security is closely related to the characteristics of oil and gas markets and this one is twofold; first, the oil market is global and the gas market has been since the mid 2000s developing towards its globalization too; second, crude oil and natural gas are fungible commodities, which means that they are fully exchangeable or replaceable.*

***Keywords**: emotion management, emotional rules, organizations.*

1. INTRODUCTION

In its classic meaning, geopolitics can be understood to be a study of state as a phenomenon analyzed within its spatial geographic environment. From this analytical perspective, the state was considered not as a separate agent but rather as a component of a broader international system. It was Rudolph Kjellen, a Swedish lawyer and scholar who first coined the term "geopolitics" in 1899 to illustrate and explain the geographical endowment of a given state as having a decisive influence on its potential of power (Ó Tuathoil, 2006). Kjellen defined geopolitics as *"the science which conceives of the states as a geographical organism or as a phenomenon in space"* (Dodds, 2005: 28). However, geopolitics as a discipline of study was fully developed by a British geographer, Halford Mackinder and an American navy officer and strategist Alfred Thayer Mahan. Those early theorists of this intellectual field had a tendency to perceive geopolitics through the lens of geographical reasoning which reflected the states' power to take actions on the global arena (Dodds, 2005).

Sir Halford Mackinder still occupies a prominent position among the scholars of geopolitics as a theory and policy and his unquestionable contribution to the development of geopolitical thinking is frequently attributed to the fact that his ideas to a greater or lesser extent influenced academics and politicians throughout the 20th century. Mackinder's Pivot-Heartland theory articulates a standpoint on "*international security that transcends the challenges of a particular period"* (Gray, 2004 : 9). On the other hand, his theories were also subject to bitter criticism because of Mackinder's follower, Karl Haushofer who paved their way into the *Lebensraum* policy of Nazi Germany (Fettweis, 2000).

Notwithstanding the shortcomings of the early geopolitical thought, the contribution of the pioneers of the method of analyzing international relations cannot be underestimated. As time showed, by means of extrapolating past events, Halford Mackinder, Nicholas Spykman, Alfred Thayer Mahan, or finally Edward Luttwak envisioned numerous future international developments like for example the creation of NATO, the end of

Cold War, or the transition of geopolitics into geo-economics (Sempa, 2009). The popularity of geopolitical thought was again brought to a revival in the late 20th century by National Security advisor and Secretary of State, Henry Kissinger with the publication of his seminal work *White House Years* (1979) in which he almost equated this concept with a realist school of thinking applied to international politics (Gray and Sloan, 2005). In Kissinger's own words *"geopolitics is an approach that pays attention to the requirements of equilibrium in international politics* (Kissinger, 1979: 714). Interestingly, Kissinger's approach was to a great extent compatible with the prevailing common understanding of geopolitics. In the general perception, geopolitics translates into the impact of a state's geographical position on its foreign policy as well as into the relations it has with other states; it also manifests in the strategic value of such aspects of a state's spatial location as the access to natural resources or sea lanes. In the often cited phrase coined by Napoléon Bonaparte: *"La politique d'un état est dans sa géographie"* (Mamadouh, 2009).

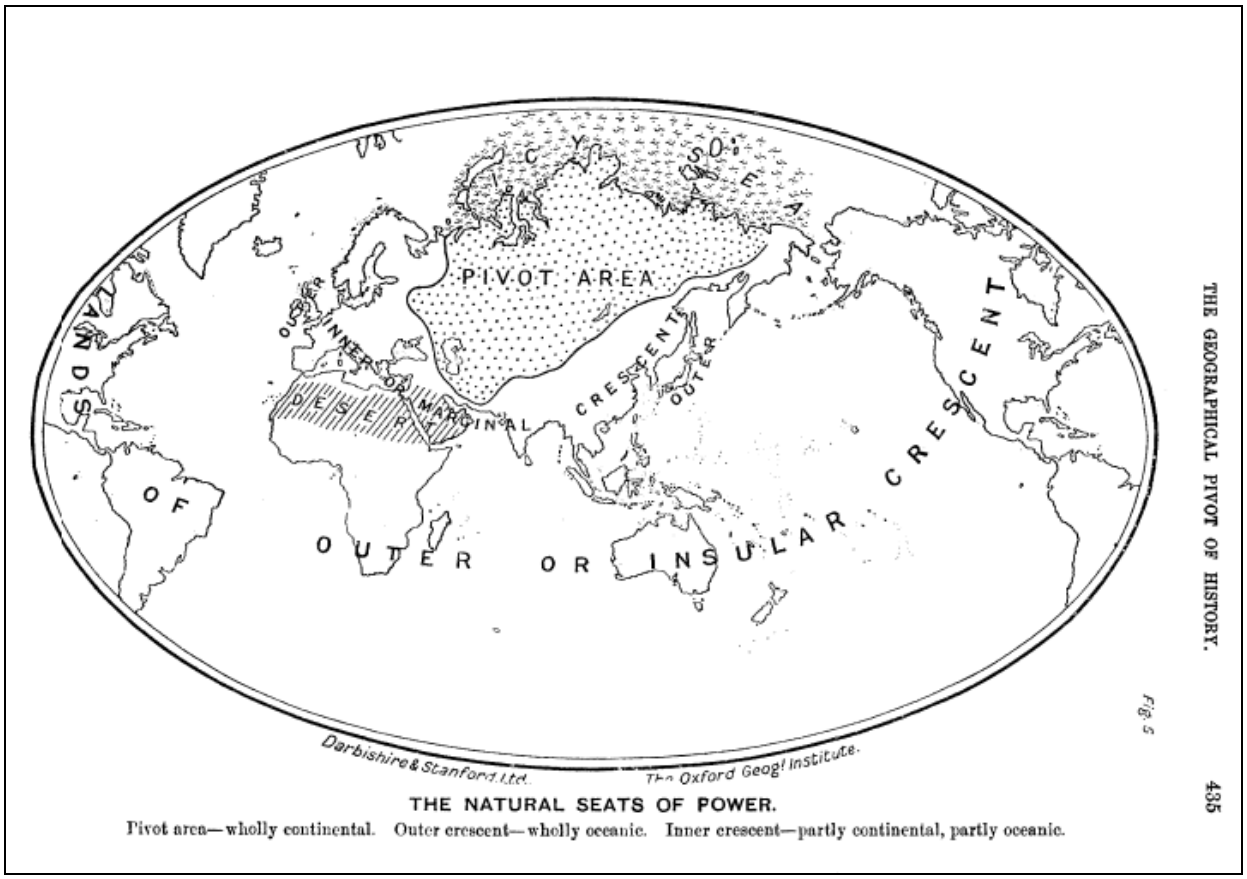

Fig. 1 The Graphical Representation of Halford Mackinder's Pivot Area. Source: The Geographical Journal, Vol. 170, 4 December, 2004.

In the contemporary geopolitical thought much emphasis is put to the fact that the hitherto traditional factors such as territories or boundaries gradually lose their relevance; instead, the economic contributors acquire substantial critical mass. As a corollary of the above, the international political environment has become subject to economization and in the last decade of the 20th century, rivalry shifted towards the control of natural resources, especially energy resources, as well as the control of international trade. The modern economic structures and mechanisms in tandem with the growing importance of multinational corporations as global actors transformed the geopolitical thinking into geo-economic thinking, whereas the newly emerged world order can be considered as pax

oeconomicana. Citing Francis Sempa: *"geopolitics is about perspectives – it is about how one views the world,"* after the end of the Cold War the perspectives of global actors shifted and so shifted geopolitics (Sempa, 2009: 4). That is all the more reason why geo-economics has become one of the dominant instruments describing and analyzing the relationship between economic and political activities and geopolitical strategies in the context of the international environment. Contrasting geopolitics and geo-economics, Edward Luttwak explains that in the latter one the conventional military potential is replaced with investment capital accumulated and controlled by the state, whereas foreign markets penetration substitutes military presence and diplomatic activities (Luttwak, 2000). The added value of the geo-economic perspective lies in that it better reflects the 21st century reality and that it offers a modern analytical outlook on the world order in which the regional geo-economic powers compete for domination and influence.

2. THE ENERGY SECURITY

In terms of energy security, geopolitics manifests in the dynamic and static factors of spatial distribution of energy resources, which in reality comes down to the interplay among the regional energy supply and demand centers and the manner in which the geographical contributors affect both state and non-state actors in their pursuit to achieve energy security goals. For example,

The corollary of the fact that the oil market is global in scope is that any event which occurs in one part of the market affects all the other parts. An example illustrating such an interrelation may be a worldwide rise of oil price in the aftermath of a disruption event taking place in the Persian Gulf (Joffé, 2007). In light of the distribution of global oil and gas resources, energy security has both structural and political aspects. According to the early geopolitical theories of Halford Mackinder, the landmass of Eurasia and the resource self-sufficient heartland correlating with the territories of Russia was a subject of unrelenting interest of the maritime powers of Great Britain and the United States. However, the history of the second half of the 20th century demonstrated an opposite course of events. Contrary to Mackinder's assumptions, it was the Soviet Union that attempted to incorporate new regions under its sphere of influence and take control over the global trade routes in Europe and the Middle East during the Cold War era. While Europe was protected by NATO, the Middle East, with the more and more limited power of the declining British Empire, was prone to become another area of rivalry and conflicting interests. Finally, the complex nature of the internal tensions of the Middle East states themselves added to the long standing political volatility of the region and had a decisive impact on the Unites States assuming the role of a regional guarantor of stability. It is worth noting here that the security of supply is of lesser importance because it is in the vested interest of the producer states, heavily dependent on oil or gas rents, to secure the continuity of supply. What really matters is controlling the stability of oil prices by means of moderating the local or regional tensions (Joffé, 2007). Therefore, the US, for decades the largest oil consumer, backed the Middle East states, especially Saudi Arabia since the post World War II era. Today the situation is different since the majority of its oil imports comes from states outside the Middle East – according to 2010 data compiled by the US Energy Information Agency "*the top five sources of US crude oil imports for November 2010 were Canada (1,975 thousand barrels per day), Mexico (1,229 thousand barrels per day), Saudi Arabia (1,119 thousand barrels per day), Venezuela (884 thousand barrels per day), and Nigeria (806 thousand barrels per day)"* (EIA, 2011). Nevertheless, its heavy oil import dependence makes the US particularly vulnerable to any adverse events influencing the security of supply to global oil markets. Hence, the American foreign policy has been for decades engaged in promoting global energy security (Bradshaw, 2009).

The concentration of the biggest oil reserves in the Middle East has always made this region an arena of international competition for resources and recurring shifts

in the regional balance of power. The etiology of the tensions in the Middle East and especially in the Persian Gulf is deeply rooted in the British and French partitioning of the region which took place after the First World War and the collapse of the Ottoman Empire. Consequently, from 1918 on, the region became a contestable area where different super powers vied for influence. Until the end of the Second World War the dominant presence in the region was marked by the French and the British super powers. Later on, the Cold War competition for spheres of influence between the West and the East also affected the Middle East where the Soviets supported the post-colonial countries of the region and recognized the governments of Egypt, Iraq, Syria and Algeria when nationalist groups succeeded in ousting their old monarchies (Sorenson, 2008). It goes beyond any question that one of the major reasons why the competition for spheres of influence intensified considerably was the discovery of rich oil fields in Persia in 1908, and later in the 1930s in Saudi Arabia and other Persian Gulf countries. With the 1950s withdrawal of the British and French from the region and with the new independent states in the region forging alliances with the Soviet Union, the presence of the US in the Middle East political landscape became essential and more vivid. In the 1950s, the US gradually became the predominant power securing the stability of the region in its efforts to support the ally monarchies of Saudi Arabia, Jordan, Iran and the Emirates (Lewis, 1997). While keeping in mind the growing importance of the petroleum industry worldwide, a brief glance at the map below illustrating the disproportionate endowment of world petroleum, suffices to realize why the access to the Middle East resources has become a top strategic priority in the last century. Figure 2 constitutes an instructive illustration of the mismatch between the regional centers of production and consumption between of crude oil. The relative size of the particular countries in the infographics proportionally represents the level of their oil reserves.

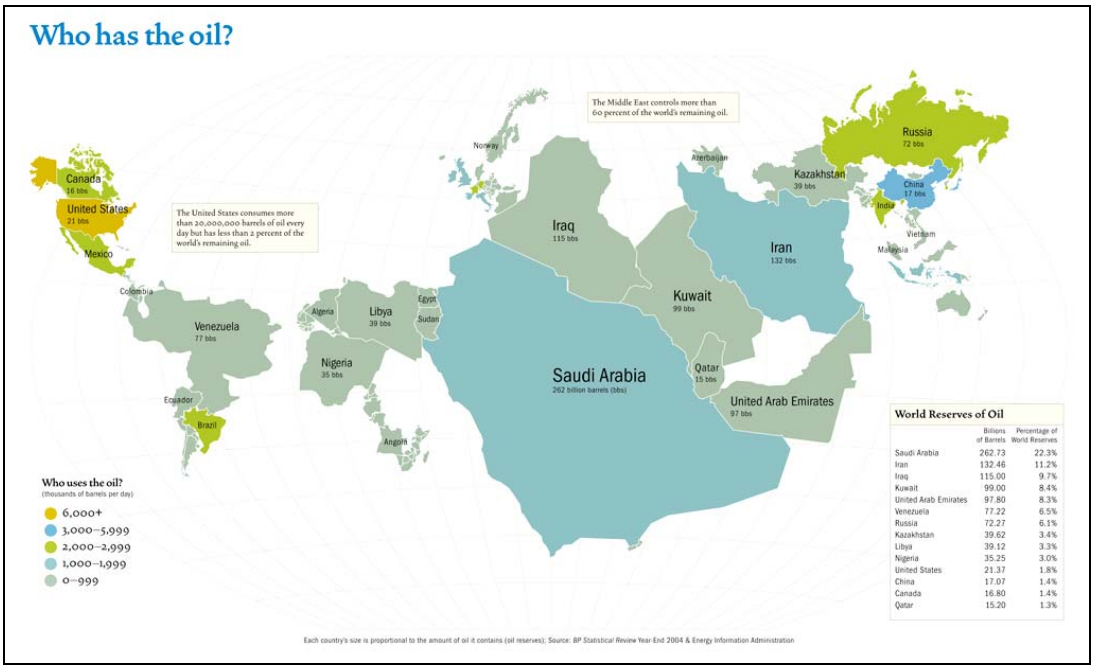

Fig. 2 The Distribution of World Petroleum Reserves, Source: http://www.environmental-action.org/drilling-deeper, data taken from BP Statistical Review, 2004 and EIA, 2004

Considering the dynamic factor of energy security geopolitics, it manifests in the security of oil and gas transit from the producing to the consuming countries. The two modes of transport i.e. by maritime tanker fleet and by pipelines are highly problematic because of

physical geography constraints. In terms of maritime transportation, geographic constraints are frequently associated with the so called chokepoints defined as "*narrow channels along widely used global sea routes which are a critical part of global energy security due to the high volume of oil traded through their narrow straits*" (IEA, 2008). Being "*locations that limit the capacity of circulation which cannot be easily bypassed, if at all,"* the chokepoints are exposed to the risks of "*interruption or military interdiction"* (Rodrigue, 2004: 359; Joffé, 2007: 3). Interestingly, chokepoints are also considered to be vital assets so accessing them must be secured by some established institutional control which assumes the form of multilateral agreements regulating the usage of a given passage as well as settling potential disputes. With the expansion of international trade and maritime circulations, a number of chokepoints became key strategic locations in the world as uninterrupted distribution of oil is critical to guarantee that its supply meets demand. Taking into account the fact that world's distribution of oil is characterized by unique geographic features, the increasing importance of the chokepoints cannot be overstated. In terms of figures, an approximate annual volume of oil maritime transit equals 1.9 billion tons which accounts for about 62% of total petroleum production. The remaining part is shipped by pipelines, railway or road haulage over smaller distances. The daily figures of oil tanker shipments amount to 100 million tones, almost half of which departs from the Middle East with the point of destination in Japan, the US and Europe (Rodrigue, 2004). The producing and consuming shipping lanes, chokepoints included, are presented in the 1st Annex. The major global oil transit chokepoints identified by the IEA, the US DOE EIA and by Lehman Brothers Global Equity Research correlate to much extent and comprise the Strait of Hormuz, the Strait of Malacca, the Suez Canal/SUMED Pipeline, the Strait of Bab el Mandab, the Bosporus and Turkish Straights and the Panama Canal. Table 1 below compiles data describing the 5 key global chokepoints in oil transit in order of their importance.

Table 1 Global Chokepoints in Oil Transit, Source: Own, data taken from Lehman Brothers Global Equity Research, 2009 and US DOE EIA, 2010

Chokepoint	**Total global demand %**	**Capacity M bbl/d**	**Destination**	**Flows in 2009 M bbl/d**	**Geographical location**
the Strait of Hormuz	20	17	Europe/US/Asia	15.5	Between the Gulf of Oman and the Persian Gulf
the Strait of Malacca	18	15	Asia	13.6	Between Malaysia and Singapore
Suez Canal SUMED Pipeline	5	4.5	Europe/US	2 (data for 2010)	Links the Red Sea with the Mediterranean
the Strait of Bab el Mandab	4	3.3	Europe/US/Asia	3.2	Links the Red Sea with the Arabian Sea
the Bosporus and Turkish Straights	3	2.4	Western/Southern Europe	2.9	Links the Black Sea with the Mediterranean

In the last decades, the geographical features of energy supply and demand have been subject to transformations on account of the demographic and economic changes occurring both in the OECD industrialized north and non-OECD global south (Bradshaw,

2010). But, historically, the uneven distribution of global resources of oil and natural gas not correlating with the regions representing the biggest demand for these energy carriers, has always been the cause of fierce competition among states for access to the resources which in turn lead to the engagement of the US in the Persian Gulf, of Russia in Central Asia and more recently to China's presence in African oil producing countries and in the South China Sea. The inclusion of China and India to the energy markets as new global consumers of oil and gas at the turn of the 20th and 21st centuries further complicated the already challenging patterns on the map of energy resources supply and demand.

3. THE CHINA CASE

From the 1990s on, Chinese authorities have come to realize that the hitherto strategy of the country's energy self-reliance is illusionary and that soon the increasing dependence on the imports of energy carriers will become a stark reality. Until the 1980s when the country's economy was liberalized, China exercised the policy of isolating itself and relying on domestic energy supplies but in the last decade of the 20th century it became clear that the exponential growth of Chinese energy demand could no longer be satisfied by its domestic supplies (the Economist, 4th August 2007). Although China attempted certain activities aiming at the diversification of energy supplies, the possible options turned out to be quite limited. Frequently described as strategic or mercantilist, China's approach to energy policy partly results from the government's efforts to maintain control over the whole energy sector through the ownership of state energy companies as well as wholesale and retail prices of oil and gas products. In doing so the Chinese government tries to secure employment in its strategic industries and progressively, once Chinese energy companies expand overseas to provide further employment opportunities for its labor (Andrews-Speed, 2006).

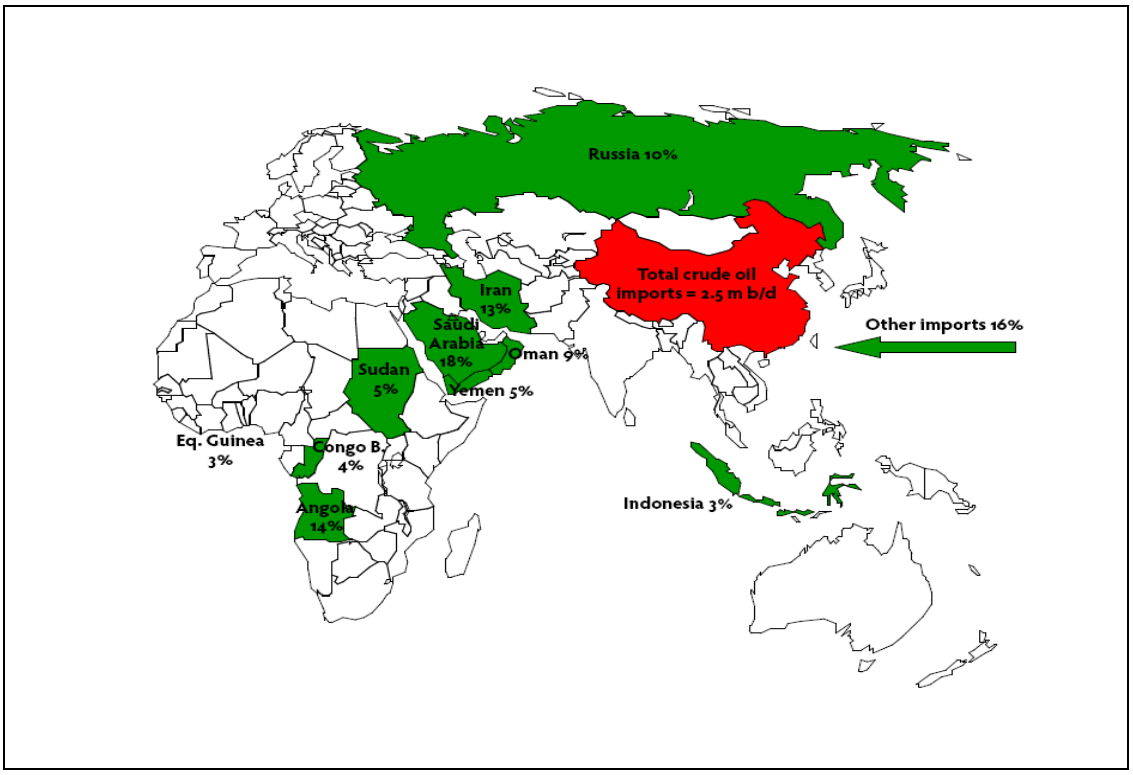

Fig. 3 Chinese Crude Oil Imports, Source: Changing Climates: Interdependencies on Energy and Climate Security for China and Europe, Chathamhouse Report November 2007

Considering the international dimension of Chinese energy policy, the main emphasis is put to the diversification and security of oil and gas supplies as major Chinese concerns relate to the possibility of physical disruptions of oil supplies from the Middle East region. With a view to securing long-term supplies, China signed in the late 1990s exploration and supply agreements with Saudi Arabia, Iran, Angola and Russia backed with diplomatic or economic measures such as military initiatives, technology transfer or construction services. Interestingly, China's energy imports encompass predominantly crude oil instead of final oil products. The reasoning behind such preference is that domestic refining allows for maintaining jobs in the Chinese oil sector, it also allows for the state regulation of oil prices and finally for fostering foreign investments in China's refining facilities (Andrews Speed, 2006). Since 1993, China's National Oil Companies (NOCs) have been aggressively acquiring energy assets in all major oil producing countries. In certain regions, especially in the African countries, Chinese investors are perceived as strategic partners supporting the local underinvested economies as they assumed a non-interference approach in terms of investments and foreign assistance activities positioning themselves as *"promoters of south-to south cooperation"* (Hodd, 2008: 50).

On the other hand, international governments and NGOs strive to pressure the African regimes to respect human rights, to improve the quality of life of their people and utilize the possibility of oil revenues to diversify their economies and develop essential infrastructure (Bradshaw, 2009). The objections of Western governments raised against China's presence in Africa frequently quote the examples of Sudan and Angola where Chinese oil revenues fill the coffers of corrupted oppressive regimes violating human rights. Another thing is that Chinese National Oil Companies (NOCs) in their pursuit of new oil supplies do not hesitate to make deals with states which antagonize the US, namely Iran and Venezuela.

In case of Iran, China has been steadily increasing its oil imports from that producer since the second half of the 1990s to achieve a decade later the position of Teheran's leading market for oil exports. Apart from the economic rationales, the additional political and strategic reasons behind the close relations with China are more than clear, in the opinion of Leverett and Bader: *"As Teheran comes under increased international pressure over its nuclear activities, the support of a permanent member of both the UN Security Council and the International Atomic Energy Agency Board of Governors provides much needed international political power. Given China's history of supplying arms and sensitive military technology to Iran, Teheran expects Beijing to play such a role again… Oil and gas deals that Iran has concluded with China have a distinctly strategic quality to them; they seem intended to ensure access to an important export market and bolster a developing political relationship."* (Leverett and Bader, 2006 : 194)

With regard to the countries which emerged after the collapse of the Soviet Union, Kazakhstan, Uzbekistan and Turkmenistan, the presence of Chinese investors is welcomed as a viable counterbalance against Russian control over their national energy assets and the access to the global energy market. Chinese investments into the pipeline infrastructure offers the Central Asia states an opportunity to reduce their dependence on Russian transport routes; from the Chinese perspective, agreements with Central Asia countries concerning the construction of pipelines enable Beijing to effectively diminish its reliance on international oil sea-lanes from the Middle East (Chatham House, 2007). China's growing political activity in the region of Central Asia was conducive to the formation of the Shanghai Cooperation Organization (SCO) in 2001. With the overarching objective of uniting China, Russia and the Central Asian states, the core activities of SCO focused on the issues of terrorist and separatist threats as well as energy policy and infrastructure development. Some international commentators, suggest that China's major priority within the organization is lobbying for turning the ancient Silk Road in Central Asia into an *"Energy Road"* (Müller-Kraenner,

2008). Last but not least, China's policy in East Asia manifests in fierce competition with Japan and South Korea for the access to energy resources. The relations between China and some of its neighboring countries have become characterized by territorial disputes over prospective offshore oil and gas fields. On the other hand, Chinese relations with South and South East Asia, especially Indonesia and Myanmar are far less tense since China has traditionally imported substantial volumes of oil from that region. What is more, Beijing regional energy strategy initiated activities leading to the coordination of Chinese and Indian investments of energy companies overseas (Müller-Kraenner , 2008).

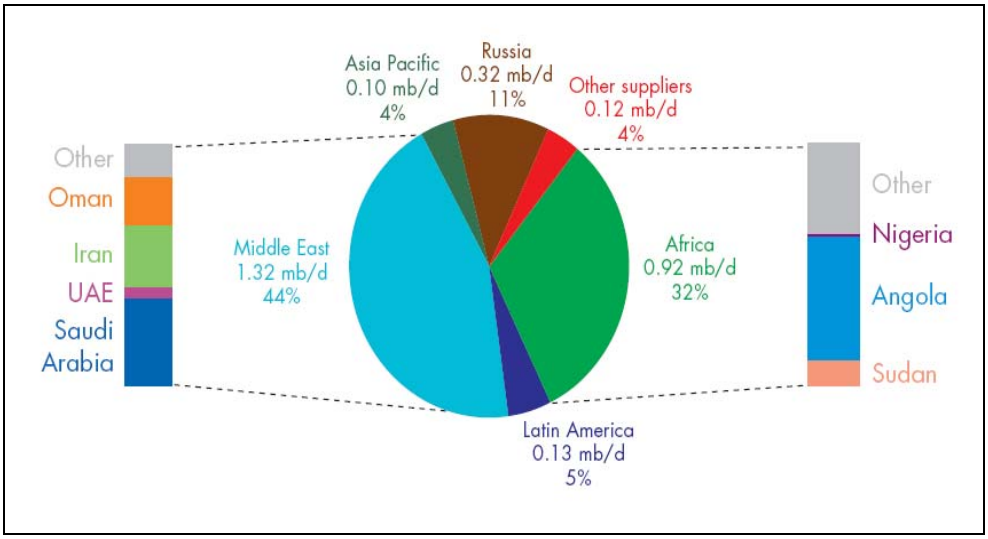

Fig. 4 China's Crude Oil Imports by Region in 2006, Source: World Energy Outlook 2007

China's engagement on the African continent is particularly vivid in terms of the country's cooperation with Sudan and Angola. The International Monetary Fund estimated that Chinese trade in the region might total 100 billion US dollars by 2010. Further aid in the form of preferential loans, credits or debt cancellation pushed other donors aside making China the most active foreign investor, trader and customer for oil and other natural resources in the region. Although China's policy of compromising on democratic principles or human rights to secure its economic interests, and in particular access to energy resources, has aroused bitter criticism on the international arena, its developmental aid is unprecedented and unlike other international investors, the Chinese provide a pragmatic approach based on mutual benefits and reciprocity instead of imposing western standards of governance (Traub, 2006). [1]

As regards the geopolitical determinants of energy security from the European perspective, the dwindling EU 27 domestic production, able to satisfy merely less than half of its energy demand, entails increasing import dependence; Figure 5 below illustrates these trends. On top of this, the EU energy situation is further complicated by the fact that the member states represent various energy mixes and have to cope with their own energy sector challenges. The series of complex energy issues Europe faces originate from economic and geopolitical developments. Within the EU structures, the processes involve the recent enlargement incorporating Central and Eastern European states in tandem with the ongoing market integration. In terms of the external environment, Europe is also affected by the altering balance among the leading global powers of the US, Russia, Japan and China as well as by the evolving structure of global oil market (Correlje and van der Linde, 2006). Interestingly, until the mid 2000s, the EU and its member states were able to exercise an approach characterized by the

[1] The section on China is a revised excerpt from a paper presented by the author at 2009 ICYS Conference, Prague

separation of energy issues from political and strategic aspects relying predominantly on market forces regulation of energy supply and demand. However, with the exponential growth of energy demand in the emerging economies of China and India coupled with quintuple rise of oil prices since 2002/3, governments gradually came to realize that new measures must be pursued and implemented in order to safeguard against disruptions in the energy supply system resulting from *"structural weaknesses in market mechanisms or from challenges that cannot be handled by the markets alone"* (Umbach, 2010: 1230).

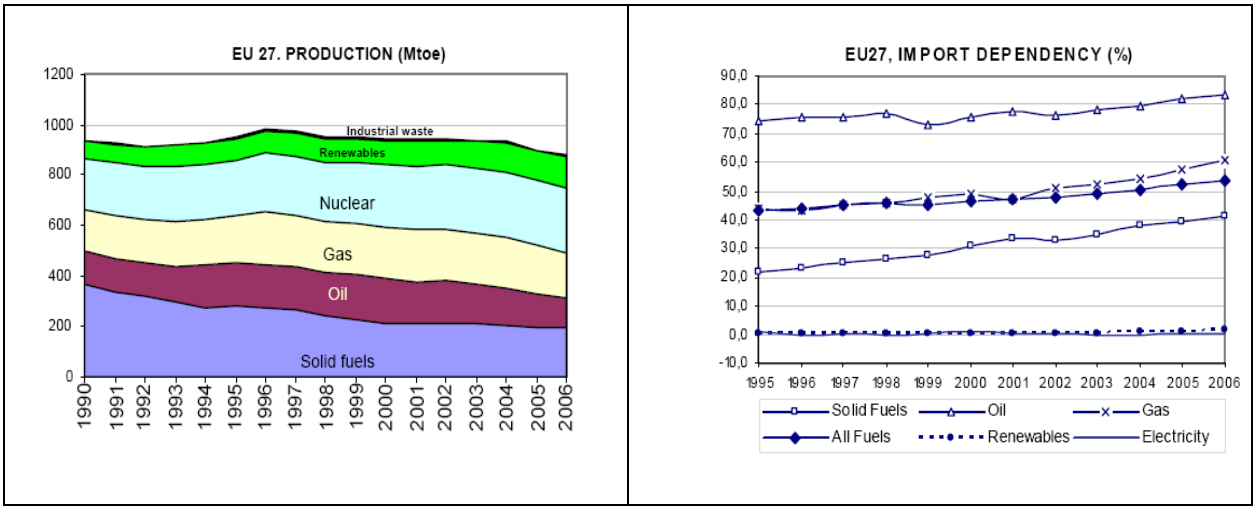

Fig. 5 EU 27 Energy Production and Import Dependency, Source: An EU Energy Security and Solidarity Action Plan, 2008, data from Eurostat

Because the internal EU market has been traditionally governed by the common standards and acceptance of the paramount significance of market forces, politics could be separated from economics; however, outside Europe the geopolitical and strategic rationales of foreign and security policies have been more and more often adopted, especially in the US, China, Russia or OPEC countries. A turning point in the long standing reliance on market forces regulating the issues of European energy security was the 2006 gas dispute between Russia and Ukraine resulting in gas shortages across Europe (Umbach, 2010). As Pierre Noél aptly verbalizes the issue *"when it comes to gas, the Iron Curtain still seems to cut Europe in two – in the Western EU, the markets are large but diversified, in the East the markets are smaller but much more dependent on Russia"* (Noél, 2008c: 9). Developed in the 1970s, the system of pipeline infrastructure transiting the Siberian natural gas to Europe was dramatically affected by the political and economic transformations which occurred after the revolutions of 1989 and the 1991 collapse of the Soviet Union. In the new political environment, independent countries separate now Russia from the European markets, whereas Russia's gas exports operated by a stated-owned monopoly – Gazprom frequently assume geopolitical dimension, especially towards the so called near abroad countries where gas pricing is used as a reward or punishment tool (Bradshaw, 2009). The increasingly complicated geopolitical developments triggered Europe's response to the challenge of the dependence on Russian gas and materialized in the form of energy diversification strategies focused on Central Asia, Caspian and Black Sea regions. The EU has adopted a far more pro-active stance with a view to broadening and deepening energy oriented relations with the neighboring countries; in parallel, the EU commenced activities leading to the incorporation of energy issues into its Common Foreign and Security Policy (CFSP). The Central Asia and the Caspian/Black Sea regions opened a viable

opportunity to strengthen Europe's energy supply security by gradual shifting away from the dependence on Russia. Therefore, numerous energy projects and initiatives were undertaken, for example INOGATE whose objective was to foster the build-up of a pipeline infrastructure system enabling the regions' oil and gas flows towards Europe. Another one, the Baku Initiative which took off in 2004 aimed at integrating the regions' energy markets with the EU market and at facilitating the transport of Caspian energy resources to Europe. In both the cases, the underlying rationale was for the Caspian region to develop alternative routes bypassing Russia and also to gain a better position in negotiating transit fees for shipments that go through the Russian infrastructure. Before the INOGATE initiative was forged, Russian domination in the production and distribution of oil and gas in the Caspian region had been unquestionable. For the region's landlocked countries that situation meant that almost all their shipments of oil and gas were transported north and westwards via Russia's pipeline system enabling the latter to dictate oil and gas prices, transit fees and the level of volumes to be transported (Belkin, 2008).

The efforts to divert the region's energy flows from the established North-South axis to an East-West axis towards the European market and to decrease the dependence of the Caspian region on Russia manifested in three pipeline projects of major importance: the Caspian Pipeline Consortium, the South Caucasus Gas Pipeline and the Baku-Tbilisi-Ceyhan (Belkin, 2008). The Caspian Pipeline Consortium, "*the largest operating investment project on the territory of the former USSR"* connects Western Kazakhstan oil fields with the marine terminal of Novorossiysk from where the crude oil is transported to global markets by tankers (CPC, 2011). Bypassing the Straits of Bosporus, the BTC pipeline has been exporting crude oil from Kazakhstan and Azerbaijan since July, 2006. Running parallel to the BTC, the South Caucasus Gas Pipeline, also known as Baku-Tbilisi-Erzurum, provides gas to Europe via a Greek transit pipeline. The importance of the new energy corridor is manifold but its major contribution lies in that it constitutes an infrastructure system providing more than one million barrels of oil per day to Europe with the potential of the Caspian region becoming one of the leading sources of alternative energy supplies for EU. Last but not least, the completion of the energy corridor project facilitated cooperation activities between Azerbaijan, Georgia and Turkey and may serve as a showcase for potential investors that the implementation of massive infrastructural projects involving the states of the region is viable. This in turn provided the foundation for the Nabucco gas pipeline project, a new energy bridge linking the Caspian, the Middle East and Egypt with the European markets (Cornell, 2009).

Notwithstanding the potential of the Caspian region energy resources in strengthening the EU's diversification strategies and security of supply, concerns are raised in terms of the political stability of its states. On top of the agenda are issues such as the Azerbaijan/Armenia conflict over the Nagorno Karabah, internal tensions in Georgia or Ukraine as well as the increasing Iran influence in the South Caucasus (Belkin, 2008). The case of Georgia would deserve a much more detailed discussion, well beyond the scope of this dissertation. In short, on account of the August, 2008 Russian attack on this country it may serve as an illustration of the fact that "*the expansion and continued existence of the West's major achievement in the region – the Caucasian energy corridor – is incompatible with Moscow's current geopolitical ambitions"* (Cornell, 2009: 132). Although the EU has managed to enhance its security of energy supply by executing numerous pipeline and LNG projects, the monopolistic strategy of Moscow characterized by a mixture of commercial an geopolitical targets frequently interfered with the EU policy towards the Caspian and Central Asia states. An illustrative example maybe the Russian attempt to undermine the feasibility of the Nabucco project by proposing a rival South Stream pipeline, or to offer Turkmenistan, Kazakhstan, Azerbaijan, Iran or Qatar to buy their gas for exports to Europe (Umbach, 2010).

4. CONCLUSIONS

To round up the discussion on the geopolitical determinants of European energy security, one major conclusion might be drawn; first and foremost, the long established EU stance of applying the principle of market governance in terms of energy security issues reveals significant shortcomings and seems to be insufficient in light of the changing international environment in the last two decades. One of the possible solution proposed by the World Energy Council could be strengthened cooperation between the public and private sectors both domestically and internationally. In addition, there appear certain pragmatic postulates for the European governments and EU institutions to adopt an approach amalgamating geo-strategic and market governance principles (Umbach, 2010; Youngs, 2007). This remains in line with the most recent EU's energy document, *Energy 2020: a Strategy for Competitive, Sustainable and Secure Energy*, which promotes inter alia *"establishing privileged partnerships with key suppliers and transit countries while pursuing diversification of import sources and routes"* (EC, 2010: 19).

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1st Annex

Fig. 6 Global Oil Transit Chokepoints and Shipping Lanes 2008, Source: Lehman Brothers Report, 18th January, 2008

THE ROLE OF BANKS IN THE WORLD OF FINANCE

Pavel BUČKA*, Martina BUČKOVÁ**

*Armed Forces Academy, Liptovský Mikuláš, Slovakia, ** University of Prešov, Slovakia

Abstract*: Banks play a major role in all the economic and financial activities in modern society. They are playing key role in activities financing the industries. All trade and commerce would slow down badly if banks were not there to handle their financial transactions. The economic development of a modern society depends on industrial growth and modernization of agriculture. Banks promote both these activities; they mobilize small deposits from the public and provide financial resource to big industries. Thus the banks perform the major task of capital formation. They motivate and lure the common people to save money and earn interest. This money otherwise would be wasted in marriages or hoarded and lie unused in iron safes. Banks mop up the funds lying idle in every home.*

Keywords*: bank, history of banking, banking system, bank functions, types of bank, law of banking, banking channels.*

1. INTRODUCTION

There are many definitions for the word *bank*. Čunderlík (1991) says that *Bank is universal naming for business (institution) specialized in money trading, money and capital intermediation*. Bernard and Colli (2002) say that *Bank is a business, which professional externalization is receiving funds from public in forms of deposits or other ways on own account and using them on discount operations, loans and other financial operations*. Wikipedia also provides information about what a bank is. It says, that *A bank is a financial institution that accepts deposits and channels those deposits into lending activities. Banks primarily provide financial services to customers while enriching investors. Banks are important players in financial markets and offer services such as investment funds and loans*.

2. ORIGIN OF THE WORD

The name bank derives from the Italian word *banco*, which means "desk" or "bench". This word was used during the Renaissance by Jewish Florentine bankers, who used to make their transactions above a desk covered by a green tablecloth. However, there are traces of banking activity even in ancient times, which indicates that the word 'bank' might not necessarily come from the word 'banco'.

In fact, the word traces its origins back to the Ancient Roman Empire, where moneylenders would set up their stalls in the middle of enclosed courtyards called *macella* on a long bench called a *bancu*, from which the words banco and bank are derived. In the British Museum in London is presented the earliest evidence of money-changing activity on a silver drachm coin from ancient Hellenic colony Trapezus on the Black Sea. The coin shows a banker's table (trapeza) laden with coins, a pun on the name of the city. In fact, even today in Modern Greek the word Trapeza (Τράπεζα) means both a table and a bank.

3. HISTORY OF BANKING

Many people don’t know that banks probably predated the invention of money. The first banks were probably the religious temples of the ancient world, established sometime during the third millennium B.C. Deposits initially consisted of grain and later other

goods including cattle, agricultural implements, and eventually precious metals such as gold, in the form of easy-to-carry compressed plates. Temples and palaces were the safest places to store gold as they were constantly attended and well built. There are extant records of loans from the 18th century BC in Babylon that were made by temple priests/monks to merchants. Ancient Greece holds further evidence of banking. Greek temples, as well as private and civic entities, conducted financial transactions such as loans, deposits, currency exchange, and validation of coinage (Wikipedia).

4. BANKING SYSTEM

Banking system includes generally central bank and network of commercial banks. Banking systems of individual countries are miscellaneous, their formation contingents on specific historical and economical conditions of a certain country. We distinguish 2 types of banking systems: one - stage banking system and two - stage banking system.

For one-stage banking system is characteristic that there is only one main bank institution which executes all the banking functions (functions of central bank and commercial bank). The main areas of specialization are usually foreign business, public sector and investment redevelopment. This type of banking system was typical for former centrally planned economy. This type of banking system does not exclude the existence of several banks in economy, but they all are fully subordinated one "monobank". They are not independent commercial subjects; they just help the main bank in the area of division of labor.

For two-stage banking system is characteristic the existence of central bank and network of commercial banks. This type of banking system is typical for most of modern countries.

4.1 Central bank. Central bank is a national bank institution. It plays a lot of roles (Lisy, 2007): bank of issue, the top subject of monetary policy, the bank of banks, state bank, represents the state in monetary area, insures exchange reserves, influences exchange rate, keeps an eye on activities of commercial banks and subsidiaries of foreign banks.

4.2 Commercial banks. We usually define commercial banks as a financial mediator which transfers temporary free recourses in economy and receives deposits of those, who save up and provides loans for those, who have investment opportunity. Commercial banks play the main role in (Lisy, 2007): receiving deposits, providing loans, realization of system of payment, providing other financial and advisory services, influencing the emission of loan money etc.

5. BANK FUNCTIONS

Banks play a lot of roles in the world of finance which are shown in their economic and commercial roles and functions. In this part, we will tell you something more about their functions.

5.1 Economic functions. The economic functions of banks include:

∗ *issue of money*, in the form of banknotes and current accounts subject to cheque or payment at the customer's order. These claims on banks can act as money because they are negotiable and/or repayable on demand, and hence valued at par. They are effectively transferable by mere delivery, in the case of banknotes, or by drawing a cheque that the payee may bank or cash.

∗ *netting and settlement of payments* – banks act as both collection and paying agents for customers, participating in interbank clearing and settlement systems to collect, present, be presented with, and pay payment instruments. This enables banks to economize on reserves held for settlement of payments, since inward and outward payments offset each other. It also enables the offsetting of payment flows between geographical areas, reducing the cost of settlement between them.

∗ *credit intermediation* – banks borrow and lend back-to-back on their own account as middle men.

∗ *credit quality improvement* – banks lend money to ordinary commercial and personal borrowers (ordinary credit quality), but are high quality borrowers. The

improvement comes from diversification of the bank's assets and capital which provides a buffer to absorb losses without defaulting on its obligations. However, banknotes and deposits are generally unsecured; if the bank gets into difficulty and pledges assets as security, to raise the funding it needs to continue to operate, this puts the note holders and depositors in an economically subordinated position.

∗ *maturity transformation* – banks borrow more on demand debt and short term debt, but provide more long term loans. In other words, they borrow short and lend long. With a stronger credit quality than most other borrowers, banks can do this by aggregating issues (e.g. accepting deposits and issuing banknotes) and redemptions (e.g. withdrawals and redemptions of banknotes), maintaining reserves of cash, investing in marketable securities that can be readily converted to cash if needed, and raising replacement funding as needed from various sources (e.g. wholesale cash markets and securities markets).

5.2 Commercial role. The commercial role of banks is not limited to banking, and includes:

∗ *issue of banknotes* (promissory notes issued by a banker and payable to bearer on demand)

∗ *processing of payments* by way of telegraphic transfer, EFTPOS, internet banking or other means

∗ *issuing bank drafts and bank cheques*

∗ *accepting money* on term deposit

∗ *lending money* by way of overdraft, installment loan or otherwise

∗ *providing documentary and standby letters of credit* (trade finance), guarantees, performance bonds, securities underwriting commitments and other forms of off-balance sheet exposures

∗ *safekeeping of documents and other items* in safe deposit boxes

∗ *currency exchange*

∗ *acting as a 'financial supermarket'* for the sale, distribution or brokerage, with or without advice, of insurance, unit trusts and similar financial products

6. TYPES OF BANKS

Banks' activities can be divided into (Wikipedia):

∗ *retail banking*, dealing directly with individuals and small businesses;

∗ *business banking*, providing services to mid-market business;

∗ *corporate banking*, directed at large business entities;

∗ *private banking*, providing wealth management services to high net worth individuals and families;

∗ *investment banking*, relating to activities on the financial markets.

Most banks are profit-making, private enterprises. However, some are owned by government, or are non-profit organizations. Central banks are normally government-owned and charged with quasi-regulatory responsibilities, such as supervising commercial banks, or controlling the cash interest rate. They generally provide liquidity to the banking system and act as the lender of last resort in event of a crisis.

6.1 Types of retail banks

∗ *Commercial bank*: the term used for a normal bank to distinguish it from an investment bank. After the Great Depression, the U.S. Congress required that banks only engage in banking activities, whereas investment banks were limited to capital market activities. Since the two no longer have to be under separate ownership, some use the term "commercial bank" to refer to a bank or a division of a bank that mostly deals with deposits and loans from corporations or large businesses.

∗ *Community Banks*: locally operated financial institutions that empower employees to make local decisions to serve their customers and the partners.

∗ *Community development banks*: regulated banks that provide financial services and credit to under-served markets or populations.

∗ *Postal savings banks*: savings banks associated with national postal systems.

∗ *Private banks*: banks that manage the assets of high net worth individuals.

∗ *Offshore banks*: banks located in jurisdictions with low taxation and regulation. Many offshore banks are essentially private banks.

∗ *Savings bank*: in Europe, savings banks take their roots in the 19th or sometimes even 18th century. Their original objective was to provide easily accessible savings products to all strata of the population. In some countries, savings banks were created on public initiative; in others, socially committed individuals created foundations to put in place the necessary infrastructure. Nowadays, European savings banks have kept their focus on retail banking: payments, savings products, credits and insurances for individuals or small and medium-sized enterprises. Apart from this retail focus, they also differ from commercial banks by their broadly decentralised distribution network, providing local and regional outreach and by their socially responsible approach to business and society.

∗ *Building societies and Landesbanks*: institutions that conduct retail banking.

∗ *Ethical banks*: banks that prioritize the transparency of all operations and make only what they consider to be socially-responsible investments.

∗ *Islamic banks*: Banks that transact according to Islamic principles.

6.2 Types of investment banks

∗ *Investment banks* "underwrite" (guarantee the sale of) stock and bond issues, trade for their own accounts, make markets, and advise corporations on capital market activities such as mergers and acquisitions.

∗ *Merchant banks* were traditionally banks which engaged in trade finance. The modern definition, however, refers to banks which provide capital to firms in the form of shares rather than loans. Unlike venture capital firms, they tend not to invest in new companies.

∗ *Both combined*

∗ *Universal banks*, more commonly known as financial services companies, engage in several of these activities. These big banks are much diversified groups that, among other services, also distribute insurance hence the term banc assurance, a portmanteau word combining "banque or bank" and "assurance", signifying that both banking and insurance are provided by the same corporate entity.

7. LAW OF BANKING

Banking law is based on a contractual analysis of the relationship between the bank and the customer defined as any entity for which the bank agrees to conduct an account. The law implies rights and obligations into this relationship as follows:

1. The bank account balance is the financial position between the bank and the customer: when the account is in credit, the bank owes the balance to the customer; when the account is overdrawn, the customer owes the balance to the bank.
2. The bank agrees to pay the customer's cheques up to the amount standing to the credit of the customer's account, plus any agreed overdraft limit.
3. The bank may not pay from the customer's account without a mandate from the customer, e.g. a cheque drawn by the customer.
4. The bank agrees to promptly collect the cheques deposited to the customer's account as the customer's agent, and to credit the proceeds to the customer's account.
5. The bank has a right to combine the customer's accounts, since each account is just an aspect of the same credit relationship.
6. The bank has a lien on cheques deposited to the customer's account, to the extent that the customer is indebted to the bank.
7. The bank must not disclose details of transactions through the customer's account—unless the customer consents, there is a public duty to disclose, the bank's interests require it, or the law demands it.
8. The bank must not close a customer's account without reasonable notice, since cheques are outstanding in the ordinary course of business for several days.

These implied contractual terms may be modified by express agreement between the customer and the bank. The statutes and regulations in force within a particular jurisdiction may also modify the above terms

and/or create new rights, obligations or limitations relevant to the bank-customer relationship. Some types of financial institution, such as building societies and credit unions, may be partly or wholly exempt from bank license requirements, and therefore regulated under separate rules. The requirements for the issue of a bank license vary between jurisdictions but typically include:

1. Minimum capital.
2. Minimum capital ratio.
3. Fit and Proper requirements for the bank's controllers, owners, directors, and/or senior officers.
4. Approval of the bank's business plan as being sufficiently prudent and plausible.

7. BANKING CHANNELS

Banks offer many different channels to access their banking and other services:

∗ A *branch*, banking centre or financial centre is a retail location where a bank or financial institution offers a wide array of face-to-face service to its customers.

∗ *ATM* is a computerized telecommunications device that provides a financial institution's customers a method of financial transactions in a public space without the need for a human clerk or bank teller. Most banks now have more ATMs than branches, and ATMs are providing a wider range of services to a wider range of users. For example in Hong Kong, most ATMs enable anyone to deposit cash to any customer of the bank's account by feeding in the notes and entering the account number to be credited. Also, most ATMs enable card holders from other banks to get their account balance and withdraw cash, even if the card is issued by a foreign bank.

∗ *Mail* is part of the postal system which itself is a system wherein written documents typically enclosed in envelopes, and also small packages containing other matter, are delivered to destinations around the world. This can be used to deposit cheques and to send orders to the bank to pay money to third parties. Banks also normally use mail to deliver periodic account statements to customers.

∗ *Telephone banking* is a service provided by a financial institution which allows its customers to perform transactions over the telephone. This normally includes bill payments for bills from major billers.

∗ *Online banking* is a term used for performing transactions, payments etc. over the Internet through a bank, credit union or building society's secure website.

∗ *Mobile banking* is a method of using one's mobile phone to conduct simple banking transactions by remotely linking into a banking network.

∗ *Video banking* is a term used for performing banking transactions or professional banking consultations via a remote video and audio connection. Video banking can be performed via purpose built banking transaction machines (similar to an Automated teller machine), or via a videoconference enabled bank branch.

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1st Annex

The list of Slovak banks: Československá obchodná banka, a.s., ČSOB stavebná sporiteľňa, a. s., Dexia banka Slovensko, a. s., Komerční banka Bratislava, a. s., OTP Banka Slovensko, a. s., Poštová banka, a.s., Privatbanka, a. s., Prvá stavebná sporiteľňa, a. s., Slovenská sporiteľňa, a. s., Slovenská záručná a rozvojová banka, a. s., Tatra banka, a. s., UniCredit Bank Slovakia, a. s., VOLKSBANK Slovensko, a. s., Všeobecná úverová banka, a. s., Wüstenrot stavebná sporiteľňa, a. s.

The list of external affiliated branches: ABN AMRO Bank N. V., Banco Mais, S. A., BRE Bank SA, CALYON S. A., Citibank Europe plc, COMMERZBANK Aktien-gesellschaft, HSBC Bank plc, ING Bank N. V., J & T BANKA, a. s., Oberbank AG.

LEGISLATIVE ISSUES OF PROMOTING ROMANIAN MILITARY CAREER

Mihai Bogdan ALEXANDRESCU

Cultural and Social Center, Brasov, Romania

Abstract*: The lack of a strategy regarding the promotion of national career offer, and of certain adequate recruitment programs, entails not only the loss of competitive candidates, but also the waste of financial resources. Furthermore, what seems to be worse, is that it may lead to altering the image of the organization as such.The present paper briefly highlights the principles that lay at the basis of promoting the military career according to Romania's assumed obligations as a NATO state member and to the legislative efforts made by military structures with responsibilities in this field.*

Keywords*: strategy, promotion, military career, recruitment, selection, legislative framework..*

1. INTRODUCTION

Romania's security interests and objectives, the army missions in the actual geopolitical context and the country's assumed obligations as a NATO state member, have imposed the continuation of quantitative and qualitative restructuring of human resource and have determined taking the decision to give up the compulsory military service in favor of one based on volunteering, starting with 01.01.2007.

The first strategy of promoting the military career was conceived in 1999, by Human Resources Management Department, once with the application of a new recruitment and selection concept and with the establishment of new specialized structures in voluntary recruitment. The implementation of this strategy has been accomplished with the help of Public Relations Directorate. The two promoting campaigns (one of them explicitly addressed to women), carried out between 1999-2001, were built around the slogan *Military Career – Your Best Choice* and of a specific logo.

The military profession was represented in a realistic favorable manner, emphasizing the advantages offered during training and exercising the military profession, as compared to the existent offers on the civilian labor market. The first campaigns have brought an increase of over 7 times the number of candidates for the military career and the local recognition of information-recruitment offices as liaison structures between the army and the civil environment, with an important role in young people professional orientation. Therefore, the military profession has become more visible on the labor market, and the position gained by new set structures – information-recruitment offices, at the local level, contributed to the strengthening of the image of the military institution, in general. These results were the consequence of direct promoting activities and of public relations. Promotion and informative materials (diverse folders, posters, CDs, video tapes) have been handed out and a website with specific information was created. But the conventional means of advertising– television, radio, newspapers, magazines, were used only sporadically and for free.

For the years 2002 and 2003, neither the conceiving of promoting campaigns at the central level nor the printing in a unique conception of necessary promotion materials (posters, folders, etc.) were possible, due to the lack of necessary funds for these activities. Therefore, the concentration of all efforts was

made at the local level. The initiatives and experience of specialized recruitment personnel were capitalized and also the image capital accomplished by information-recruitment offices in the previous years. Starting with the fall of 2003, up to 2006, Human Resource Management Department restarted, designed and monitored the annual promoting campaigns, under a new slogan (*Above targets – Be the best*), in a new graphic conception and with new promoting materials in large circulation: folders, posters, calendars, notebooks. The absolute novelty was re[presented by promotional objects, very welcomed by young people and not only. The posters and folders have brought the attention the man, the serviceman and diverse postures of life as a soldier.

These campaigns, without being, neither this time, at the level required by amplitude and social importance of recruiting professional military personnel, revived the military career promotion and supported the activities developed by recruiters in target groups areas of origin. Although rather insufficient and incomplete, the promotion campaigns were welcome. The transition from army based on compulsory military service to the one based on volunteering, imposes the repositioning of military profession on the labor market, especially versus the competition represented by the other similar state institutions. Even if the military institutions very appreciated by the Romanian population (as shown by national polls), the military profession remains at a medium level in a hierarchy of preferences.

Given the professionalization of soldiers and NCOs corpus, it may be possible that the assuring of a relatively great number of candidates for this category of personnel, in a relatively short period of time, to lead to a temporary decrease of their quality. Thus, either the existent situation within inside and outside military organism framework, or the experience of armies with tradition in the field of promoting military profession and recruiting on volunteer basis shouldn't be ignored. There is a series of factors that can have a negative influence on reaching the recruiting objectives of military personnel, as follows:

- Civil market of educational and professional offers has diversified very much, new border specializations appeared, that confer professional flexibility and jobs in competitive environments, with rapid possibilities of promotion and motivating salaries.
- The natural population decrease and aging, and the external migration of workforce, which reached its top after the adherence to the European Union, are phenomena that lead to the increase of internal completion and to the considerable decrease of the selection for the military career.
- The impact that the army restructuring measures have on the image of military profession is hard to counteract through mass-media articles and explanatory-soothing discourses, or through popularization of success recorded by Romanian military personnel in the theatres of operations, through the appreciations received from the North Atlantic Alliance officials, on the occasion of the engagement into different missions. The myth of the stable workplace and of a foreseeable career evolution (for example the relatively sure accession to the rank of colonel, the retention until the retirement age etc.) is about to fail.
- The redundant military personnel or those, whose contracts are no longer extended, due to several reasons, often feel frustrated. Thus, being conscious or not, through the expression of some negative and subjective opinions regarding the army, within the civil environment they bring disadvantages to the recruitment efforts.
- Romania's NATO adherence, even if it is a political success and a guarantee for national security, can also be a double-edged weapon, from the promotion of military career point of view. To be a NATO member does not mean only to have rights but also duties. To this, risks resulted from the new Romanian military obligations are added, inclusively those assumed within antiterrorist coalitions, outside NATO. A poll made by Metro Media Transylvania shows that 44% of young people

aging between 14 and 29 consider that the integration into NATO means taking risks.

- The military career is not one of the most attractive professions, due to its nature. Its main advantages are providing a job immediately after going through the training period, free education and a certain social protection. Instead, the independence is reduced, there are many regulations, constraints, obligations, discipline is stricter, bureaucracy more pronounced, and the environment can sometimes be, demanding and risky. For many, the balance seems not in their favor.
- Although the national patriotic feeling hasn't disappeared yet, the patriotic message has lost its credibility and force. Young people from 2000 onward are hard to convince only with simple patriotic slogans. They are more farsighted and informed when it comes to the world they live in. Their system of values, mentalities, aspirations are different from those belonging to the generations the present military leaders are part of. Firstly, they wish to reach, as soon as possible, the highest standard of living or, at least, one superior to that of their families of origin. Consequently, they will look for a workplace or profession that can provide such things.
- Following what happens in the NATO state member armies, it is noticed that the social-economic development does nothing else but to reduce the military profession attractiveness, versus other professions, to estrange the young from the military career. Tens of millions of dollars, Euros or pounds annually spent, to candidates` attraction and retention, prove that the interest is, first of all, that of the state military institution, and that the military profession is not one of the most wanted, when there is the possibility to choose.
- The large quantity of offers and the daily "bombardment" with advertising products made the modality of presentation to be extremely important, often decisive for the success of a product, service, organization or person. The military profession makes no exemption to this rule. But, if the advertised image proves to be false and distorted, creates false expectations and is not supported by changes within the military organization, the effect is just that of losing the interest and credibility on long-term.

Taking into account the previous mentioned aspects, the speeding and revitalization of the young interest for the military career should be imposed. This interest oscillates according to general economic situation, to the perception existent at a certain moment regarding the military organization, but also to the marketing strategies of other institutions, for which the recruitment-selection process is much shorter, less demanding and less expensive, and that offers independence and a greater professional mobility. Outsourcing the advertising component (ads.) of promoting the military profession is a necessity. Although the army holds a Press Trust, a cinematographic studio and a Publishing House with long-term experience and outstanding accomplishments, that can support the military career promotion campaigns, it has no structures specialized in advertising. On the other hand, giving up conformism and conservatism traditionally associated with the image of military organization, the classical modalities to approach the military environment, will come as a pleasant surprise and will particularly draw the attention of the young. They will perceive this change as a proof of the proper changes made in the army.

2. PROMOTION / MEANS OF INFORMATION AND ATTRACTION FOR POTENTIAL BUYERS

The promotion, seen as one of the most empirical fields of marketing actions, is characterized by "the assembly of actions and means of informing and attracting potential buyers towards the selling points, in order to satisfy their needs and wishes and, implicitly, to increase the economic efficiency of the producing enterprise activity" (Patriche, 1994:215).

2.1 Content and necessity. The amplification of the promoting phenomenon has the following explanation: "the concurrency acceleration, the markets`

congestion, consumer's saturation towards the excessive number of advertising communications, the minimizing of products and trademarks, the preference for short-term results, the demanding requirements of new distribution forms etc." (Dubois, Jolibert, 1994:233), that makes the products continuous promotion to become a major requirement, an indispensable factor of every selling process, whatever the nature of goods.

As means of communication used to inform, convince or remind the public about certain goods, services, image, involvement in the community of a person or organization, the promotion often has the decisive role in the process of accomplishing the established objectives. In modern market economy, the fact that products are of high quality doesn't matter nu if the potential consumers are not aware of them and there is less probable to sell them. Traditionally speaking, the promotion had as purpose the attraction of new customers. Nowadays, it is at least as important, too, if not even more, to remind customers the advantages offered by own products, as compared to of the competitors` and to convince them in this respect, guiding them to satisfy their needs by buying your products. Thus, modern promotion will stimulate, develop and guide consumers` needs. Today, nobody doubts of the necessity to promote products, fact also reflected in the pattern of marketing mix, whose important variable is promotion (one out of four 4 considered as classical). The more flexible and innovating the promotion is, the greater the impact will be on a saturated of advertising messages market.

Promotion, as expression of actions, means and methods used to guide, inform, attract and convince customers to buy the product with the purpose of satisfying their needs, but also of assuring the usefulness of the product enterprise, is a necessity to accomplish strategic and tactical objectives of the enterprise, to revive the product life cycle, and also to annihilate the effects of the actions that lead to the sales decrease.

In literature, we encounter a double acknowledgement given to promotion that is further on explained by P. Lasségne (1972:73). Thus, broadly speaking, promotion is synonym with "commercial dynamics" and designates all the research that may train the increase in selling. The Anglo-Saxon term "promotion" means the broad sense of promotion that is one of those 4 marketing mix components (product, price, place, promotion). In a more restrictive approach, promotion is the expression of specific techniques whose common characteristics are displayed below and which differentiate it from advertising.

The essential features of promotion are:

- its concrete, immediate and straight character;
- the existence of an advantage, supplement, etc,
- ephemeral character;
- uncommon and exceptional character;
- its relation with a definite product;
- its origin (producer, distributor, professional organization) and its targets (consumers etc.) variants;
- its link with the marketing mix as a whole.

The main elements of these characteristics are found in Y. Castagnol's paper that defines promotion as "a practice of marketing which consists in the temporary adding of a supplementary value to the product or service, which provides a specific advantage to targeted buyers according to an precise measurable objective" (Castagnol, 1972). F. Guilbert (1986) adds two elements to these features, that specifies that promotion leads to a (temporary) change in the main offer and to getting a definite behavior "that cannot be only a buying behavior".

In conclusion, in the modern sense, promotion represents a complex concept because:

- it is a means of communication that concentrates on promotional mix, with a wider spread that advertising;
- it aims at an immediate and direct change of demand (acceleration, increase, adjustment),
- it aims at an immediate change of customer's/ deliverer behavior, etc.;
- it aims at a positive and temporary change of consumers' offer, of the intervention terms of deliverers, etc.;

- the promotion effect is direct, when it directly aims at consumers and indirectly, when it comes to intermediaries.

Promotion, considered the set of techniques or practices of marketing, or marketing action, or form of communication, aims at overcoming a sale level through drawing attention and attracting potential buyers by outlets, by informing, convincing, forming and maintaining of customers that are attracted by the product and by the producing company. It develops into two main directions:

1. product promotion – through all the means and methods used for orientation, information of potential clients on new or improved products, starting from the idea of new product and ending with its market launching, in order to develop a new positive attitude towards the product.

2. sales promotion – through the set of actions and means of getting the potential buyers' attention by outlets in order to boost sales. It is accomplished by more types of actions, called promotional means or forms, such as: advertising, direct promotion, public relations, merchandising, sales promotion, other.

If we consider the manner of promotional actions development, we may distinguish:

- promotional actions realized through mass-media (e.g. advertising);

- promotional actions realized at the point of sale (e.g. direct promotion).

More, if we consider the initiator of promotional activities, we may distinguish:

- active promotion – when the producer assumes the responsibilities of promotion, which he directly exercises among final consumers, in order to create and stimulate a certain preference for a product.

- passive promotion – when the distributor/ intermediary assumes the responsibility as to the la met methods and techniques he uses in the field of promotion. The manager with responsibilities in the field is the one who will decide on forms, methods and techniques to be used, when and to what extent.

2.2 Promotion objectives and roles. Lately, especially during the last decade, an emphasis on actions in the field of product promotion and especially of sales is remarked. This has lead enhancing the promotion role within marketing activities and thus it lead to a diversity of promotional products. The promotion role lies in the complex content of promotion concept, that emphasizes the fact that the general purpose is influencing people behavior, so a s to increase the goods sales volume of a certain producer. Therefore, promotion meets a series of socio-economical malfunctions that highlight its use, such as:

- providing information both to the buyer and seller;

- neutralizing detrimental information that spread especially through rumors;

- stimulating market demand is the direct and immediate purpose;

- attenuation of demand fluctuations, especially in the case of seasonal products;

- products differentiation, especially of brands;

- reminding the products advantages in order to remain loyal customers;

- counter rivals;

- influencing people with decision-making at governmental level;

- influencing public behavior;

- forming an image;

- justifying the price of goods and services;

- making the public aware of new created products and services.

Based on this wide range of functions that the promotion activity can accomplish each company sets its short-term objectives, but also long-term ones, general and specific objectives, objectives for sellers, deliverers and consumers. Among the promotion general objectives the most frequent are:

- changing flow demand, directly – when the demand behavior changes, and indirectly - when the circuit distribution agent's behavior changes;

- the acceleration growth in demand for short-term assets;

- demand regulation.

- consumer loyalty.

Martin Bell (1972) synthesizes seven main objectives of promotional strategy, as follows:

1. sales increase;

2. maintain or improve market share;

3. creating or improving the recognition, acceptance or maintaining brand.

4. creating a favorable climate for future sales.

5. informing and educating the market.

6. creating a competitive difference.

7. improving promotional effectiveness.

Depending on how you focus on an object, you can create a promotional mix. It is also important to note that the use of promotion in marketing mix is favored, according to Bell, by:

- a favorable trend in demand;
- a strong product differentiation;
- the hidden qualities of the product;
- emotional reasons influence a purchase
- adequate funds are available.

Each of these key-issues influences, in his own way, the promoting efficiency.

As, within the marketing activity, the 4P interact, the promotion objectives cannot be isolated from the other 3P and therefore, objectives are established in relation to pricing, distribution and product. From many targets and the effects they may promote, Y. Castagnol highlighted some of the objectives that enterprises currently propose. Thus, as main objectives, there are mentioned:

- making attempts;
- cause of first purchase;
- stimulating the unconcerned;
- developing a new use;
- enhancing a point of the brand image;
- creating an event.

As secondary objectives, the following appear:

- obtaining the distribution trademark;
- the dissemination increase;
- the increase of brand availability;
- achieving an "advertising presence" at the point of sale.

3. LEGISLATIVE FRAMEWORK

The constant decline, year after year, of the number of candidates for military educational institutions, up to an alarm, imposed in the late '90s, assessing the situation, analyzing the causes and consequences of the short, medium and long-term, not only for military education, which is not an end in itself, but especially for future professional human resource of defense. For example, if in 1977 there were almost four candidates for a place in military academies in 1999 the number of candidates / seat for career officer had already decreased up to 2. The cause of this steady decline was the inadequacy of the existing recruitment system at that time, to the economic and social conditions, to the changes in the labor market that was becoming more and more dynamic.

In the first marketing strategy, designed in 1999, the military profession was represented in a realistic, positive manner, emphasizing the benefits during school and the military occupation was compared with the existing offerings on civilian labor market. As a result, the military profession has become more visible in the labor market and gained the position of newly established structures - information-recruitment offices, and locally, it contributed to strengthening the image of the military in general. The promotion campaigns, without being at the required level of scale and social importance of recruiting military personnel, have revitalized the military profession in the labor market and supported the activities of recruiters in the backgrounds of target groups. Although insufficient and incomplete, campaigns have been welcome. The more the human resource is more important for an organization (quantitative and qualitative), the more obvious and necessary is the approach to business recruitment as a marketing campaign. And, in the center of all marketing efforts lies the promoting of **the military profession.**

The legal framework that underpins the promotion of the military profession in Romania is presented below:

Laws:

- Law no. 346/2006 on the organization and functioning of the Ministry of Defense;
- Law no. 395/2005 on suspension of peacetime military service in the army and moving to voluntary military service;
- Law no. 48/2002 on Act approving the Government Ordinance no. 137/2000 on Preventing and Punishing All Forms of Discrimination;
- Law no. 389/2001 on approving the amendment to the Emergency Government no.

14/2001 Law no. 544/2001 on free access to public information;

- Law no. 84/1998 on trademarks and geographical indications;

Decision of the Supreme Defense Council:

- No. S-26/2006 approving the "Strategy of the Romanian Army's transformation"

Minister of Defense orders and approvals:

- no. M-25/2006 approving the "concept of the promotion system of the military profession, military personnel recruitment and selection";
- Minister's approval, the resolution on the report of the Director of Human Resources Management Directorate no. C 7456/17.10.2005 approving the "concept of modernizing human resources management in the Romanian Army";
- no. M.S.-107/2005 on approval of the "professionalization of Romanian Army Concept";
- no. M-134/2002 on approval of "R.P.-1, Instructions for organizing and conducting public relations activities in the army ";
- no. M-32/1999 on approval of "Rules of organization and operation of information-recruitment offices";
- no. M-100/1998 on approval of the "Concept of promoting the military profession, recruitment and selection of candidates for military career";
- no. 49/1995 on the conditions under which military personnel may present public information in military activity.

Chief of Staff General provisions:

- no. S/L1/426/1996 on the organizing the "Open Doors Day" within units of the Ministry of National Defense.

Secretary General of Ministry of Defense provision:

- no. S.G. 1/2005 on "Organizing, planning, deployment and management of transformation activities of military education system"

The provisions of the Human Resources Management Director:

- no. C-10240/2001 approving the "Instructions on the organization of recruitment and selection of candidates for admission to the military educational institutions;
- no. D.M.R.U.-13/2004 approving I.M.-2/6, Criteria for candidate recruitment and the content file for admission to military schools".

4. CONCLUSIONS

In all fields, the struggles for human resource earn goes in terms of fierce competition, being in a continuous growth. While for some organizations, such as the military, the amount is important, when it comes to competition, especially the quality is of concern. On a market that offers professional and educational services, the operating principle of supply and demand functions. Therefore, recruitment is addressed by the principles of marketing. All those wishing to hire foreign sources share much the same (groups - target), the same average recruitment, what differs being the values and philosophy specific for organizations, the criteria and recruitment methods. Since the staff is a strategic resource of any organization, one that depends on its success, human resource recruitment is critical to achieve the organization's mission and strategic objectives. Professional competence, skills and degree of motivation depend on the objectives and organization development.

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THE CHARACTERISTICS OF DECISION MAKING PROCESS IN ADOLESCENTS CAREER

Mihaela GURANDA, Cosmina-Oana DRĂGHICI

„Henri Coandă" Air Force Academy, Braşov, Romania

***Abstract**: Current research conducted among adolescents shows that they have relatively little knowledge about occupations, labor market and their requirements. The professional options field is limited, with adverse implications on future career that may be marked by unrealistic choices, dissatisfaction, frequent job changes and unemployment. To have any chance of success, the opportunities in favor of choice and career decision options must be multiplied. Thus, an investigation of the career decision-making process for adolescents was initiated on 60 high-school students from a socio-humanities high-school in Brasov. During the investigation, the characteristics of career decision-making process were identified and analyzed. It was found that adolescents participating in the investigations are sociable, energetic, assertive and willing to engage in competitive situations. They have interests oriented towards business and administration fields. The vocational profile corresponds with the followed specialization, supporting the correlation between their professional choices and interests that define them. Teenagers should be encouraged to explore and inform, thus developing autonomy in career decision making. The too strong influence of family or of any structures with significant relevance to the adolescent life can destroy this autonomy and can lead to the inability to gain experience in decision making. With a specialized support the adolescent practices the career decision making process, winning the best both autonomy in choosing the optimal alternative due to information and self-confidence, fighting for his own professional development.*

***Keywords**: career counseling, career decision, autonomy, personality and professional interests, professional development.*

1. INTRODUCTION

In adolescence there is a tendency for extension of the social secondary stage through education and training institutions. Thus, the occupational decision is delayed due to labor market instability, to obsolescence of initial training package and to the bad correlation of educational offers with top professions requirements. (Jigău, 2003). The teenager is looking to break free from routine tasks that are time and energy consuming and to dedicate himself to creative professional activities. As Ursula Șchiopu said (1997) adolescence is the period in which important decisions for the development of the person are taken and future plans are made. For example, when choosing a professional trajectory, adolescents must decide what type of school they want to follow, what tests to give and what specializations would be useful for their professional evolution.

Recent years research on adolescence have shown that these features depend mostly on type and quality (authenticity) of family relationships, on school and group of friends, on the social and cultural context in which the adolescent develops himself. Demand of highly qualified labor force imposes the school extension and young people are more and more faced with the situation to delay becoming a productive adult. In the contemporary society, the teenager is considered adult when he becomes independent, including financially. Solving this task is extremely difficult in some cases, given the strong interdependence between career and financial independence. Since the

labor market is constantly changing, the demands in education are increasingly high; there are situations where financial independence can be won only at the end of adolescence. Therefore, we may say that any person can have a career, not just those who successfully exercise a particular profession. (Jigău, 2001).

2. DECISION-MAKING IN CASE OF ADOLESCENTS

To have any chance of success, favorable decision career opportunities must be multiplied. Knowing the skills and interests, the teenager will take realistic decisions when choosing the suitable specializations and their corresponding professions. As free as it seems, this process is conditioned by the employment offer and by the development degree of labor market and economic life. The world is constantly changing professions. Complex movements in the world are making the career decision tensed and difficult. The best choices are those that are consistent with the adolescent's interests, skills and personality types. This was one of the reasons for initiating the investigative approach in this paper. 60 students attended from a socio-humanities high school in Braşov, aged between 17 and 20, the average age being 17.85 for boys and 17.41 for girls.

Table 1 Mean age of adolescents by gender

	N	Minimum	Maximum	Mean	S.d	Gender	N	Mean	S.d
Age	60	17	20	17,56	0,74	Feminine	39	17,41	0,54
						Masculine	21	17,85	0,96

Participants were involved in a decision-making process to identify the best alternative careers. The stages of decision-making process were: problem awareness, reflected in the interview, self-evaluation, which consisted in assessing the initial knowledge level of motivational issues, personality traits and professional interests, exploration, accomplished by application of accredited psychological tests and of labor market exploring strategies and implementation, where clarifications about personality knowledge and professions that fit in line with this were produced.

3. RESULTS INTERPRETATION

After statistical processing of recorded data, we found that:

- in terms of profession they want to choose in the future, teenagers opt in 20% for those professions in social sciences(sociologists, counselor, psychologist), followed by 13.3% as attorney, lawyer, judge;
- adolescents approach the career decision-making more intuitively (71,7%) than rationally (28,3%). The intuitive style focuses on emotions, imagination and spontaneous decisions, yet accepting responsibility for own decisions. Open, curious, with wide interests, spontaneous and adaptable, the intuitive postpones decision to learn as much information as possible. Although intuitive decision is made based on a rich information support, he looses opportunities due to delays. These individuals speak easily about career alternatives they may have but they can just as easily change their decisions in a short time.

Following self-assessment shows that teens are eager to coordinate activities and to be opinion leaders. The exploration moment confirms that adolescents are described by friendly, open mind and extraversion. Analysis of personality traits scores obtained on boys and girls show distinct interesting differences. Thus, girls have significantly higher scores than boys in friendly factors (m_{girls} = 234,74, S.d. = 23,98 and m_{boys} = 222,81, S.d. = 28,81) and conscientiousness (m_{girls} = 226,08, S.d. = 26,57 and m_{boys} = 217,95, S.d. = 32,77). Girls, as compared with boys, focus more planning and organization, being persons who prefer to work under well-established plans, with clear and precise objectives. They are confident, generous and jump to the aid of others.

In contrast, boys have higher mean for the emotional stability factor (m_{girls} = 206,33, S.d. = 29,42 and m_{boys} = 212,29, S.d. = 37,29) demonstrating a better management of impulses and reactions. They are more emotionally stable and calm; they don't lose their temper in front of problematic situations. In case of the business factor there are significant differences between girls` and boys` averages. Therefore, the girls` mean values are greater that the boys` (m_{girls} = 54,43, S.d. = 8,95 and m_{boys} = 49,28, S.d. = 14,26), proving a better planning and organization of activities.

Table 2 Mean and standard deviation for business

2nd Stage Information about professional interests				
	gender	N	mean	S.d.
JVIS_business	feminine	39	54,43	8,95
	masculine	21	49,28	14,26

These differences between groups of participants may suggest the existence of some dissimilarity at the level population. To determine the statistical significance of these differences we used the t test for independent samples.

Table 3 Differences of mean values for business

2nd Stage Information about professional interests - teenagers						
	Levene Test		t Test			
	F	p	t	df	p	Mean value differences
JVIS_ business	5,08	0,02	1,50	28,70	0,14	5,150

Comparisons made using the t test show that we don't have significant differences in the Business factor, between boys and girls, p >.05, which reinforces the idea that girls and boys similarly perceive this factor. Professions in this field are selected and correspond to girls and boys, almost equally. In case of Science and mathematics factors, which include social sciences, the average value differ between boys and girls (m_{girls} = 22,00, S.d. = 9,60 and m_{boys} = 23,43, S.d. = 13,67), the boys` mean value being higher than the girls` one. They dominate through the openness towards physics, chemistry, biology, girls being more oriented towards social sciences and mathematics. Girls can do well with the statistical analysis applied in different fields and with mathematical models needed in design. Boys do better in design, construction and equipment testing. With higher scores, boys demonstrate self-control, are quieter, stable and hard to incite. These people value the opportunity to pursue peace and intellectual interests and they are oriented towards accumulation of diverse knowledge from as many domains as possible. Numerous studies from specialized literature (Ahrens, & O'Brien, 1996; O'Brien, 1996; O'Brien & Fassinger, 1993; O'Brien, Friedman, Wulff & Steitz, 1999) examined influences that occur on adolescents` decision-making process, by gender. The results of these studies say that boys teenagers have an inspiration more inclined for career that girls`. The weight of parents` influence on children in the process of career decision-making can be decisive. Behavioral patterns related to work can be taken without any change by children. The more various forms of specializations they come across the more personalized these models become. Adolescents` involvement in various professional activities can change behavioral patterns taken from parents. In most cases, the family remains the major part in shaping options for a certain career for adolescents. The career counselor must verify the family's point of view in the adolescent's decision-making process so as not to enter into contradiction with him. Knowing the family option, and linking it with the adolescent's and with what fits him, career decision acquires positive valences in the professional development.

Teenagers that are in various stages of career decision making have different perceptions about self-confidence in taking the right decisions. Mau (2000) founds in his research that American teens learn to take their own decisions about their professional future and that adolescents in Taiwan relate to their family expectations and community they

belong to when taking them. It is less common for Taiwanese adolescents to go to work before graduation and therefore, the lack of experience will make the decision making process more difficult.

4. CONCLUSIONS

There are teenagers who still do not know what field of activity would be suited for them, which leads us to start career decision making process earlier in order to learn more about him and the world of professions In this situation, the main purpose of a career counselor is to know the characteristics of decision-making process and to adapt them to those they work with. Living in a dynamic labor market, teens must deal not only with identification a sure occupation or profession but they must also be prepared for change. Flexibility and adaptation should be predominant features of today's adolescents throughout the career decision-making process.

Even if development of decision-making processes hasn't come to an end, only the first four specific stages in the career decision being presented, adolescents participating in our investigation have made clear the options for career choice and have come to know some of the decision-making process characteristics. The other stages of decision making will be analyzed during future investigations that will start in February, 2012. Also as a continuation of our investigation an extension of knowledge and of the factors influencing career decision-making will be approached. In conducting our investigation ethical rules on confidentiality, on adolescents` participation in terms of informed consent and on the use of licensed psychological tests have been followed. The results of our investigation can provide a support in understanding adolescents` decision-making process in order to take realistic career decisions. Not all individuals follow the same career pattern. Some have a quick start in professional life; others delay the decision-making process very much. Everyone should know better when to take a career decision and to find information on career and professional fields of their choice. Individual ability to take career decisions and choose a certain professional field is built in close dependence to the correct processing of information about themselves and the world of professions. (Silvaş, 2009). The success of a decision lies in selecting information, in the use of those strategies that can help individuals make good choices out of an excessive supply of alternatives. (Tatu, Gherasim, 2006). Entering the labor market is according to the level of training. Currently, only a qualified labor force can be competitive on the labor market. This requires investment in education and science. EU countries cooperate closely to develop education and to face all obstacles and challenges. Lisbon strategy focuses on learning throughout life and promoting research and development. Individuals must become active in the working field, to adapt to labor market changes and to be able to take decisions quickly and efficiently.

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ADOLESCENTIN EXISTENTIAL SATISFACTION AS PROCESS CONECTING SELF-IMAGE AND NEGATIVE EMOTIONABILITY

Aurel Ion CLINCIU

"Transilvania" University, Brasov, Romania

***Abstract**: 206 adolescents, aged between 16 and 18, from four high schools in Brasov, distributed in a balanced way after the gender criterion, were investigated with a battery of instruments destined to determine the factors implied in the global level of life satisfaction. Besides the questionnaire of demographic data, there were used the questionnaire of Existential Satisfaction, indicative for global level of life satisfaction, Burns questionnaires for anxiety and depression, Dean questionnaire of Social Support and three questionnaires of self-esteem, on its dimensions: physical (Clinciu Body Self-perception), psychical (Clinciu Self-perception) and social (Social Self-Esteem Inventory of Lawson, Marshall, and McGrath). The study hypothesis anticipates a significant direct link between the level of self-esteem and the level of life satisfaction and an indirect one between life satisfaction and negative emotionality (anxiety and depression). In addition, we anticipate that negative emotionality and self-esteem represent the poles of a unitary factor which is the one of adaptation. Exploratory factorial analyses applied to these sets of variables confirm the presence of the unitary bipolar factor of adaptation. It significantly correlates with life satisfaction and with school performances as well. It presents important associations with the variables gender, type of school and level of parents' schooling. Thus, negative emotionality plays a more important role for the feminine gender, its weight being less for the higher categories of age. The feeling of self, especially through its psychical and social dimensions, is more strongly represented at the good schools of tradition in the city, and within these schools at the sciences departments.*

***Keywords**: existential satisfaction, well-being, negative emotionality, self-image, self-esteem.*

1. INTRODUCTION

A more and more important construct related to well-being literature is life-satisfaction. Proctor, Linley, & Malby (2009) suggest that life satisfaction in children and adolescents has received less attention compared to adult life satisfaction, which has been studied extensively for the last decades. "Measures of life satisfaction are sensitive to entire spectrum of functioning, and thus, provide indications of both well-being and psychopathology" (Proctor *et al.*, 2009:584). The well-being state has become a structural component of personality models, being investigates as a relevant dimension for the efficient functioning of self. It is found included in the great inventories of personality, either as a distinct factor or as one of the facets of a super-factor. Thus, McCrae (2002) considers the well-being state is an expression of adult psychological development. More specifically, one of the facets of Extraversion super-factor from Costa and McCrae's NEO PI-R, E6, is called Positive Emotions, being considered by the two authors to be the best predictor of psychological well-being. On the other side, among the twenty basal scales of CPI, Gough & Bradley (2002) include one which is called Well-being (Wb). The persons with high scores to Wb are self-confident, good at coping with pressure, alert and energetic, able to get a long well-being with others. The low scores at the Wb are described as ill at ease socially, tense and nervous, prone to willful or headstrong behaviour.

In the evaluative model of self elaborated by Clinciu (2010) this is conceived as the integrative instance for four major structural sub-dimensions. Out of these, two of them - physical dimension and emotional dimension- have a preponderantly biological substantiation, being basal dimensions. The other two - cognitive dimension and social dimension of self - are preponderantly gained, being superior dimensions that were elaborated later in ontogenesis. The expression of superior integrative capacity of self is represented by its good functioning which is made evident through a superior level of adaptability, a good physical and psychical state of the person, the feeling of personal self-efficacy and high self-esteem. Its dysfunctional expression is represented by the negative emotionality that is managed by self, outlined by the high level of anxiety, depression and self-dissatisfaction, by a low independence on the account of a high need of social assistance and support. Thus, self functioning can be thought as a continuum which implies negative emotionality at one pole and at the other one adaptive efficiency doubled by a high feeling of self-esteem. In a magazine of literature concerning life satisfaction, Proctor, Linley, & Malby (2009) put its levels into connection with demographic factors and personality factors. The authors refer to the link between life satisfaction and physical or psychical health, or between life satisfaction and general level of the person's productivity. In this category they include employment, goal and motivation, hope, achieving personal standards and self-efficacy. They also emphasize the role and involvement in life satisfaction a parental marital status, siblings, social support, parenting style and family functioning. For the mentioned authors life satisfaction has environmental and cultural determinants, such as environmental quality, life events, and acculturation and culture values. The concept involves risk-taking behaviour, as violence, victimization, and bad sexual behaviour. Low life satisfaction is also correlated with physical disabilities, and mental disorders. Frequent invoked psychopathological problems of life satisfaction are eating disorders (anorexia and bulimia), and obesity, depression, loneliness, suicide, insomnia, and emotional disturbances.

In accordance with the model proposed by Marques, Pais-Ribero and Lopez (2007), subjective well-being is comprised of three distinct components, namely positive affect, negative affect and life satisfaction. Life satisfaction seems to be a "global evaluation by the person of his or her life" (Pavot, Diener, Colvin, & Sandvik, 1991:150). No matter if subjective evaluation about own life satisfaction is a global one or interferes to specific domain of life, evaluation seems to be a multidimensional one, involving physical or psychological aspects, intrapersonal or interpersonal outcomes, perennial or contextual-specific traits or domains. Bipolar nature of life satisfaction is reflected in its strong association with extraversion, pro-active behaviour, pro-social activities, stress-resilience and active coping, internal locus of control, high self-esteem, self-efficacy and positive self-concept. On the other hand low levels of life satisfaction may correlate with anxiety, depression, social stress (Huebner at al., 2000), high level of stress, chemical abuse, aggressive behaviour and neuroticism (Fogle at al., 2004). Some studies explore the relationship among life satisfaction, body image and eating disorders (Zullig, Pun, & Huebner, 2007; Korkeila et al., 1998).

2. OBJECTIVES AND HYPOTHESES

The goal of the present survey is to study a Romanian instrument intended for investigating existential satisfaction of pubescents and adolescents, students in low and high secondary school levels. The instrument we have elaborated consists in 20 items and has been conceived through an empirical method taking into consideration the already existing instruments of life satisfaction.

Secondly, we intend to render evident the relationships between existential satisfaction and the other two components of well-being (Huebner et al., 1996), what the positive affects and the negative ones are. In our survey the negative affects include anxiety, depression and dependence (the high need of

social support). The positive affects refer to self-image through self-efficacy and self-esteem, the latter including physical, psychical and social components. The model that arises for operationalizing well-being (Figure 1) is similar to the one proposed by Huebner (1996), the latter consisting in three components: existential satisfaction, negative emotionality and self-image. The difference comes from the fact that the last two components define a unitary bipolar factor which we named adaptation of self. In this context life satisfaction is the direct resultant of integrative efforts of adaptation of self and not only a component of its well-being.

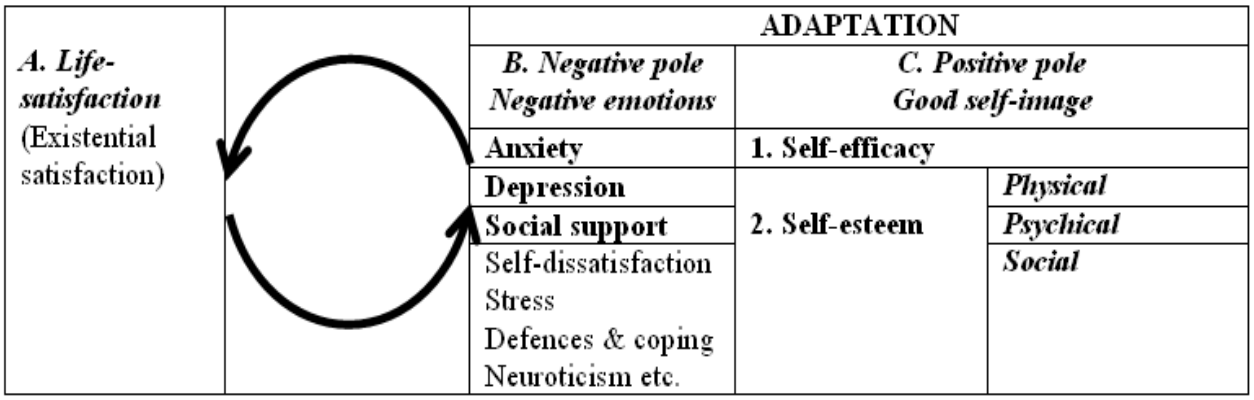

Fig.1 Model of operationalizing well-being

Third, the constructs involved in survey were put into connection with demographic variables in order to find gender differences, differences associated with the level of parents' schooling and of types of attended high schools and departments. Our survey anticipates the existence of some significant gender differences in connection with the place and role of negative emotionality in the process of adaptation of self which could have a more important weight for feminine gender. On the other hand, all the three components of self-esteem (physical, psychical and social), together with a stronger feeling of personal efficacy, could have a bigger weight for masculine gender. Secondly, existential satisfaction will be associated, at close but significant levels, with the two components of the factor of adaptation of self due to its symmetric bipolar nature. It is also expected that existential satisfaction should associate directly with the level of parents' schooling and with the indicators of the level of family's socio-economical and cultural status. Students' school performances, expressed by grade point average and main participants' averages (Romanian and mathematics) will be associated directly with existential satisfaction and with self-image (self-efficacy and self-esteem) and inversely with negative emotionality.

3. METHOD

3.1 Participants. Participants included 206 pupils, from two high schools from Brasov, aged between 15 and 20 years (M=17.13, SD=1.51), equally distributed numerically in two age groups, 16 respectively 18 years. Partition after gender criterion and type of high school (good and less good) is also a balanced one (102 males and 104 females; 101 from "good" high schools and 105 for the less good ones).

3.2 Measures. All participants completed measures of Clinciu's Existential Satisfaction Inventory (ESI), negative affect (anxiety, depression and social support), and self-efficacy plus self- image questionnaires (physical, psychical and social self-esteem).

Existential satisfaction: *Existential Satisfaction Inventory* (Clinciu, 2006) consists in 20 items which measure a homogeneous construct, namely the one of existential satisfaction, which results from summating several distinct facets: physical and psychical

well-being, psychical endowment, life context, relational, family and physic dimension. The items score on a bipolar scale from -3 to +3. The questionnaire has a high internal consistency, alpha Cronbach for the entire test being of 0.86, for the first and second part of 0.76, respectively 0.78, and between halves (correct Spearman-Brown method) of 0.79.

Negative affect: *Burns Inventory of Anxiety* (BIA) has the advantage that, although it is single phase, it operationalizes anxiety in three distinct categories, namely anxious feelings (6 items), anxious thoughts (11 items) and physical symptoms as a result of anxiety (16 items), giving a consistent expression to the physiological reactions to stress. *Burns Depression Inventory* (BDI) consists in a list of 15 depressive symptoms that are scored from 0 (not at all) to 3 (a lot); out of their summation there results a synthetic indicator of the level of depression. The instrument has a good concurrent validity with Beck Depression Inventory (BDI). *Questionnaire of Social Support* (QSS, Dwight Dean) comprises a number of 24 items that are scored on a scale with 5 steps, from strong agreement to strong disagreement, these items measuring not only the need for external support and help – a major way of stress decreasing – but also the social seclusion.

Efficacy and Self-Esteem: *Self-efficiency Scale* (SES of Sherer, Maddux, Mercandate, Prentice-Dunn, Jacobs, Rogers, 1982) consists of 23 items rated from 1 (very little) to 5 (heavily). The author of the theory of social learning, Bandura, demonstrates the existence of a very close connection between self-esteem and the feeling of self-efficacy. *Questionnaire of Self-perception* (QSP, Clinciu, 2010) consists of 30 items which are rated on a bipolar scale from -3 to +3 which express self evaluation, easiness in decision-making and attitude towards risk. This tool provides on one hand a self-depreciative component (negative) of self-esteem which is very pronounced in depressed persons and, on the other hand, a self-appreciative component (positive). The algebraic sum of the two components reveals the synthetic image of self-esteem, with important particularities on temperament and gender. *Corporal Self-perception* (CSP, Clinciu, 2010) consists of 48 items which are rated on a bipolar scale from -3 to +3 which express physical self-evaluation. The questionnaire offers a synthetic measure of a homogeneous construct which is indicative of physical dimension of the satisfaction connected to own body and therefore to the corporal component of self-image. *Social Self-esteem Inventory* (SSEI) was created by Lawson, Marshall and McGrath (1979) and also evaluates self-esteem, but in social context. The subjects with a deficit of assertiveness or with a personality disorder usually have a social self-esteem which is inferior to the other categories of subjects.

4. RESULTS AND DISCUTIONS

In order to see if the manner in which we have operationalized the concept of well-being is in accord with the real situation, we have made an exploratory factorial analysis. Conditions for such an analysis are achieved because the determinant is positive, the value of KMO index is 0.80, Bartlet test of sphericity shows a $p < .001$, and MSA is an excellent one. The principal components with Varimax rotation were used, with the number of factors initially unspecified. There were extracted two factors with eigenvalues higher than 1 (3.28 and 1.11), which cover 62.69% out of the entire variance.

Table 1 Factorial loading for seven study variables

		Two-Factor Model	
	One-Factor Model	*Factor 1 Negative affect*	*Factor 2 Esteem_ Efficacy*
Anxiety	-.73	.87	-
Depression	-.85	.77	-
Social support	-.61	.75	-
Corporal self-esteem	.57	-.48	.33
Psychical self-esteem	.70	-	.66
Social self-esteem	.61	-	.86
Self-efficacy	.69	-	.78

Results that are summarized in the above Table 1 confirm unitary but bipolar nature of the extracted factor, giving saturations of over 0.50 for all factorized variables. The identified factor is that of adaptation, followed by

studying its relationships with the other factors and variables, especially with existential satisfaction. Through rotation, anxiety, depression and social support obviously form the pole of negative affection while self-efficacy, psychic and social self-esteem form the negative pole which is called efficacy and self-esteem. Corporal self-esteem has saturations at levels that are close between the two poles, but we prefer to add it to the latter pole because it has positive values of saturations as that one. Relationships between the factor of adaptation and other variables of the survey are summarized in Table 2.

Table 2 Correlation between adaptation and other study variables

	Existential satisfaction	Gender	Mark grade	High school type
Adaptation	.56**	-.31*	-.18*	.15*
Effect size	1.12	.33	.18	.15

* Correlation is significant at 0.05 level ** Correlation is significant at 0.01 level

Although all the four correlations in Table 2 are statistically significant, the effect size is extremely strong only between adaptation and existential satisfaction, being just average for gender.

Table 3 Statistical significance for Existential Satisfaction sub-dimensions

	Gender M/F	Number N	Mean x	Sigma D. σ	Difference Δ	Signific. t	Probabil. p
TE Existential Satisfaction	M	102	33.47	12.53	2.43	1.39	0.166
	F	104	31.04	12.58			
TE1 Endow-ments	M	102	1.65	0.80	0.23	2.21	0.028*
	F	104	1.88	0.69			
TE2 Support	M	102	1.88	0.80	0.17	1.45	0.149
	F	104	1.71	0.86			
TE3 Context	M	102	0.33	1.24	0.13	0.80	0.423
	F	104	0.46	1.11			
TE4 Well-being	M	102	2.10	0.69	0.55	4.57	0.001**
	F	104	1.55	1.00			
TE5 Family	M	102	1.91	1.05	0.06	0.47	0.640
	F	104	1.85	0.85			
TE 6 Physic	M	102	2.00	0.88	0.23	1.84	0.067
	F	104	1.76	0.95			

The general score of existential topics questionnaire does not show significant differences after gender. Significant differences are still on two of the questionnaire facets, one in favor of girls, the other one in favor of boys. Thus, girls score at a superior level compared to boys at the dimension of endowments ($t(102, 104) = 2,21$, $p = 0.028$), which refers to a combination of elements that include learning, intelligence, personal efficacy and affectivity. On the other side, boys score significantly high at well-being ($t(102, 104) = 4.57$, $p < .001$), consisting in physical endowment, health, soul wealth and happiness.

5. CONCLUSIONS

Firstly, the goal of the present survey was to study a Romanian instrument intended for investigating existential satisfaction of early adolescents and adolescents. The newly created instrument has good psychometric qualities and gives a unitary image for life satisfaction at the considered ages. Secondly, in our research the model that arises for operationalising well-being is similar to the one proposed by Huebner (1996), consisting in three components: existential satisfaction, negative emotionality and self-image. The difference comes from the fact that the last two components define a unitary bipolar factor which we named adaptation of self. Existential satisfaction is in a good relationship with adaptation factor. Both of them have some gender and family's socio-economic and cultural determinants. Thirdly, students' school performances, expressed by grade point average and main subjects averages (Romanian and mathematics) are weakly associated with existential satisfaction and with the adaptation factor. The feeling of self, especially through its psychical and social dimensions, is more strongly represented at the

good schools of tradition in the city, and within these schools at the sciences departments. Further researches need to prove the validity of the proposed model of well-being in other areas, such as stress, work, sports or human psychiatric pathology.

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RESIDENTS' PERCEPTION OF VIOLENCE ACTS - A LOCAL RESEARCH

Ecaterina Maria UNIANU*, Aida Cristina FRANGULEA-PASTOR**

*"Transilvania" University, Brasov, Romania, **University of Bucharest, Romania

***Abstract**: The community perception of violence acts committed in a neighbourhood space represents an important issue for the international project "SafeLand – Safe Living across European Cities". The interest for this issue represents a starting point for a partnership between schools and local community in order to prevent violence acts in the neighbourhood and in schools. It is also important to try to increase the safety level in those areas and found out the most effective ways to realize those objectives.*
This research was carried out during a two months period – August-September 2010 in Electroprecizia neighbourhood of Săcele, Braşov and the sample comprised 250 residents of this area. The main instrument was a questionnaire which was designed in order to reveal the residents opinion on violence acts committed in the neighbourhood. The research revealed that the residents know very little about their neighbourhood and its safety; that they want to see some real actions in order to increase safety level in those areas; that the main categories of those who commit violence acts are gypsies, teenagers and people who have been arrested many times before. It also revealed measures that can be taken in order to increase safety level in this neighbourhood such as police intervention, mediators' activity, informing the people on mediators' activity and police activity, a partnership between local police, community and schools and so on.

***Keywords**: community, violence, mediators, safety.*

1. INTRODUCTION

The violence in the neighbourhood or in the public space represents a research theme for many social and humanistic domains. The phenomenon of violence is studied from different points of view such as: psychological, sociological, anthropological, economic or educational. The acts of violence are also defined and sanctioned according to all regulations and norms of a society or community, at national or international level.

This research is a response to an interest of "Victor Jinga High School" from Săcele, county of Braşov for the perception of Electroprecizia's residents concerning the safety of their neighbourhood. This initiative is a great one because it's representing an interest of this High School for the local community, for the developing of a strong link between the local community and this institution in order to create future directions of action for preventing violence in the neighbourhood and growth of safety degree.

"Victor Jinga High School" is involved in many national and European projects witch gather in different institutions from the local community. One of these is "SafeLand – Safe Living across European Cities", project that has been approved by the European Commission, Directorate-General Justice, Freedom and Security (project number JLS/2008/ISEC/AG/081, Call for proposal 2008 „Prevention and Fight against Crime"). The present research is one of the many activities of this project which is initiated and implemented by Metropolitan Agency for Sustainable Development of Brasov, in collaboration with local partners such as "Victor Jinga High School" and "School no. 9 of Brasov".

2. THE RESEARCH ON VIOLENCE IN THE ELECTROPRECIZIA NEIGHBORHOOD

2.1 The conceptual delimitation. The violence is defined as a deficiency, both at European level and at national level (studies elaborated by the Institute of Educational Sciences – "Violence in school", Bucharest, 2005; by UNICEF Romania, "Violence, abuse, neglect", "Our right to be protected against violence", "Preventing and fighting against violence in school" and so on). Violence represents the use with intention of force against itself, against another human, group or community. This can have as effect a material, physical or moral prejudice, death, pain or deprivation of any kind. It also can be a physical or psychological constraint, of a human against another in order to impose his own will by oppression.

2.2 Methodology of the research. The main objectives of our research are: identification of residents' opinion towards the neighbourhood's safety, identification of the factors and causes of violence in the neighbourhood, identification of optimal strategies and measures against violence in the neighbourhood. For our purpose, we selected 250 participants, all residents of Electroprecizia neighbourhood of Săcele, county of Braşov. The distribution of the participants was according to three criteria: gender (123 men and 127 women), age (17 to 86 years old, the average – 38,56 years) and areas of the neighbourhood (100 participants from area "apartments buildings", 50 from "School area", 50 participants from one area with detached houses and 50 from one area with homes for singles). The participants filled out a questionnaire with 20 statements and questions about the concepts presented.

2.3 The presentation and interpretation of the results. First of all, we tried to identify the residents' opinion concerning the degree of safety in their neighbourhood. On a scale from 1 to 10 (10 – the highest level of degree), the average was 5.23 and the distribution of the results on the specific areas was a uniform one. Another question refers to the time when the violence acts are committed and the perception of the residents is that there are more violent acts in the night (84% of participants), during the holidays (72.4%) and on weekends (60.2%).

We also want to identify the types of violent acts that are perceived by the residents to be more frequent in their neighbourhood. We offered them a list with 14 types of crimes and we asked them to say if they know that in their neighbourhood are committed those crimes. The list included: theft from homes, theft from cars, theft of cars, robbery, vandalism, threatening, assault on police, disturbing public, traffic with drugs, physical violence, rape, and homicide.

The most frequent answers were those implying theft from cars, threatening, disturbing public and physical injury (Fig.1).

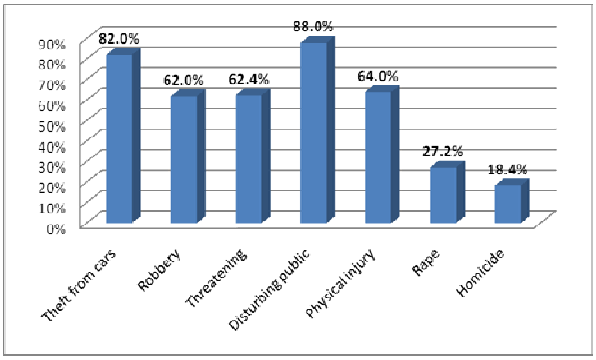

Fig.1 Types of crimes

The residents of the Electroprecizia neighbourhood (58.8% of participants of this research) think that the persons with ages between 18-25 years are making the numerous crimes in this area. The participants also identified the main social and economic categories from which are those who commit such crimes. The most frequent categories are: gypsy (96.4% of participants of this research think that the gypsies are committing the most numerous crimes in their neighbourhood), street gangs (68.8%), recidivists (65.6%) and those who are members of dysfunctional families (56.4%). The social category of gypsy is the most frequent category mentioned by the participants to this research, no matter form which area the participants are. There are no significant differences between areas concerning the social categories that are committing the most frequent crimes.

The next information obtained from this research was the residents' opinion concerning the safety in the school of this neighbourhood. The participants were asked to choose from a list those crimes that are more frequent in the schools of Electroprecizia neighbourhood. The list includes behaviours such as: beating, truancy, shoved, stealing, calling by nicknames, swearing, verbal threat, injuries, rejecting, screaming, breaking rules and so on. In residents' opinion, the most frequent behaviours in schools are: swearing (77.2% of the answers on this topic), screaming (70.8%) and truancy (70.4%).

Regarding the causes and factors that are fostering the violence in the neighbourhood the participants think that the main causes of violence were: poverty and the lack of jobs in this area (35.24% of participants who answered to this question), the behaviour of the gypsy (19.05%), alcohol (17.15%) and a lack of education (13.34%). They also mentioned the poor intervention of police's forces and indifference, social neglect, domestic violence, the bad examples presented on television.

The residents' opinion is that the number of the crimes remains constant despite of all interventions of Police or other community institutions. There are few residents who think that the number of the crimes committed in their neighbourhood is smaller (7.60% of the participants who answered to this question). 78.8 % of the participants think that the sanctions for the crimes are too small relative to the degree of these crimes.

In order to identify the secondary opinion of the participants regarding the causes of violence, the last question of our questionnaire was a complex of seven statements with a strong value of prejudices. The seven statements were: (1) Men commit more violent acts than women; (2) The most numerous acts of violence are committed by young people; (3) The most numerous acts of violence are committed under the influence of alcohol; (4) The girls are raped because they are acting provocative; (5) The children learn violence at home; (6) The child must know "fear"; (7) In the marginal neighbourhoods are committed more violent acts than in the central ones. The participants were asked to say the degree of agreement regarding those statements.

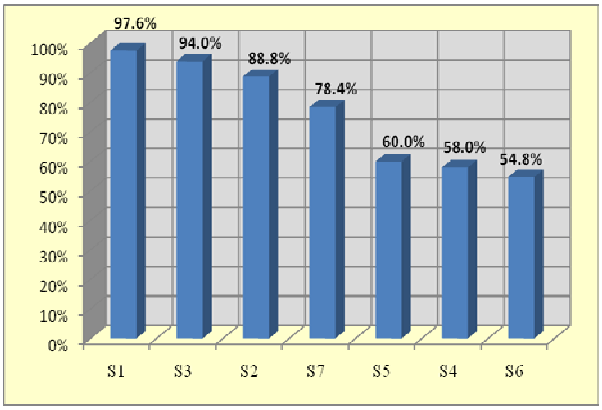

Fig. 2 The classification of the statements

On the first statement, 97.6% of the participants were totally agreed with the fact that men are committing more violent acts than women. The participants were also agreed with the third statement because 94% of them think that the most numerous acts of violence are committed under the influence of alcohol (fig. 2).

Based on those seven statements, it was calculated a prejudice parameter (index) and compared with some variables such as: age and level of education. We concluded that it is a significant correlation between this index and age – the strength of the prejudice is higher on those who are older (Pearson Correlation is .141, significant at the 0.05 level). We also found that it is a strong connection between the prejudice index and the level of the participants' education – the prejudice are stronger when the level of educational studies is lower (Pearson Correlation is -.191, significant at the 0.01 level).

The third part of our research had the main objective the identification of possible measures that could be taken in order to increase de safety level in this area. We tried to identify the residents' perception regarding the measures that have been taken in their neighbourhood in order to decrease the number of violent acts. It was an open question that has provided answers from 209 participants from a total of 250. The answers were analysed and categorised on different sections as follows: an increased number of

police forces (33.6%), public illumination (9.2%) and the safety of every house or apartment (4%). There were a significant number of participants (37.6%) who said that there was taken no action in order to increase the level of safety in their neighbourhood.

The residents were also asked to identify possible measures that can be taken in order to increase the level of safety. 38.7% of the participants who answered to this question thought that is very important to increase the number of police actions, 23.21% thought that it should be necessary the application of the law with no exceptions as can be seen from the chart no. 3. The police implication involves, in participants' opinion, activities such as: reinforcement of public order (12 answers), increasing the number of active police officers (30 answers), the increase of night patrols (39 answers), a larger implication of police (29 answers) and so on.

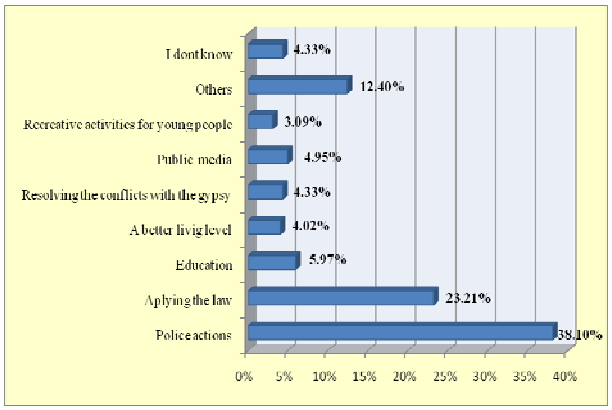

Fig. 3 Possible measures in order to increase the safety level in the neighbourhood

"Resolving the conflicts with gypsy" was another answer of this research's participants. They think that is necessary to take some action in order to limit the access of gypsy in this neighbourhood, even the "interdiction" for them or "a definitive elimination". The answers were very drastic and involve a general perception of Electroprecizia neighbourhood of this ethnic category.

We also proposed to the participants a list of possible persons that can help to increase the level of safety in this area. The list contain persons such as: the community police officers, local police officer (a profession which is no longer active), the neighbourhood residents, the police officers, the protection and security officers and proximity cop. The participants chose the police officers (47.2%) and the community police officers (32.8%).

The residents were also asked if they are willing to involve themselves in some actions to prevent violent acts. A number of 91 of 250 respondents (36.4%) answered "yes" to this question and 84 (33.6%) said "I don't know". Their involvement in these actions is presented in several categories: direct involvement (8.63% of the participants who answered to this question – "announcing the police in case of violent acts", "patrolling with the police officers", "the participation on different actions of police officers in order to prevent violent acts"), indirect involvement (6.9% - "involvement in implementation of different projects"), partnership with local police (13.79%) and implementation of different projects (13.79%). There were some undefined answers (20.68% - "it depends", "if I can", "even personal", "I would do anything") and some answers included in the category "others" (17.25% - "to spy", "counselling", "volunteering").

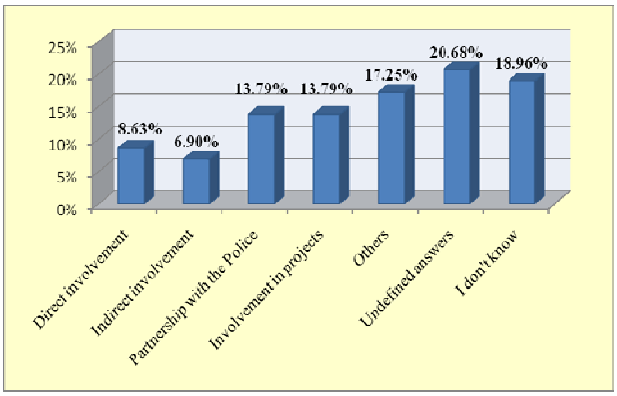

Fig. 4 How you plane to involve yourself in order to increase the safety level in your neighbourhood?

Another important domain was the one of mediators and their role in preventing violent acts and increasing the safety level in the neighbourhood.

We wanted to find out the residents' perception of the right persons who can be mediators and who can make a difference regarding the neighbourhood safety. A number of 116 respondents (46.4%) think that the

police officer is the best option for a mediator in this area. He was followed by a residents' official with 98 choices (39.2%). The participants also identify the community police officer (31.6%), the teachers from the neighbourhood schools (22.8%), the priest (19.6%) and the principal of the school (16%).

Regarding the role of the mediator in this area the participants thought that is imperative that he has to have an important contribution to education and information of residents concerning the violent acts, prevention strategies, community partnership and so on.

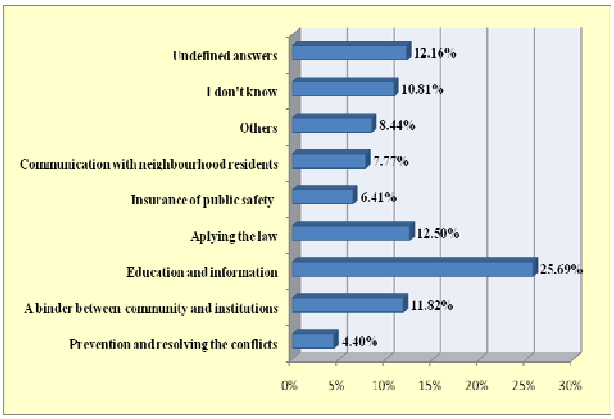

Fig. 5 What a mediator should do?

Mediators' activities should imply: extracurricular activities with student and pupils, activities in order to show the destructive effects of smoking or taking drugs, meetings with police officials, information activities regarding the crimes in the neighbourhood and prevention strategies, pointing out the bad examples, educational programmes on local television, counselling and church involvement. The last topic concerns the changes that the residents want to be made in their neighbourhood. Their answers refer to the infrastructure of the neighbourhood (29.7% of the respondents), places of entertainment (15.07%), public safety (12.32%), the conflicts with the gypsy, stray dogs and changes in the structure of Police department.

3. CONCLUSIONS

The conclusions that can be made based on the research results are pointing out the fact that safety and the prevention of violent acts represents a very important topic both for different institutions and for residents of the neighbourhood. In this particular case, the residents of Electroprecizia neighbourhood are not very pleased with the safety level in their area. The main factors that contribute to the violent acts are, in residents' opinion, poverty and the lack of jobs in this area, the behaviour of the gypsy, alcohol and a lack of education.

The possible measure in order to increase the safety level could be: increase the number of police actions, the application of the law with no exceptions, reinforcement of public order, increasing the number of active police officers, the increase of night patrols, a larger implication of police and resolving the conflicts with gypsy people.

The mediator has an important role in this strategy because he has to be involved in activities such as: education and information of residents concerning the violent acts, prevention strategies, community partnership, extracurricular activities in schools, information activities regarding the crimes in the neighbourhood and prevention strategies, pointing out the bad examples, educational programmes on local television, counselling and church involvement.

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STUDENT MOTIVATION AND SELF-REGULATED LEARNING – A THEORETICAL REVIEW

Ana-Maria CAZAN

"Transilvania" University, Brasov, Romania

Abstract*: Recent research on self-regulated learning has stressed the importance of both motivational and cognitive components of classroom learning. The main motivational theories valorized in research about self regulation are expectancy - value theory and achievement motivation theory. Models of self-regulated learning strive to integrate the different motivational and cognitive components into a comprehensive model of students' classroom academic performance. Many authors proposed also different models including the motivational self regulation. As motivation plays a crucial role in learning and constitutes an essential area in all the approaches to self-regulated learning, this paper aims to realize a synthesis of the most recent research in this field. Considerable evidence indicates that student motivation and use of learning strategies are related. The paper aims, therefore, to highlight the more relevant models of academic motivation involved in self regulated learning.*

Keywords*: academic performance, learning strategies, learning task, motivation, self-regulated learning.*

1. INTRODUCTION

Recent research on self-regulated learning has stressed the importance of both motivational and cognitive components of classroom learning. Self regulated learning and motivation can be considered components that are inextricable related (Boekaerts, 2010:75). This relationship is reflected in definitions of self-regulated learning as an active, constructive process that involves setting learning goals, then monitoring, regulating, and controlling motivation and behavior to accomplish them (Boekaerts *et a.l*, 2000:103). Self-regulating students are characterized by their motivation and personal involvement in learning; they are capable of persisting and making an effort in the tasks to achieve their proposed goals. Motivation is observed in students' personal choice to engage in the learning task and in the intensity of their effort and persistence in the activity (Valle *el al.,* 2009:98). There are also authors that proposed different models of self regulated learning including motivation as a core component of self regulation.

The main motivational theories valorized in research about self regulation are expectancy value theory, achievement motivation theory and self determination theory. Models of self-regulated learning strive to integrate the different motivational and cognitive components into a comprehensive model of students' classroom academic performance. As motivation plays a crucial role in learning and constitutes an essential area in all the approaches to self-regulated learning, this paper aims to realize a synthesis of the most recent research in this field.

2. ACHIEVEMENT MOTIVATION THEORY

2.1. General considerations regarding achievement motivation theory. Achievement motivation represents a multidimensional concept. An approach of this theory concerns the dimension of goal orientation. Goal orientations have to do with individuals' reasons for engaging in a task. Researchers have identified several types of goal orientations. They have identified an

orientation in which the learner is focused on task mastery, improvement, and self-comparison; these goals represent mastery goals, individuals' goals being to increase their competence (Dweck, 1992: 206).

Another type of goal orientation is performance goals in which individuals are concerned with gaining favorable judgments of their competence (Dweck, 1992: 208). An important dimensions incorporated into the achievement motivation construct is the approach–avoidance distinction. Some authors proposed 2 × 2 achievement goal framework that incorporated the approach– avoidance distinction within mastery goals as well as performance goals (Elliot, Dweck, 2005:5). The four achievement goals resulted are: mastery approach (focused on task-based or intrapersonal competence), mastery-avoidance (focused on task-based or intrapersonal incompetence), performance-approach (focused on normative competence), and performance-avoidance (focused on normative incompetence). The core of the model is competence differentiated in two ways — according to how it is defined and according to how it is valenced (Elliot, McGregor, 2001:502).

2.2 The relationship between achievement motivation and self regulated learning. While a positive relationship between mastery goals and self regulated learning has been widely established (Pintrich, De Groot, 1990:35, Pintrich, 2000:453), the relationship between self regulated learning and performance goals is less clear. Mastery goals also show a strong relationship to performance compared to performance goals (Wolters, 2004:206; Middleton, Midgley, 1997:711; Pintrich, Zusho, 2002:253).

A synthesis of the research in this area shows the following results:

- the dimension of orientation (both mastery and performance) predicts the use of deep learning strategies, while the dimension of avoidance predicts the use of surface learning strategies (Pintrich, 2000:455; Diseth, 2011:5).

- mastery goals are more closely associated with deep processing learning strategies and hence with higher level of self-regulation (Pintrich, 2000:453) whereas performance goals are associated more closely with surface learning strategies and with low levels of self-regulation (Diseth, 2011:5; Pintrich, Schunk, 1996:234).

However, conflicting results have been highlighted in research, especially concerning the orientation towards performance goals, such as obtaining significant positive association between performance goals and the use of self-regulated learning strategies (Pintrich, Schunk, 1996:220) or obtaining insignificant association between performance orientation and self-regulated learning (Valle *el al.*, 2009:99; Wolters, 2004:207).

Thus, most of the research reveal that students who value learning and who are determined to learn and improve their competencies devote their efforts to academic tasks, persist at such tasks, and they usually use deep learning strategies; these students engage more in self regulating their learning (Pintrich, De Groot, 1990:37), they make a greater effort to learn, and have more control over their comprehension, realizing what they are and what they are not learning (Middleton, Midgley, 1997:713).

3. EXPECTANCY - VALUE THEORY

3.1 General considerations regarding expectancy – value theory. Expectancy value model of academic motivation proposes that there are three motivational components:

- an expectancy component, including students' beliefs about their ability to perform a task,

- a value component, including students' goals and beliefs about the importance and interest of the task;

- an affective component, which includes students' emotional reactions to the task (Wigfield, Eccles, 2002:102).

Expectancies for success and task value are the proximal determinants of outcomes such as effort, choice and persistence.

Expectancy is represented by self-concept of ability and self-efficacy (Eccles, Wigfield, 1995:206) and involves students' beliefs that they are able to perform the task and that they are responsible for their own performance.

The four components of value are: intrinsic interest, that is, the enjoyment gained from doing the task; attainment value that captures the importance of doing well on the task; utility, which is defined as how useful the task is for the student's future; and cost, that is, the effort and lost opportunities for engagement in an activity (Berger, Karabenick, 2011:419). These components are additive, for example students who find a task both interesting and useful should display greater motivation than students who find the activity either useful but not interesting or interesting but not useful. Students who experience high utility value, high interest value, high attainment value, and low cost for a given task should be highly motivated to complete the task.

3.2 The relationship between expectancy – value and self regulated learning. Children's achievement values affect their self-regulation and motivation because goals influence how children approach, engage in, and respond to academic tasks (Hidi, Harackiewicz, 2000:152). Research on relationship between expectancy - value model and self-regulated learning have focused more on the role of motivational beliefs (expectancies, control beliefs) and less on the value component (attainment value cost). There is a tendency both to study separately the components of motivation and to highlight their relationship with self-regulated learning, but also a tendency to take into account the combined effects and the interaction of components in the frame of motivational self-regulated learning.

Most of the research focused on the relationship between academic self efficacy and self regulated learning. Self-efficacy is positively related to student cognitive learning strategies and performance. Students who believe they are capable are more likely to report use of cognitive strategies, to be more self-regulating in terms of reporting more use of metacognitive strategies, and to persist more often at difficult or uninteresting academic tasks (Schunk, Ertmer, 2000:117; Zimmerman, 2000:17; Linnenbrink, Pintrich, 2002:315). Intrinsic value is related to the use of cognitive strategies of self-regulation. This association is observed independent of initial performance levels or self-efficacy and test anxiety. Students who are motivated to learn the material and who consider learning as an interesting and important activity are more cognitively engaged in trying to learn and comprehend the material, thus they use deep learning strategies (Pintrich, De Groot, 1990:37).

Among the components of the model expectancy-value - the perceived utility of the task predicts the use of deep learning strategies (such as elaboration and critical thinking) even when controlled for the effect of goals and perceived competence. Thus, students who choose a subject because of its relevance for their future, tend to use less the surface learning strategies and to use deep learning (Berger, Karabenick, 2011:418). Thus, the results confirmed that the strongest predictors for the use of deep learning strategies are self-efficacy and perceived value. Of these two components, it appears that self-efficacy predicts more efficiently the use of adaptive learning strategies.

Cost is the most understudied component of value including its relation to self regulated learning. Cost may constrain students' use of strategies to learn or guide them toward the use of more surface-processing strategies (e.g., rehearsal) that require less cognitive engagement even if it requires the same amount of time as higher-order strategies (Berger, Karabenick, 2011:416; Wigfield, Cambria, 2010:36).

There are also researches in the field of test anxiety. Research revealed that test anxiety is also an important predictor of both strategy use and performance in similar ways across subject areas; it is related to cognitive strategy use and to regulation and performance. Specifically, students who reported higher levels of test anxiety were more likely to engage in cognitive strategies, but were less likely to use regulatory strategies and tended to receive lower grades (Wolters, Pintrich, 1998:28). An explanation of these results is the fact that students who are anxious may use more cognitive strategies in an attempt to do better, but they have difficulties in regulating their learning and often end up performing more poorly (Pintrich, Schunk, 1996:342).

Recent models of self regulated learning include motivational beliefs together with self regulatory strategies; for example, the activation of task value as part of the forethought phase of self regulated learning model (Pintrich, 2000:453). In order to assess motivation and self regulated learning, many instruments have been constructed. One of the most cited instruments in recent research is the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich *et al.*, 1991:25). MSLQ measures students' motivational beliefs and students' use of self-regulated learning strategies. The measure is designed to be domain specific, the instructions ask students to think about a particular class as they answer the questions, and the instrument has been used with respondents ranging in age from late elementary school through college. One set of items in this measure assesses achievement values. The motivational component of the questionnaire comprises scales assessing academic self efficacy, intrinsic and extrinsic motivation, task value, control beliefs, goal orientation, corresponding thus to both motivational theories analyzed in this paper. The researches using MSLQ are the starting point for many of the research conducted on the topic of the relationship between self regulated learning, academic motivation and academic performance (Pintrich, Schunk, 1996:245; Linnenbrink, Pintrich, 2002:314). By assessing different facets of motivation, the MSLQ made possible the examination of associations between motivation and self-regulation with a greater degree of precision. There is now considerable support for the association between students' motivational beliefs and use of learning strategies.

4. CONCLUSIONS

Students are not characterized either by the presence or total absence of motivation, in terms of a general quantity, but instead there are important qualitative differences in how students become motivated and how these different qualities significantly affect learning and achievement.

Thus, considerable evidence indicates that student motivation and use of learning strategies are related. The paper aimed to highlight the more relevant models of academic motivation involved in self regulated learning.

Despite the large number of researches conducted on the relationship between self-regulated learning and learning motivation, a multitude of issues remain contradictory and requires further investigation. A first issue concerns the assumption that students with higher levels of learning motivation use more self-regulated learning strategies (Pintrich, De Groot, 1990:37) and that motivation predicts the use of self-regulated learning strategies. Thus, individuals who are motivated to engage in learning tasks in general, are using more effective learning strategies. The opposite assumption is that learning strategies predict the motivation level. Thus, effective use of self-regulated learning strategies can predict the level of self-efficacy and involvement in a task.

One reason which can explain these concerns is that studies examining motivation and strategy use have largely employed correlational designs. This approach restricts inferences regarding the direction of effects. An alternative and efficient approach is the focus on longitudinal study in order to test whether motivation affects students' use of learning strategies, and the converse, over time. This type of design could determine whether motivation at an initial moment in time predicts the strategy use at a subsequent time moment, controlling for initial strategy use (Berger, Karabenick, 2011:416).

There are many motivational factors related to self-regulated learning. These factors are involved both in developing self-regulated learning but are also involved in processes that underlie self-regulated learning. Self-efficacy, learning goals, interests, and intrinsic motivation are motivational structures which are found in all dimensions of psychological self-regulated learning, they are also conditions of self regulated learning. Motivational factors related to the cognitive factors may influence the development of self-regulated learning by modifying and

improving the learning goals and the self regulating processes (Pintrich, Zusho, 2002:250). The relationship between self regulated learning and motivation can be illustrated by the following generalizations:

- Self-efficacy beliefs are positively related to adaptive cognitive and self-regulatory strategy use as well as actual achievement in the classroom.

- Mastery goals are positively related to adaptive cognitive and self-regulatory strategy use in the classroom.

- Higher levels of task value (importance, interest, and utility) are associated with adaptive cognitive outcomes such as higher levels of self-regulatory strategy use as well as higher levels of achievement.

- High levels of test anxiety are generally not adaptive and usually lead to less adaptive cognitive processing, less adaptive self-regulation, and lower levels of achievement (Pintrich, 2003:104).

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MULTIPLE INTELLIGENCES AND LEARNING REGARDING STUDENTS – AN EXPERIMENTAL APPROACH

Anca-Olga ANDRONIC, **Răzvan-Lucian ANDRONIC**

"Spiru Haret" University, Brasov, Romania

Abstract*: During faculty, students in psychology and pedagogy experience different learning problems. Some of them need rigorous directional elements (what and how much to learn), while others need only to be guided towards the sources of learning. Once at the graduation level, one rarely asks the question: how could I learn more easily, more durable and in a nicer manner. And this happens because, until they reach faculty, each person had already outlined a personal learning style that they consider it to be the best one. Is there a relationship between student learning and multiple intelligences? Could the application of multiple intelligences make teaching / learning more attractive both for teachers and students? Could it increase the motivation for learning following the application of Gardner's theory? Are students' results better after differentiated instruction? The psycho-pedagogical experiment carried out has attempted to answer these questions and it started from the following hypothesis. 1. If the teacher uses in his teaching activity the theory of multiple intelligences then, the students' motivation for learning increases. 2 If the student learns based upon the profile of multiple intelligences, school performance increases. 3. If the teacher uses Gardner's theory, teaching / learning becomes more attractive for both the teacher and the student. The sample included two groups of first year students from the Faculty of Psychology and Pedagogy - 25 students in the experimental group and 25 students in the control group. Methods: psycho-pedagogical experiment conducted during the second semester, school year 2009-2010. The results confirmed the three hypotheses described and showed that there was a significant difference between teaching based on the theory of multiple intelligences and the classic one. Conclusions and recommendations: a classical education addresses rather the mathematical and verbal intelligence, the intrapersonal and interpersonal intelligence – so necessary for the psychologist and the pedagogue - are least developed. Therefore, the introduction of a differentiated teaching/ learning strategy is required in order to develop the bio-psychological potential of each student.*

Keywords*: multiple intelligences, teaching, learning, motivation, performance.*

1. PROBLEM STATEMENT

From year to year the psychology and pedagogy students (and others) seem to have less and less motivation, to learn with more difficulty, considering the whole process almost to be a chore. Seeing this, a question arose in our mind: "How can we help students to learn, how can we motivate them to learn? " A few years ago I heard about the Theory of Multiple Intelligences. It was first published by Howard Gardner in "Frames of Mind: The Theory of Multiple Intelligences" in 1983. Starting from the existence of different and autonomous intelligences, leading to different ways of knowing, understanding and learning, Howard has achieved the most important discovery in the field of pedagogy, after Jean Piaget. In Gardner's view, an intelligence is "a computational capacity - a capacity to process a certain type of information - which is found in human biology and in human physiology as well [...]. An intelligence entails the ability to solve problems or to create products that are important in a particular cultural context or in a community "(Gardner, 2006:14). The conclusion reached by Gardner is that intelligence is not an inborn trait which dominates the other skills that people have. He does not question the existence of a general

intelligence, but he supports with evidence the fact that the traditional definition of intelligence does not cover newly discovered cognitive possibilities. The results of his research suggest that intelligence is located on different areas of the brain that are connected to each other, support one another, but can function independently if necessary. They can also develop in optimum environmental conditions.

The eight intelligences found by Gardner are: the verbal/linguistic intelligence or the intelligence of words; the mathematic/logic intelligence or the intelligence of numbers and reason; the visual/spatial intelligence or the intelligence of images, drawing and painting; the musical-rhythmic intelligence or the intelligence of tone, rhythm and timbre; the bodily-kinesthetic intelligence, or the intelligence of the whole body; the interpersonal intelligence or the intelligence of social interaction; the intrapersonal intelligence or the intelligence of self-discovery; the naturalist intelligence or the intelligence of the patterns of regularities and behaviors. The existence of the ninth intelligence, the existential intelligence, which however is still a subject to research is being put into question.

The principles this theory follows are: the application of multiple intelligences can make teaching / learning more attractive for both teachers and students; each student should be encouraged to use the preferred type of intelligence when learning; students remember best the materials if they had learned them in their personal style. Our schools address rather the mathematical and verbal intelligence and the intrapersonal and interpersonal intelligence are least developed in school. Children are often labeled as having learning difficulties or hyperactivity, but in reality they are not involved in learning through a certain task adapted to the type of intelligence. Howard Gardner's findings were followed with great interest by the international educational community which was accustomed to another way to deal with intelligence: unique, measurable, an indicator of academic success.

The training opportunities offered by the theory of multiple intelligences: we can be identify at least three ways in which this theory can be used by teachers: a. Knowing the student's intelligence profile for the development of bio-psychological potential of each student; b. The examination of own training strategy in terms of human potential differences c. The contribution to differentiated instruction for students in accordance with the intelligence profile (Gardner *apud* Gliga and Spiro, 2001:12).

In short, the theory of multiple intelligences leads to three conclusions: 1. We all benefit from the full range of intelligences; this makes us human beings, cognitively. 2. There are not two individuals – not even twins – that have exactly the same intellectual profile. This is because, even if the material is genetically identical, individuals have different experiences; twins are often highly motivated to distinguish themselves one from another. 3. If one has a strong intelligence, this does not necessarily mean that one acts smart [...]. All these allegations relate to the psychology of human intelligence - where the theory of multiple intelligences seeks to make a contribution. But of course they involve important issues regarding education, politics and culture (Gardner, 2006:33).

Regarding motivation, as we know, it refers to those states and emotional and cognitive processes that can trigger, guide and support various behaviors and activities. Motivation determines the initiation of an activity and persistence in achieving a task or its abandon, being one of the main factors influencing performance. In most cases, the motivation to achieve human behaviors results from the interaction of complex sets of reasons: the need to maintain the balance of physical and mental functioning; the need to adapt to the environment and the need for personal development. In what concerns the relationship between motivation - performance, motivation is undoubtedly an important factor of performance in activity. It is seen, both by experienced teachers and the newest in the field, as a prerequisite for effective learning, and the biggest challenge for most teachers is to make students wish to learn. If a student does not wish to study,

learning effectiveness will be so small that he will probably not learn anything.

2. PURPOSE AND METHODS

Is there a relationship between student learning and multiple intelligences? The application of multiple intelligences can make teaching / learning more attractive for both teacher and student? Can motivation for learning increase due to the application of Gardner's theory? Are students' results better after a differentiated instruction? The psycho-pedagogical experiment carried out has tried to answer these questions. The purpose of the experiment was to increase motivation for learning and to develop bio-psychological potential of students.

The main methods used: the psycho-pedagogical experiment, the observation, the questionnaire, the study of digital social documents (catalogs). For more than a century, the application of the experiment in social life has given birth to a dispute between supporters of this method and positivists - a dispute that, in one form or another, is perpetuated today. In terms of the history of the experiment, there is a full conformity among specialists, "it is considered that the studies of Norman Triplett in 1898 represent the first attempts of a rigorous enforcement of the experiment in the field of psycho-sociology" the paradigm introduced by him being not only the oldest of field, but also one of the most fruitful experimental paradigm (Chelcea, 2007:422).

Regarding the definition of the experiment, Leon Festinger believes that it „is to observe and measure the effects of the manipulation of independent variables on the dependent variables in a situation in which the action of other factors (actually present, but foreign to the study) is minimized" (*apud* Hohn & Vârgă, 2000:13). The psycho-pedagogical experiment is an alternative of the natural experiment.

In the psycho-pedagogical experiment conducted, we have followed several steps: choosing the problem - as Einstein said „the formulation of a problem is often more important than its solution." Identifying the problem started, as most often happens, from practical intelligence, from daily observations. Observing how children learn, I found that some of them need rigorous directional elements (what, how and for how long to learn), while others needed the indication of more diverse sources of learning. Once at the graduation level, one rarely asks the question: how could I learn more easily, more durable and in a nicer manner. And this happens because, until they reach faculty, each person had already outlined a personal learning style that they consider it to be the best one.

Defining the assumptions. In the present experiment we started from the following assumptions: 1. If the teacher uses in his teaching activity the theory of multiple intelligences then, the students' motivation for learning increases. 2 If the student learns based upon the profile of multiple intelligences, school performance increases. 3. If the teacher uses Gardner's theory, teaching / learning becomes more attractive for both the teacher and the student.

In what concerns the planning of the experimental design, it involved: 1. The election of variables - the dependent variables were: motivation, school performance and attractiveness of course; independent variable - teaching (lecture and seminar) / learning after the theory of multiple intelligences.

The investigated group: 50 students in the first year of the Faculty of Psychology and Pedagogy of Brasov, University "Spiru Haret" - 25 students in the experimental group (G1) and 25 students in the control group (G2). The sample (although not representative for the investigated population) was extracted by simple randomization process (lottery method) from a total of 180 first year students. The average age of the students was 37 years and two months old, including students between 19 and 65 years old. Each group included 21 women and 4 men.

The psycho-pedagogical experiment was conducted during the second semester, school year 2009 - 2010 and involved three stages: 1. the pretest phase: all the participants in the experiment have written their own profile of intelligences by filling up the questionnaire for identification of multiple intelligences; the students have also filled up the motivation questionnaire, the questionnaire for identifying

class attractiveness and also, school performance was noted. 2. the experimental phase, where G1 benefited from teaching / learning by Gardner's theory. 3. the post-test phase in which the participants (both in the control group and the experimental group) were retested (the motivation questionnaire, identifying the intelligence profile and the questionnaire for identifying the attractiveness of the course), noting the school performances.

Regarding the teacher, he was the same for both groups, the differences between the two approaches - the traditional manner in the control group and the manner in the light of Gardner's theory in the experimental group - have been noted on observation forms and in the research journal. The experimental instrumentation included all the technical means of realization of the experiment: sound and audio-visual recording, computers, questionnaires, forms etc.. The application itself: the research was conducted over 14 weeks, four hours per week - two hours of lecture and two seminars.Regarding other methods used, the observation is with no doubt " the first and fundamental method in the knowledge of the surrounding reality and, therefore, the cognitive canvas of our actions" (Iluţ, 1997:76).

The need to understand human behavior, for than to be able to make predictions on their way to act, has always been alive throughout history and speculated in various forms. Physical sciences (called "hard sciences"), started with rigorous observations that led later to experiment along with observation which, however, as a specific method, continues to be a main one (ibid., 76). Regardless of its forms: self-observation, observation (oriented to capture behavioral manifestations of others), passive/external observation; structured/ participatory observation quantitative), which involves to follow a list of pre-established categories of behavior etc.., the observational act is designed to bring more information to the one using it. I used observation in the following situations: observation of behavior during role-play; observation during problems solving; observing the behavior during communication. The effort of observation involves three landmarks: noting the attitudes and behavior; acknowledging the context in which the behavior occurs; the availability of an intellectual sympathy of the counselor towards the subject (Dafinoiu, 2002:87). Among the conditions of a good observation are: the clear and precise establishment of the goal and objectives, selecting the most appropriate forms of observation to be used, the necessary conditions and means for an accurate observation, the immediate record of the observed facts (within an observation protocol) because subsequent noting might be affected by obliteration; making an optimum number of observations; the development of the observation in conditions as varied as possible; compiling a list of units of observation (behavioral sequences, where applicable) (Jigău, 2007:287).

3. FINDINGS AND RESULTS

The obtained results confirmed the three assumptions described and showed that there was a significant difference between teaching based on the theory of multiple intelligences and the classic one. From the analysis of the responses to the applied surveys in the first stage of the experiment, the following results emerged: regarding the first method used – the questionnaire for identifying multiple intelligences - the majority of students (86%) have outlined a profile where two, maximum three intelligence scored high, the rest being insignificantly pointed. The first identified intelligences (with high scores) were: 1. the naturalist intelligence (58%), the intrapersonal (30%), the interpersonal and the visual intelligence took the third place (24%). In last places: the linguistic and the musical intelligence (12%). There were also students who scored the lowest regarding all 8 types of intelligence.

The second method applied to students – the motivation questionnaire. The results showed a low to medium motivation. In the end of the phase their school performance in the first semester was noted (the study of catalogs).

In the experimental phase where G1 benefited from activities developed after Gardner's theory. Thus, a part of the

workshops were held outdoors (for example for the topic on research methods in education psychology, the observation was made in the park, but also in kindergartens and schools); it was provided a musical background where the theme allowed it, the students were asked to express through sounds the feelings they believed that some of the subjects presented in the case studies were having. Activities aimed at expressing through body (exercise "human statues" for a particular concept for each group) were also used.

The main feature of the faculty is understanding and relationship with man, so there have been presented several problematic situations in which the student had to resort to inter- and intrapersonal intelligence so as to finally be able to find optimal solutions to resolve them.

In posttest phase, the questionnaire for identifying multiple intelligences was applied again: the results of most of the students in the experimental group were surprising: 92% of the respondents attributed high scores to almost all multiple intelligences (some of them have even filled up the applied questionnaire - where there are only eight intelligences - and the existential intelligence). Although the latter does not have specific questions in the questionnaire, some of the students (28%) felt the need to specify that they are aware of it and use it equally.

In the motivation questionnaire, the results showed a significant difference – in the experimental group as opposed to the control group and to the initial results, the motivation for learning increased , being also confirmed by a permanent and constant presence of all students in the activities developed (although it had been explicitly stated that that presence is not mandatory!). The presence of the students in the control group decreased significantly during activities – from 25 students remaining until the end only one group of 12 people.

The questionnaire identifying the attractiveness of the course was applied to both groups only during posttest phase. The significant difference was made by the final item in which the students were being asked to make suggestions on how to conduct future activities in order to improve the quality of the seminar. In the experimental group all questionnaires show remarks like: " they are to be the same as those carried out", " I don't have any suggestions, everything has been very well and if all classes were as attractive I would come to school more often and learn with more pleasure". In the control group the majority of responses were: " certain group discussions on specific case studies would be more useful", " I would like some activities to take place in nature"; " I think we could use a musical background in some classes " etc.. The attractiveness level of the course was rated as "low".

Regarding the teacher, the differences between the two approaches of the groups were noted on observation forms and in the research journal. There were days in which I find noted in my journal a great enthusiasm after meeting with the experimental group, "students have expected me today with big, playful eyes and inquisitive as children and one of them have even told me: " We're looking forward to seeing what you we have prepared for us today!. " It is certain that working with the control group was very difficult, making it hard to resist the temptation to accelerate the activity through the strategies used in the experimental group. Finally, because I did not want that the 25 students in the control group to be denied of the benefits of Gardner's theory, I held three sessions were I presented in essence the means by which everyone can support and develop one or other of the intelligences. Knowing that the selection was made by the lottery method at the end, their reaction, was: " what a pity we didn't have the good fortune to be elected in the experimental group!"

4. CONCLUSIONS

Even though, unlike children, adults are predominantly intrinsically motivated to learn, it does not mean that in their case we should not use motivational strategies. Learning to teach from the perspective of multiple intelligences or how to improve your teaching can be a great challenge. Sometimes, at first, students "fight" these methods because they are not used with them and one can spend a

long time teaching both partners in education to use them in their favor.

Sometimes one makes many mistakes until finding the most appropriate way for each of those with whom one works. The experiment undertaken, but especially the daily reality shows us that the traditional education addresses the mathematical and the verbal intelligence, and the intrapersonal and interpersonal intelligence – so necessary to the psychologist and the pedagogue - are the least requested. Therefore, the introduction of a differentiated teaching and learning strategy in order to develop the bio-psychological potential of each student is mandatory.

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PATRIOTISM AND MILITARY VALUES

Diana ILISOI, Daniela NAGY

„Henri Coandă" Air Force Academy, Braşov, Romania

***Abstract**: Patriotism may be generated by the formation of active and informed citizens and by the development of civic conscience, compassion and tolerance in a world of multiple diversities, which coexist and impose tight observation on extremes. The patriotic behavior, reflected by solidarity, involvement, engagement and identification with general interests, expands and compresses at the same time. To speak of patriotism today is an audacious engagement, meant to reveal tensions between universal and national, or between global and local. The current study aims at identifying the modern configuration of the military young people's axiological consciousness and the place that 'country' occupies in it. This endeavor sustains the necessity of cultivating an authentic patriotism, purified from nationalistic tendencies.*

***Keywords**: patriotism, nationalism, military values, axiological education, military career.*

1. INTRODUCTION

Each individual is born and he develops as a human being in a given socio-cultural context, without having the possibility of choosing it. This very context provides him with an identity while securing the original nucleus through which he starts the dialogue with the world around him and based on which the individual justifies his choices.

2. PATRIOTISM vs. NATIONALISM

From a philosophical perspective, patriotism is perceived as a complex moral sentiment, in tight connection with the sentiment of "being at home", and associated with parents, forefathers, the native place, mother tongue a.o.. All of these elements contribute to a socio-cultural modeling of personality, the forming of self-conscience and axiological conscience (as a system of beliefs and values), in close relation with their lifestyle. In other words, we witness a "stylistic particularization of the psychic life" by following perceptive models, geographically and culturally conditioned, a specific language structure or value-related determinations of feelings and goals. Furthermore, such elements reflect one's "country" at psychological level (Neveanu, 1978:520). Lucian Blaga, the Romanian poet and philosopher, referred to this reality as the "stylistic matrix" of a culture, perceived as hidden spiritual reality, but yet a powerful one, the "secret mechanism" that administers our conscience.

Within the sociological psychology, Abram Kardiner introduced the concept of "basic personality" (1939), considered to be "that configuration of personality which is shared by most of the society members as a result of their early common experiences" (Allport,1981:179).

The concept of basic personality leads to the concept of national character, analyzed by Alex Jukeles and D. J. Levinson (Cambridge, 1954). Therefore, patriotism shapes at the level of the basic personality and becomes manifest by a "set of moods and conscience manifestations, including feelings, attitudes and beliefs with regard to integration and belonging to a socio-political community and to a country's historical and cultural tradition" (DEP, 1979:29). Similarly, the patriotic condition implies not only integration and

belonging but also solidarity, engagement and participation at community's events.

An analysis of the term, from historical perspective, reveals to us its polymorphism and dynamics in time. Patriotism is conditioned socially and historically and each epoch attributes it various significations, in accordance with its targeted social ideals and progress. In this respect, the appearance of state-nations represented a turning point, a fact that caused the gradual conversion of patriotism into nationalism. Thus, ironic remarks to the idea of patriotism are mentioned starting with the 18th century: "patriotism has become a trivial word" (ODP, 2001:329).

In this historical context, nations are promoted as ideal entities, homogenous human collectivities that store specific cultures, traditions and unitary and unique histories. Nationalism, in turn, appears as a "political and cultural orientation that claims the necessity of promoting the nations' autonomous and self-determined development" (EFSU, 2004:733). The negative meaning that we today give the word nationalism is due to its radical forms, but also to intended oblivion of differences between the nationalism's general principles and its particular manifestations, which become dangerous once they promote exclusivist passions and negative feelings toward their exterior world. By exaggeration and ideologization of the aggressive connotation aimed at others, classical nationalism alters and leads to the appearance of totalitarianism, in the 20th century. In the latter half of the 20th century, the overuse of the idea of 'nation' as a form of human ideal cohabitation that denies any other authority, fuels the anti-colonial movement. Consequently, nationalism produces a boomerang effect, contributing to the disintegration of traditional state-structures, which, initially, it consolidated. Deviations of nationalism are caused by a diversity of factors characterizing the contemporary world: an amplification of tensions between They and Us, inequities in the relation reasoning-affection and an affective overloading of various human groups, hidden effects of globalization etc.

The picture of nationalist movements reveals to us a plethora of aspirations: from the fraternity ideal and self-promotion of a nation to ethnical purification and the tendency of "civilizing" other peoples. Accordingly, the perception of nationalism as something good or bad in itself is wrong. Nationalism does not fall under the incidence of ethics, of valuable judgment by itself; but it is judged given the value of its accomplished political projects. Hence, the association of nationalism with chauvinism and xenophobia is still mistaken, once nationalism may animate constructive political projects as well. Starting from this positive perception, contemporary political analysts recommend the use of rational judgment in appreciating each particular case of nationalist manifestation, in turn, and not its definite denial. Within the contemporary world, the destiny of patriotism, nation and nationalism is intimately related to globalization.

According to the modernist viewpoint, supported by the British anthropologist Ernest Gellner (1983), a nation's role, given the current realities, gradually diminishes, at the same pace with the integration of social life in trans-national landscapes, at the planetary scale. Although the tendency of diminishing nationalism is acknowledged by the development of over-state bodies, especially in the fields of economics and communications, there are also claims of supporting the perennity of ethnic communities, as natural entities able to preserve language, religion, ethnicity and territorial connections. As a result, the ethnic origin of nations makes possible for them to continue to exist through cultural, idiomatic expressions, dependant on their language and ethnic spirit. Moreover, "democracy itself generates nationalism and nationalism generates democracy" (Zamfir & Vlăsceanu, 1993:376), because, paradoxically, the democratic character of a regime encourages the demands of ethnic minorities, perceived as groups holding common cultural traditions and defending their identity status as part of society (Smith, 1979).

In conclusion, although the nation that configured the history of the past centuries loses ground, it requires re-definition and re-

analysis as long as the national interest is preserved and it amplifies under the circumstances of global modernity" (John K. Galbraith, 1982). At the same time, although the state-nation, as expression of classical modernity is no longer the main actor of globalization, we have found out that the appearance of an adequate substitute for it is delayed, and this substitute should correspond to global transformations and to finding solutions to social crises that were amplified by globalization.

3. PATRIOTISM AND MILITARY VALUES

The Romanian philosopher, Mircea Eliade published a series of articles in "Cuvantul" and "Vremea" magazines, between 1932 and 1934. These articles were later on included in his work "Oceanography". The article "Being no longer a Romanian" is relevant for our paper due to the fact that Eliade warned against and denounced a "fashion" manifesting at that time in Romanian young intellectuals, educated at Western universities and strongly influenced by foreign ideals. These educated people, seduced by existential philosophy, came to forget their origin (and adopted a nihilist behavior). Moreover, they became indifferent about the profoundly Christian spirituality of their own people: "these young people understood nothing from the geniality of their Romanian people, haunted by numerous sins, experiencing countless lacks, yet shining with its own intelligence and intuition" (Eliade, 1991:138). In the same social historical context, the refined Romanian diplomat, Nicolae Titulescu, stated at Paris, in December 1929 that it was necessary for the Romanian youth, no matter where they might be, to hold tight to their origins. He continued that openness toward Europe was conditioned by the conscience of one's own identity: "Europe cannot be loved but as a specific country out of it" (Titulescu, 1985:24).

These extremely actual ideas, by their content and message, encourage us to investigate the existence and manifestation of patriotic feelings among young generations. Such a topic proves to be of great interest especially when we face the values set of a dignified profession – the military career.

Being an exemplary professional model, in Samuel Huntington's acceptance, the military career displays to its highest degree the three dimensions of an occupation: expertise, responsibility and l'esprit du corps. The very holding of the armed force imposes a high level of responsibility, based on solid moral education. Approaching the topic of military honor, Henri Carrard noted that, although freedom of action with the modern soldier is greater than of his predecessors, holding force and the good will of accomplishing missions do not allow for quite any type of action and intrusion. Carrard identified three moral limits that should guide military actions, irrespective of the level of combat techniques at their disposal. First of all there must be respect for national laws and international conventions. Secondly, human dignity should be considered by all means. Last, but not least, Carrard set out the interrogation "What does one defend and why?", thus raising the issue of country and patriotism, by identifying the cause for which one may agree to pay the supreme sacrifice. Should military values stand for general human values, then self-sacrifice, in the name of some noble cause, represents their specific characteristic? The responsible human attitude, in the name of a collective ideal, becomes manifest as patriotism or civism. Military values configure at the crossroads between individual and social values and are impregnated with powerful praxiological valences by their translation into models, standards, actional and behavioral regulations or military rules.

4. STUDY

The study, completed in a military educational institution, revealed the decline of values pertaining to an institutional model of the traditional armed forces, in favor of the occupational model, under the market economical pressure.

The survey was accomplished based on a mixed opinion questionnaire, made up of twelve items. Although the complexity of the investigated topic called for open items, the

items included seven close pre-codified answers for both offering freedom of individualized expression and for making it easier to analyze results.

When asked to what extent they feel animated by patriotism, the respondents generated the following percentages, as shown in Fig.1:

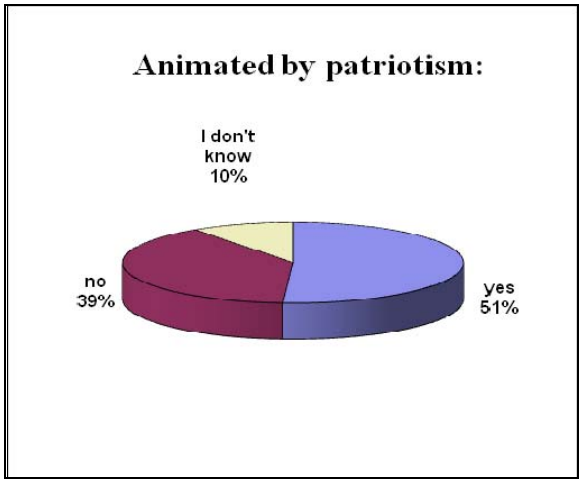

Fig. 1 Animated by patriotism

Apart from 51% of subjects declaring themselves as patriots, 39.2% associated this feeling with their attachment to their country by involvement. The next positions are occupied by appreciation of and respect for their country (Fig.2).

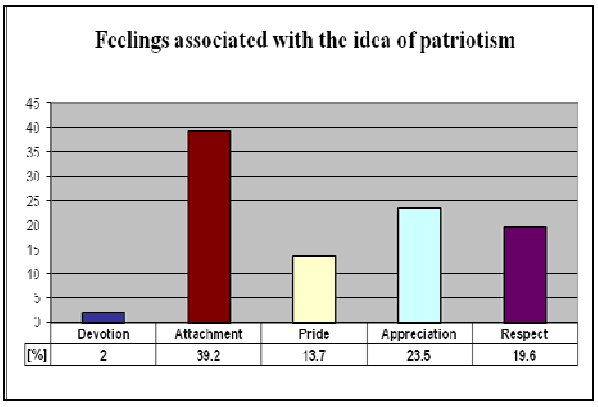

Fig. 2 Feelings associated with the idea of patriotism

Nevertheless, within a personalized hierarchy of military values, only 5.9% of the respondents chose patriotism, thus patriotism comes last on a scale consisting of six values (Fig.3).

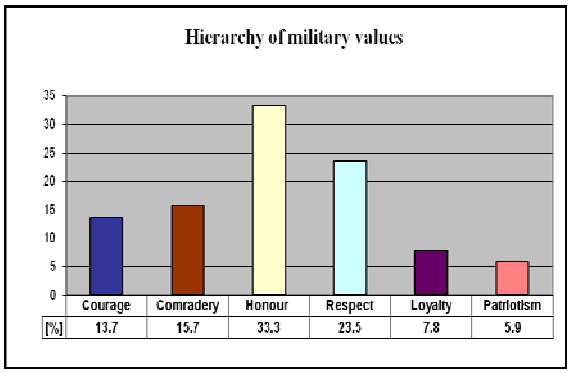

Fig. 3 Hierarchy of military values

On the other side, cadets are aware of the risks involved in their profession, yet only 66% of them are prepared for the supreme sacrifice (Fig.4).

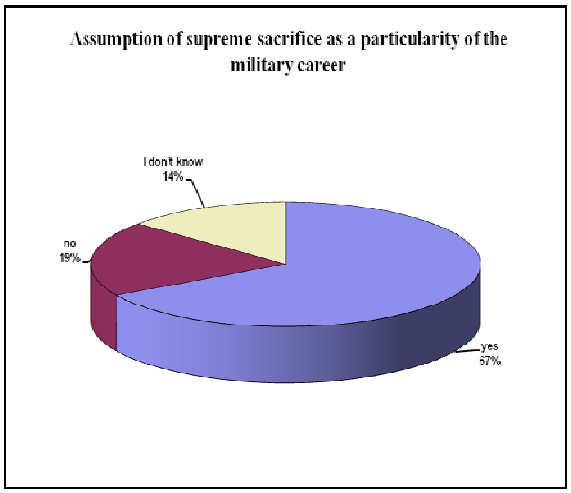

Fig. 4 Assumptions of supreme sacrifice as a particularity of the military career

Statistical differences obtained are explained by various significations attributed to the notion of "country": native place, the feeling of being at home, parents etc. Although the military education curricula and its specific rituals include as one of their objectives the fostering of patriotic feeling in forming the combatant personality, this finality diminishes under the pressure and invasion of praxiological values (see the model of universal soldier). Furthermore, although the oath of faith to the country explicitly contains the avowal of supreme sacrifice for the country ("I swear to defend my country even at the cost of my life"), its impact is veiled by the physiognomy of the world today, by the excessive formalization of human deeds.

This is the symptom of a society that, in time, eroded the civic spirit in favor of individual interest and transferred the source of attachment to the country and her laws to the area of security feeling, of individual rights and liberties.

4. CONCLUSIONS

The conclusions of this study warn against the peril of neglecting the axiological education, within the general educational backgrond and, within the military education, in particular – fact that leads to nurturing and amplifying the moral crisis of the social whole. We witness the steady abolition of traditional values within the military institution, thus making room, in a dangerous manner, for the exclusivist manifestation of economical criteria and material values.

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INTERCULTURAL AND MULTILINGUAL EDUCATION IN HIGHER EDUCATION

Roxana-Maria GÂZ, Delia FLANJA

Babeş-Bolyai University, Cluj-Napoca, Romania

Abstract*: Languages are an important part of our lives. They do not only help us communicate with one another, but they also contribute to our self-improvement, they help the development of the economy and of the business environment. We live now in an era of globalisation; while at global level there are certain languages that tend to dominate the scene, in Europe, the linguistic diversity is not eliminated, but celebrated. Without the constant effort of the European Union institutions to fight for the promotion of language learning, language teaching and preservation of languages, or without the continuous will of European citizens to learn the languages of their neighbouring states, at any time in their lives, there would not be understanding or a true "unity in diversity". In order to make people proficient in a language that can help the economy and/or the development of a business, people on the labour market have to be trained in schools or universities, or other institutions, by offering language courses. Therefore, universities and governments have a great responsibility to work on promoting languages, language learning and teaching. This article focuses largely on the recommendations made by the European Union in what multilingualism is concerned, on the European Higher Education Area, and particularly on the actions taken in higher education institutions in order to implement the above-mentioned recommendations as to language teaching and learning.*

Keywords*: language, language policy, language learning, European Union, higher education.*

1. INTRODUCTION

Language means diversity, cultural heritage and cooperation. It is an important part of our identities and represents the most direct manifestation of a culture. Due to language, one may establish relations with other people and may transmit the cultural heritage of his/her people. They also represent bridges between peoples and cultures, and are considered "the medium through which communication takes place in politics, commerce, defence, academia, the media, technology, the internet, and most aspects of life"; therefore they are definitely "central to our increasingly international world, to globalisation and to the accelerating process of European unification" (Phillipson 2003: 5).

We live now in the era of globalisation, but, while at global level there are certain languages that tend to dominate the scene, in Europe, the linguistic diversity is not eliminated, but celebrated. However, English tends to dominate the scene as a *lingua franca* in various domains of human life. A separate sub-chapter of this discourse will analyse this very problem.

The strategy for multilingualism of the European Union stresses the fact that speaking other languages and understanding other cultures strengthen the connections between different parts of Europe, as well as the fact that languages represent the path that has to be followed for social integration and intercultural dialogue.

2. THE SUPREMACY OF ENGLISH

One cannot start discussing multilingualism in Europe without speaking first of the current *lingua franca*. Today, English is the *lingua franca*. It is, certainly, the

synonym of globalization all around the world. It has become such a powerful language and such an important tool for communication that today we are surrounded by it everywhere.

"A language achieves a genuinely global status when it develops a special role that is recognized in every country" (Crystal 2003: 3), when it has a special role within the communities, and this status can be achieved in two ways: either by adopting the language as the official language of the country (and this way the language is used at all levels, from the government to the education institutions) or by foreign language teaching.

In the case of English, it is well known the fact that, at the beginning of the 19th century Britain was one of the most important countries in the industrial and trading sector, but by the end of the same century its leading role was taken by the U.S.A., which, in just one century, developed without precedent and became the most productive economy in the world at that time. It was indeed Britain which began the spreading of English through its colonies and political imperialism, but it was the U.S.A. that strengthened the position of this language as a global language.

As a consequence, a notion well-known in the field of sociolinguistics has to be brought into discussion: the *linguistic imperialism* [Phillipson (1992) Pennycook (1994, 1998), Crystal (2003), Graddol (1997), Brutt-Griffler (2002), Maurais and Morris (2003), Hamel (2005), Ricento (2006), Hagège (1992, 2006)]. Phillipson offered the first definition regarding the *linguistic imperialism* of English: "*the dominance of English is asserted and maintained by the establishment and continuous reconstruction of structural and cultural inequalities between English and other languages*" (Phillipson 1992: 47), and by structural he referred to the material properties such as institutions and financial allocations, while by cultural he meant immaterial or ideological properties such as attitudes and pedagogic principles.

In some countries, governments have adopted laws in order to limit the invasion of English terms in the local language. We may take France as a good example. The Toubon Law of 1994 relative to the use of the French language is well known. Having three main objectives (the enrichment of the French language, the obligation for the citizens to use it, and the protection of the language as the official language of the country), *la Loi Toubon* was envisaged to protect the French language from the English invasion[1]. Examples can be made: the French use the word *ordinateur* for *computer*, *souris* for *mouse* and so on.

Therefore, we may analyse the spreading of English from four points of view: economic, scientific and technological, media-related and educational.

The economic aspect of the wide-spread of English as a global language is strongly related to the Second World War and the power and influence exercised by the US in the European recovery. I believe we are all familiar with the Marshall Plan, also known as the European Recovery Plan, promoted by the US Government at the end of the Second World War. The main purpose of the Americans was to make the US a European power (Phillipson and Skutnabb-Kangas 1999: 22). "The first grand objective [of the US], of course, is to keep America as a European power, not just for today, but for the indefinite future" the US Ambassador to NATO, Robert Hunter, stated in 1997, and was cited in "Guardian Weekly" on 12 January 1997 (cited in Phillipson and Skutnabb-Kangas 1999: 22). Therefore, it seems that English is "a language which has repeatedly found itself in the right place at the right time" (Crystal 2003: 120).

Another aspect that explains the wide-spread of English is the scientific and technological development of the US in the 20th century, which was the result of the US strengthening position on the European and global market and of the massive emigration of the European intellectuals to America.

We may speak here of two terms: *brain drain* and *brain gain*. During and after the Second World War, the Nazi politics of exterminating Jews caused the emigration of many intellectuals and scientists to the US. One of the most notable examples is that of the

[1] See full text at http://www.langue-francaise.org/Loi_toubon.php, 07/04/2011.

famous physicist Albert Einstein who, due to political reasons relative to the Nazi politics, immigrated to the US in 1933 and obtained the American citizenship in 1940[2]. Other famous physicists moving to the US in the war period include Hans Bethe, James Franck, Victor Weisskopf, Werner Heisenberg and Enrico Fermi. They all left their home countries and moved to the United States as a result of the Nazis taking over Germany or as the Italian policy to move closer to the Nazi doctrine with which they did not agree.

Further on, another thing explaining the wide-spread of English as a global language has media-related and cultural aspects. Ever since the mass emigration of European intellectual and artists, a new cultural world formed in the United States. Great artists such as the composer, pianist and conductor Igor Stravinsky moved to the US.

Afterwards, in the 1960s appeared a new cultural trend, that of *pop art*. Basically, initiated in the UK, the trend expanded and developed in the USA, having Andy Warhol as the main figure. The term is the abbreviation of "popular art" and defines the post-war work centred on consumerism and materialism.

Mention should be made that the US supremacy in the media-related and cultural field was sought since the European Recovery Plan (i.e. Marshall Plan). The Foreign Assistance Act of 1948 contained, according to the French linguist Claude Hagège, an explicit exigency: "*les pays qui profitaient de l'aide américaine pour se relever des destructions de la Seconde Guerre Mondiale n'étaient pas assistés gratuitement, mais devaient, parmi beaucoup d'autres compensations, accorder aux productions de Hollywood 30% de leurs écrans*" (Hagège 2006: 29).

However, probably one of the most important reasons for the wide-spread of English around the world is the educational one. The teaching of English has become one of the most important activities in schools, high schools and universities all around the globe. International academic conferences are organised in English, most speeches are delivered in the same language. If one takes a look at the ranking of the best universities in the world, there will be no surprise to see that the universities in top twenty are predominantly American.

Another important mention on this topic is that English has also become the *lingua franca* of international scientific publications. According to Hamel, at the beginning of the 20th century, there were three languages that dominated the sciences: German for medicine, biology and chemistry, French for law and political sciences, and English for political economy and geology. The fact that English has become the language of science and of international scientific publications may also be the result of the *Citation Index*; even its founder, Eugene Gardner, stated that the most influential solution for the promotion of his citation indexes was the publishing of as many pages as possible in English, emphasizing that "English is simply the language that scientists as a whole now *best understand*" (cited in Ammon 2006: 8). As such, in 2007, more than 75% of the articles in the social sciences and humanities and 90% in the natural sciences were written in English (Hamel 2007: 53).

3. MULTILINGUALISM IN THE EU

The first official document regarding languages in the EU was the *Regulation No. 1 regarding the language regime of the European Economic Community*. On 6 October 1958, the Council of the European Economic Community, based on Article 217 of the Treaty, adopted the *first Regulation regarding the language regime of the European Economic Community*[3]. The regulation settled the official languages and the working languages of the community institutions. According to Art. 1 of the Regulation, the official and working languages were German, French, Italian and Dutch. Furthermore, Article 2 of the Regulation regarding the language regime of the European Economic Community mentioned that all texts

[2] See details at http://www.einstein-website.de /z_biography/princeton-e.html, 10/04/2011.

[3] http://eur-lex.europa.eu/ro/dossier/dossier_11.htm, 18/10/2010.

addressed to the institutions by a sender from a member state, as well as the answers given by the institutions, had to be drafted in one of these official and working languages. Article 4 of the Regulation stipulated that the regulations and other texts of general applicability were also supposed to be drafted in the four official languages, and so did the Official Journal of the Community (as Article 5 stipulated).

Several other documents were issued by the EU institutions along the years[4].

Mention should be made that several programmes have been initiated in order to promote foreign languages, together with the mobility of students, professors and administrative staff, such as: Erasmus, Leonardo da Vinci, Grundtvig or other European projects elaborated under the auspices of the EU Directorates.

4. THE EUROPEAN DIMENSION OF HIGHER EDUCATION

In order to make people proficient in a language that can help the economy and/or the development of a business, people on the labour market have to be trained in schools or universities, or other institutions, by offering language courses. This way, schools and universities can also implement the European Union's recommendation regarding the need for citizens to be able to speak at least two languages other than their mother tongue. This recommendation was first stated during the meeting of the Council with the Ministers for Education of 4 June 1984[5]. Afterwards, it continued to be reassumed in almost every E.U. document on multilingualism than followed[6].

More recently, languages policies have become very important for universities, as most of them accepted to adhere to the Bologna process, which is the result of the Bologna Declaration, signed in 1999, by the Ministers of Education from twenty-nine European countries, in order to establish a European Higher Education Area. The main goals of this declaration were to adopt "a system of easily readable and comparable degrees, as well as "a system essentially based on two main cycles" (bachelor and master); to establish a system of credits: to promote mobility for students and teachers; to promote the "European cooperation in quality assurance", as well as the "European dimension in higher education"[7].

[4] *First Regulation regarding the language regime of the European Atomic Energy Community* (1958), the *European Charter for Regional or Minority* Languages (1992), the Council decision regarding the *Multiannual programme to promote the linguistic diversity of the communities in the information society* (1996), the *Decision of the European Parliament and of the Council on the European Year of Languages (2001),* the *Report from the Education Council to the European Council "The concrete future objectives of education and training systems" (2002)*, *Opinion of the European Economic and Social Committee on the 'Commission staff working paper – Promoting language learning and linguistic diversity'* (2003), *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004 – 2006* (2003),the *White Paper on Education and Training. Teaching and Learning. Towards the Learning Society* (2005), the *Communication from the Commission to the European Parliament and the Council on the European Indicator of Language Competence* (2005), *A New Framework Strategy for Multilingualism* (2005).

[5] The Council recommended member states to adopt all measures necessary in order to ensure the teaching to pupils of at least two languages other than the mother tongue before they finish the compulsory schooling. See full text in the *Council Resolution of 16 December 1997 on the early teaching of European Union languages*, at http://eur-lex.europa.eu/LexUriServ/site/en/oj/1998/c_001/c_00119980103en00020003.pdf, 22/01/2011.

[6] See the Presidency Conclusions of the Barcelona European Council, 15-16 March 2002, at http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/71025.pdf, , 22/01/2011.

[7] The Bologna Declaration, 1999, http://www.magna-charta.org/pdf/BOLOGNA_DECLARATION.pdf, 20.01.2011. This European higher education dimension established in Bologna was afterwards completed by several other Communiqués: Prague (2001), Berlin (2003), Bergen (2005), London (2007), Leuven and EUA Prague Declaration (2009). All these documents focused on the necessity of having lifelong learning programmes, on the attractiveness of the European Higher Education Area, on the adoption of a system of degree structures based on two main cycles, and the recognition of degrees, on doctoral studies, on the promotion of young researchers and their mobility, on the need to facilitate the mobility of students and staff and to make quality higher education accessible to all, on the social dimension and the employability of graduates, and, last but not least, on the need to preserve

5. MULTILINGUALISM IN THE EUROPEAN HIGHER EDUCATION

There are many discussions on the definitions given to language policy, but there is not a standard one. Harold F. Schiffman, for instance, argues that language policy is "a set of behaviours, assumptions, cultural norms, prejudices, folk belief systems, attitudes, stereotypes, ways of thinking about language, and religio-historical circumstances associated with a particular language" (Schiffman 1996: 5). Robert L. Cooper notes that "language policy is the body of decisions made by interested authorities concerning the desirable form and use of languages by a speech group" (Cooper 1989: 160). The UNESCO document on "Everyday Multilingualism" states that "language policy is focused on plurilingualism, intercultural competences, deepening mutual understanding, and supporting transparency and coherence in language learning"[8].

European education ministers and universities are well aware of the fact that languages are extremely important and that language policies are needed, not only at governmental level, but at the level of the universities as well, as the universities are the ones that train and perfect the future employees for the labour market.

Nonetheless, the struggle of universities and their commitment to promote linguistic diversity and language learning can only lead to success, both for the institutions and for their students, not to mention the economy.

But do the European universities actually have a language policy? Or do they just admit that it is necessary to have one, but in fact they do not have a clear policy? Is it that they just advocate for multilingualism and intercultural education in higher education, but when it comes to their own institution nothing is made in this respect?

As an answer to these questions, the European Language Council launched a survey; the questionnaire was addressed to the universities of the European area, in order to find out if they implemented the recommendations of the European institutions, and if so, in which way. This survey was made in 2002 and 2003 and gathered information on the situation at that time regarding language policies in higher education[9].

Therefore, as the results of the survey show, surprisingly, at that time, there were only three universities in the member states (150 questionnaires sent, but only 21 that responded to the survey) that actually had a language policy in the form of a single document (the case of Babeş-Bolyai University of Cluj-Napoca, Romania) or as a documentation integrated in several documents (the cases of Aristotle University of Thessaloniki, Greece, as well as the University of Freiburg, Switzerland). Other eight universities responded that they were at that time working on the development of a language policy, while ten of them did not have anything similar to a language policy.

Still, the language policy document of Babe□-Bolyai University of Cluj-Napoca, Romania, remains, as the European Union documents show it[10], one of the most comprehensive and appropriate documents on this issue. The document, adopted in 2001, under the title *For a European Language Policy*, explicitly situates the policy within the European context of 1+2 (mother tongue plus two other foreign languages), underlining the skills required (communication skills, intercultural communication skills etc.) in order to form European citizens, presenting the infrastructure used. The foreign language

cultural and linguistic diversity for a "unity in diversity".

[8] UNESCO document, *Everyday Multilingualism*, Proceedings of the International Conference at the University of Applied Sciences, 13-15 June 2008, Eisenstadt, Burgenland, www.unesco.at/news/conference_report.pdf, 29/01/2011.

[9] Angela Chambers, University of Limerick, Ireland, *Language policy in higher education in Europe: a pilot survey*, www.userpage.fu-berlin.de, 12/01/2011.

[10] See the ENLU's (European Network for the Promotion of Language Learning among All Undergraduates) document *Benchmarks for a Higher Education Language Policy*, at www.userpage.fu-berlin.de/~**enlu**/downloads/TF1_report_final.rtf, 29/01/2011. See also Angela Chambers, *op.cit*.

course culminates in the examination of the students' linguistic knowledge, in accordance with the *Common European Framework for Languages*, and in the issuance of language certificates.

It is difficult to find other clearly stated language policies in the universities across Europe, as the great majority probably does not have a single document, but several other documents, which may be "very unspecific"[11].

6. INTERCULTURAL AND MULTILINGUAL EDUCATION AT BABEŞ-BOLYAI UNIVERSITY

Babeş-Bolyai is promoted as a multilingual and multicultural institution of higher education. This is supported by the fact that our university is situated in a multicultural and multilingual area, where Romanians, Hungarians and Germans live. The university tried to respect the cultural and linguistic diversity of the population in the area.

Therefore, the multicultural character of our university is supported by the fact that its students, teaching and administrative staff are Romanian, Hungarian, German and Roma. Moreover, the university has set up "lines of study" with different languages of instruction. As such, "15 of our 21 faculties provide both a Romanian and a Hungarian curriculum, and 9 of them provide both a Romanian and a German curriculum. There are also two faculties (the Faculty of Reformed Theology and the Faculty of Roman-Catholic Theology) which provide courses in Hungarian only"[12].

According to the official data, published on the university's website, the university offered, for the academic year 2010-2011, a large number of specialisation at bachelor and master's level, in Romanian, Hungarian, German, English, French, Italian and Spanish languages[13]. Usually, the Hungarian and German specializations are attended by students who have Hungarian or German as mother-tongue or who are fluent in these languages. While for the programmes in the other above-mentioned languages, courses are attended by non-native speakers; therefore, the courses taught in one of these languages are usually considered CLIL classes. Professors teaching CLIL classes are either native speakers of the respective languages or non-native speakers and in this case they have to make proof of their fluency in the language.

Moreover, the University encourages students to familiarise with the culture of country whose language they are learning, by participating in language courses organised by the cultural centres functioning within it[14]. This way, students can are better endowed with intercultural and plurilingual competences.

BBU is strongly committed to implement the EU recommendation regarding the learning of at least two languages other than the mother tongue; that is why, in most faculties, they are obliged to choose at least one foreign language as part of their study programme. Many of them also choose a second foreign language as an optional subject.

In 2006, five years after the adoption of the first document on languages and cultural diversity in our university, the BBU Senate adopted the "Hotărâre privind reactualizarea politicii lingvistice a Universității Babeş-Bolyai" [translated "Resolution for updating BBU's language policy, Oltean 2009: 93], which strengthened the position adopted by our university in what regards languages and cultural diversity.

Therefore, the Senate adopted the document which provided that two foreign languages had to be studied for at least three

[11] See *Higher Education Language Policy in Europe: A Snapshot of Action and Trends*, www.userpage.fu-berlin.de, 25/01/2011.

[12] For more details, please visit the official website of the university, available at www.ubbcluj.ro.

[13] According to the official data published on the university's website, for the academic year 2010-2011, at bachelor level there were 104 specialisations in Romanian, 55 in Hungarian, 13 in German, 8 in English and 1 in French. At master's level, the university offered 179 courses in Romanian, 36 in Hungarian, 7 in German, 34 in English, 11 in French, 3 in Italian and 3 in Spanish. Data are available at http://www.ubbcluj.ro/en/programe_academice.

[14] Italian Cultural Centre, Austrian Cultural Centre, French Cultural Centre, Polish Cultural Centre, American Cultural Centre, German Cultural Centre, Korean Cultural Centre, the Institute for Turcology or the Confucius Institute.

semesters; that the first modern language studied had to be one of the six languages that are studied in the Romanian schools (i.e. English, French, German, Italian, Spanish or Russian) and the level of knowledge had to be the equivalent of B2 of the CEFR (at least 20 points out of 30, obtained at the language proficiency certificates issued by one of the two language centres); the second modern language was any other foreign language, including the non-European languages, while proficiency in this language had to be of at least 15 points (the equivalent of B1 according to the CEFR).

Babeş-Bolyai University, through its Centre for International Cooperation, coordinates and supports the different forms of international cooperation. It develops, promotes and implements, under the close supervision of its Director and of the Vice-rector in charge of international relations, the internationalisation strategy of BBU by coordinating and managing the students', teachers' and researchers' exchanges through LLPs (Erasmus, Leonardo da Vinci, Grundtvig, Comenius, Tempus etc.).

7. CONCLUSIONS

Language policy and language planning in higher education represent a much debated topic in the last decade. The resolutions, conclusions and communications issued by the EU institutions are mere recommendations made to guideline the member states in drafting a language policy for their own citizens, relying therefore on the *principle of subsidiarity*[15].

The national economy can also be better supported if graduates are prepared for the job market with better language skills. Let us remember the words of Willy Brandt, former Chancellor of the old Federal Republic of Germany, who once said: "If I'm selling to you, I speak your language. If I'm buying, dann muessen Sie Deutsch sprechen [then you must speak German]."

Therefore, universities have to take, along with the states, the responsibility of implementing the resolutions, conclusions and communications issued by the EU institutions in what language learning and teaching are concerned in order to create citizens that are able to work in the knowledge-based society.

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[15] "The subsidiarity principle pursues two opposing aims. On the one hand, it allows the Community to act if a problem cannot be adequately settled by the Member States acting on their own. On the other, it seeks to uphold the authority of the Member States in those areas that cannot be dealt with more effectively by Community action. The purpose of including this principle in the European Treaties is to bring decision-making within the Community as close to the citizen as possible". For more details see the European Parliament fact sheets detailing the "principle of subsidiarity" at http://www.europarl.europa.eu/factsheets/1_2_2_en.htm , 04/04/2011.

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INTERCULTURAL ADAPTATION: THE CASE OF INTERNATIONAL STUDENT EXCHANGE PROGRAMMES

Delia FLANJA, Roxana-Maria GÂZ

Babeş-Bolyai University, Cluj-Napoca, Romania

***Abstract**: The cultural background of people that interact at an intercultural level has a strong impact on the manner in which this type of interaction takes place. Cultural diversity should not be regarded as an obstacle to communication and a threat to the specificity of one particular culture. On the contrary, the development of intercultural exchange is an opportunity to enrich one's cultural horizons and also the horizons of the community that he/she belongs to or that he/she interacts with. The impact on a pre-established identity is inevitable and the challenges generated by the process of globalization focus mainly on the ability to adapt and, at the same time, not to lose specificity. The case of international student exchange programmes is an important factor in the process of intercultural interaction, as it forms a strong perception both on the students in international exchange programmes, and on the members of the host country, or the county of origin, regarding the other. Their manner of integration will be analyzed in this paper, focusing on the benefits that can be obtained due to the exchange programmes and the way in which those benefits can be increased. A case study on international mobility of Romanian university students in Bordeaux has the aim of reinforcing the ideas presented in the paper.*

***Keywords**: globalization, intercultural adaptation, international student exchange, communication.*

1. INTRODUCTION

Intercultural contact, largely developed nowadays due to the intense process of globalization, creates the frame for numerous points for discussion. It is impossible to draw a line and to conclude what are the advantages and the disadvantages that each culture, or each individual of one culture, can obtain from this increased contact, or whether the balance is in favour of the advantages or of the disadvantages. But, as this process is inevitable, one should try to benefit as much as possible and to see the opportunities that hide behind the difficulties. This article has the aim of presenting a way of obtaining benefits from the intercultural contacts, through the international student exchange programmes, and it focuses on three aspects: ERASMUS student mobility programmes, the identity of the stranger in intercultural contact and the case of 30 Romanian students in Bordeaux, France.

2. STUDENT EXCHANGE PROGRAMMES

According to the data provided by UNESCO, referring to the period 2000-2010, France is the main destination of study for Romanian students that take part in short-term study mobility programmes abroad. In the academic year 2008-2009, the number of Romanian students in study mobility was of more than 22000,[1] and this number makes the study of their adaptation and integration justifiable. The number of students that chose Romania as host country was of 1206, among which the largest number was represented by French students. [2]

The ERASMUS programme (European Region Action Scheme for the Mobility of

[1] See full report at: http://ressources.campusfrance.org/publi_institu/etude_prospect/stats_pays/fr/roumanie_fr.pdf, 04.03.2011.

[2] See full report at: http://ec.europa.eu/education/erasmus/doc/stat/table109.pdf, 20.02.2011.

University Students) is a programme that enjoys a great success in the European area. According to the official website of the European Commission in December 2010, more that 2.2 million students have been beneficiaries of this programme since its launching in 1987. More than 4000 institution of higher education from 33 courtiers participate within the programme.

Mainly, the programme involves the students in study abroad exchange programmes, but the students are not the only ones that can participate to this exchange; teaching staff or administrative staff can also benefit from the programme, the aim being of developing inter-universities cooperation.

In order to frame the situation of Romanian students, according to the last statistics available, that refer to the academic year 2008-2009, 10 Romanian universities found their place in the top of 500 institutions concerning outgoing study and placement mobility; the first three places have been occupied by *Alexandru Ioan Cuza* University on the 79th position, *Babeş-Bolyai* University on the 144th position and the *University of Bucharest* on the 164th position. Spain is the leading country in outgoing study and placement mobility[3].

The programme may have not reached all its initial objectives, but the large number of beneficiaries is a proof of the example of good practice that it represents in the field of intercultural development.*"(...) the biggest gains, not surprisingly, are in learning the language, understanding the new culture, and in the development of a more international perspective. It is also an excellent opportunity to learn about yourself*."(Hansel, 2007:3).

As most studies focus on the positive aspects of the programme, it is worth mentioning the observations made by Magali Ballatore, author of a study on Erasmus mobilities in the years 2004-2005. She points out the fact that only 1% of the European students are beneficiaries of the programme whereas the goal of the European Commission is of 10%. (Ballatore 2008:2) She does not deny the strong points of the programme, but she draws attention on the fact that the objectives set by the European Commission have not been reached.

"For the Erasmus population, as for the international service class, we could say that their aim is a social, economic rather than a cultural integration. The Erasmus student doesn't mix up with the host population as a whole. In fact the Erasmus students are part of global society through the simply act of mobility." (Ballatore, 2008:5) Ballatore considers that the main benefits of the programme are those obtained by each individual at their personal level and the benefits that are harder to be noticed are those at the European level.

Still, the impact at the European level of the students involved in an exchange programme has conducted to the perception of a so called "*ERASMUS generation*" quoting the political scientist Stefan Wolff, in a speech referring to the future leaders of Europe (Bennhold, 2004).

Further on, I will enlarge the topic from the international student exchange programmes to more general issues regarding the implications and risks involved in intercultural contact and the statute of the stranger in the intercultural environment.

3. INTERCULTURAL CONTACT AND IDENTITY

When two individuals belonging to different cultures enter into contact, it is not easy to find the common codes that are most appropriate in order to communicate effectively. For the individual that is outside his cultural environment it is important to feel that he belongs to a certain group in order to communicate properly and to express his true self.

The process of self identification and construction of the feeling of self is constructed on the bases of three polarities: *"identifying the other, identifying with the other, being identified by the other, the other making reference in this case both to a group of people and to an individual as member of*

[3] See full report at: http://ec.europa.eu/education/erasmus/doc/stat/studiesout0809.pdf, 20.02.2011.

the target group"[4] (Ferréol, Jucquois, 2005:19).

Fred Dervin, a specialist in the field of intercultural communication and education, separates the concept of stranger into three categories that can be useful to a better comprehension of the situation of foreign short-term students:

The first category is represented by the *solid strangers*. Solid strangers are not just passing through a foreign country, but they intend to remain in that country and to find a suitable long-term place there. "*They usually manage to get a job and get involved with 'locals', learn the local language(s), etc. In other words, they become 'attached' to the host country and fit in (but of course, they are free to 'leave' any time)*" (Dervin, 2009:123).

The second category identified by Dervin, and the one that I focus on in my paper, is represented by the *liquid strangers*. We can place short term foreign students in this category, as they occupy a transitory, temporary position and their stay in the foreign country is limited by the duration of the programme they are involved in.

The third category of strangers is the one of *effervescent strangers*, who "*may be just passing or staying longer*". In higher education, the difference between liquid strangers and effervescent strangers is the one between short-term and long-term international students. As long-term students stay at the foreign university in order to obtain an entire degree of study, they are more involved in the local environment and are closer to the category of solid strangers (Dervin, 2009:123).

Returning to the category of liquid strangers, reference should be made to Zygmunt Bauman, who introduced the association of the term "liquid" with the one of "modernity". In a society belonging to liquid modernity, individuals are receptive and adapt easily to change and to different exterior factors; it is a society that perceives the relativity of space, a globalized society. *"We are witnessing the revenge of nomadism over the principle of territoriality and settlement. In the fluid stage of modernity, the settled majority is ruled by the nomadic and exterritorial elite"* (Bauman, 2000:13).

In the book *Europe: An Unfinished Adventure*, Bauman describes the European culture as having a way of life that is not only inclined towards crossing the borders, but that is in fact *allergic to border*. (Bauman, 2004:7).

According to Levi-Strauss, the stranger can enjoy a privileged place in the intercultural group, due precisely to his statue of stranger. "*The stranger benefits from the prestige of the exotic and he symbolizes the opportunity, provided by his presence, of enlarging the social network*"[5] (Levi-Strauss, 2001:133).

Levi-Strauss makes a beautiful comparison between cultures and trains that move with different speeds, each in their own directions. The trains that move in a rhythm and in a direction similar to the train we are in, are easier to be noticed, but when interacting with a train that has different rhythm and directions, we can only throw a glance at the passengers, that is more likely to be unclear and sometimes even disturbing, as it disrupts the habitual contemplation. (Levi-Strauss, 2001:140).

Having presented some aspects related to the particularities of the ERASMUS student mobility programme and to the intercultural encounters in a globalized world, I will move to the practical part of this article and discuss the particular case of 30 Romanian ERASMUS students in Bordeaux

4. CASE-STUDY: ROMANIAN STUDENTS IN BORDEAUX, FRANCE

As long-term outcomes of student exchange programmes are difficult to observe, to measure or to evaluate, my goal in this article is limited to observing their perception regarding the study mobility, more precisely their experience as foreign students and the immediate impact. To this end, I have

[4] Author's translation from the original : « *identifier l'autrui, s'identifier à autrui, être identifié par autrui, autrui referant ici aussi bien à un groupe de personnes qu'à un individu en tant que membre du groupe visé.* »

[5] Author's translation from the original : « *l'étranger jouit du prestige de l'exotisme et incarne la chance, offerte par sa présence, d'élargir les liens sociaux* ».

distributed a questionnaire of 32 questions to the Romanian students that were doing their studies in Bordeaux within the ERASMUS programme, in the first semester of the academic year 2010-2011. The students were studying at three of the four prestigious universities gathered under the name of Université de Bordeaux: Bordeaux 2 – Victor Segalen, Bordeaux 3 – Michel de Montaigne, Bordeaux 4 – Montesquieu.

The students involved in the study, 23 girls and 7 boys, 21 to 25 years old, were all living in the hostels put at their disposal by the universities, through an institution that is in charge with both local and foreign student accommodation. The questionnaires have been given at the end of the first semester, so that they have sufficient time to be able to answer properly the questions concerned.

Also, the interaction with the students did not take place only through the questionnaires, but also through participant observation throughout their period of mobility. As this part of the research is focused mainly on the use of questionnaires, it has the form of a quantitative research, but with a qualitative dimension, as appreciatively half of the 32 questions are open-ended questions.

The fields of study of the 30 students varied from medicine to anthropology, psychology, economics, political science, sports and geography, but since there were no notable differences between the answers depending on their fields of study, I will not put special emphasis on this aspect.

It is true that many of the problems that a foreign student might experience can be predicted (for example problems related to language, food, unfamiliar habits, discomfort, culture shock etc.) and possible solutions to facing those problems can be accessed by the students from numerous sources (books, the internet, other foreign students, family, teachers, etc). Literature in this field is very rich, but since the purpose of this paper is to present the particular experiences of particular individuals, I will refer only to the case of these 30 students.

It is interesting to see the answers given by one of the students to the question referring to whether the perception regarding her home culture has changed. Most of them admitted that it has indeed changed, but I would like to present just one of the answers: "*The perception regarding my own culture has changed as I had the possibility to see it from the exterior. So, I became more tolerant, as I realised that no culture is perfect. (...) Regarding my field of study, the classes that I attended here opened new concepts of research that I could apply in my own culture.*"[6]

Regarding the perception towards the host culture, the case of this student is the one of the individual who over idealises the culture of the host country; the expectations she had before the study mobility in Bordeaux proved to overpass reality. It is one of the typical problems that a foreign student may be faced with. "*The difficulties students face in this period stem often from their expectations about the experience. Some students do not expect very many differences, or have learned about the culture in school or from film.*" (Hansel, 1997/2007:63) In the case of this student, the differences between the two cultures have proven to be fewer and less significant than she had expected, and she was disappointed to see that some things that she considered to be as weak points in her culture, like the conditions of accommodation in student hostels, existed in the place of mobility as well.

As a result, the disappointment from this point of view was the response she gave to the question regarding her first week in Bordeaux: "*First of all, I was disappointed by the conditions offered by the student hostels, even if later I understood that they were also one of the cheapest (...) I missed home, the city did not attract me in any way, I saw only the negative aspects.*"[7]

[6] Author's translation from the original : „*percepția în legătură cu propria cultură s-a modificat pentru că am avut posibilitatea să o privesc de la distanță. Astfel, am devenit mai îngăduitoare, dându-mi seama că nicio cultură nu este perfectă. (...) În ceea ce priveşte domeniul meu, cursurile de aici mi-au deschis noi concepte de cercetare pe care aş putea să le aplic în cultura mea.*"

[7] Author's translation from the original : "*am fost foarte dezamăgită de condițiile pe care le oferă căminele studențeşti, chiar dacă ulterior am înțeles că sunt şi cele*

20 out of the 30 subjects stated that their perception towards their home culture has changed, and this fact is relevant to the impact of this type of study motility, especially since the students have been in mobility for just a couple of months.

Another important mention on this topic is that 37% of the respondents feel 70% adapted to the cultural environment of the host city, and 46% feel more than 70% adapted, after just a few months on mobility. This is not an evidence that they have indeed adapted to such an extent, especially taking into consideration that the contact they had with the local cultural environment was limited, but that they have reached a degree of comfort that gives them the impression of adaptation; this is an evidence that the negative aspects of the experience have been left behind in a great measure.

Further on, I will set into the details of the negative "symptoms" experienced by the students during their study mobility. The symptoms that I made reference to in the questionnaire are some of the symptoms of culture shock (Oberg, 1960; Triandis, 1994; Ward, Bochner and Furnham, 2001).

The manifestation of these symptoms in the case of the 30 subjects has been declared to be as follows: home sickness 66%, stress 55%, loneliness 48%, anxiety 34%, confusion 34%, sadness 34%, disorientation 31%, frustration 31%, lack of confidence 24%, isolation 24%, helplessness 14%, depression 10%, feeling of loss of identity 7%, physical discomfort7%, other symptoms14% (percentage of respondents).

The problems regarding communication did not occur so much at the level of language, though some students expressed uneasiness in producing in a foreign language, but more at the level of common codes shared by the subjects involved in conversation.

Here are some of the coping techniques used by the 30 students: self motivation, trying to understand the behaviour of others and learning more cultural codes, perseverance, getting involved in a lot of activities, socializing, trying not to overrate the problems encountered, thinking that in a student hostel most students are foreigners, focusing on the benefits brought by the scholarship and on the positive aspects of the study mobility, focusing on the purpose of leaving the home country and on the fact that this departure is just for a limited period of time, and one must try to make the best out of it, keeping in touch with family and friends back home and with the organizations that were involving foreign students in different cultural activities.

Mention should be made that some of the students found comfort in going to church. The Romanian students in Bordeaux are privileged from this point of view, as there is an orthodox church, where the service takes place both in French and in Romanian. The Romanian community that attends this church is large and very active, and many of the students go there to find a place of belonging and of support, even if they did not attend church that often at home.

Even if the changes in perception, the symptoms of culture shock or the coping techniques bring nothing new to the literature available in the field, the results presented in this study can be useful, as they reflect a concrete and contemporary situation and they make a step from general to particular situations.

5. CONCLUSIONS

All in all, one of the advantages of short term student exchange programmes, widely developed in the contemporary era of globalization, is that the period is short enough not to alter a pre-established identity, but long enough to offer the opportunity of perceiving oneself from a different perspective, in offering a point of comparison.

Also, since this mobility takes place at the beginning of the process of maturing, the impact of an intercultural encounter puts the person into contact with the reality generated by the increased process of globalization that he is indirectly and inevitably exposed to. The fact that this encounter takes place in an institutionalized context, and for a limited and

mai ieftine (...)îmi era dor de casă, oraşul nu mă atrăgea cu nimic, vedeam numai parţile negative."

short period of time, puts the student at a safe distance, as he or she has a certain freedom of choice regarding the degree of immersion in the intercultural environment. In a way, the student is an explorer of others and of self. The benefits in the academic field and for the professional formation of the students cannot be ignored, as this widens their horizons and they bring back home part of the achievements of that experience.

I will end with a quote from the book *Modernity and Ambivalence*, by Zygmunt Bauman, where he discusses the attitude of modern society regarding the stranger. His words can sum up the proper attitude one should have in front of the intercultural challenges of globalization: "*One needs to honour the otherness in the other, the strangeness in the stranger*" (Bauman, 1991: 235).

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AMERICA AND WWII

Oana-Andreea PIRNUȚĂ , Dragoş Nicolae SECĂREA

*"Transilvania" University, Brasov, Romania

***Abstract**: The present paper highlights the influence of the USA on the outcome of WWII. But in order to understand a certain aspect of the war, it is necessary, first of all, to analyze the major elements that triggered the world in this military conflict. Therefore, the first part of this article presents the major causes of the start of the second global conflict (ideologies, economic issues, political difficulties, or territorial expansionism). The USA was reluctant to the idea of participating in a new world war (because of the traumas left by WWI), but it was triggered in WWII by the bloody (and still controversial) Japanese attack on Pearl Harbor. Immediately, the USA joined Great Britain, the Soviet Union and other allies, in their efforts to neutralize the Axis forces. The American intervention eradicated the Axis occupation on both major war theaters: the Pacific and the one represented by Europe and Africa. The end of the war was triggered by the USA's decision of launching two atomic bombs in the Japanese territories. This decision determined Japan to surrender, but it also created the foundation of the Cold War, a conflict which was the main constituent of the post-war world.*

***Keywords**: WWII, the USA, war theaters, battles, causes, events, aftermath.*

1. INTRODUCTION

Throughout the 20th century, the world history was marked by two global conflicts. The first one started under the pretext of the assassination of the Austrian Archduke, but it emerged in a zone, which was in a state of conflict, eager to have an event that would lighten the flames of war. The US president, Woodrow Wilson, saw WWI as the perfect opportunity of gaining the desired status of world-wide superpower (and of course, all the benefits which emerged from it). The American participation in the war was almost unnoticeable, but it gained that status because Europe was ruined and the Old Continent was in need of the US help.

One of the greatest moments in the American history was represented by the *Roaring Twenties*. But after ten years, the glory was replaced by the trauma initiated by the dark *Great Depression*. Europe was struck by the American economic issues, which fueled everyone's fear: a new global conflict was about to start.

2. AMERICA AT WAR

2.1 The major causes of WWII. The effects of the *Great Depression* were considered the main causes of the beginning of WWII, but as previously mentioned, this theory is still debatable. The start of the war was determined by various factors, such as: doctrines, philosophies, military actions, social issues, etc. First of all, it is worth to mention *expansionism* (Hitler's desire to regain the territories lost by Germany in WWI and unite the populations of German origin and ancestry under one flag, and with a central government). Then, there were the *political ideologies* (communism, Nazis, Fascism), the *Versailles Treaty* (it was supposed to be a peace treaty, but instead it just created the desire of starting a new war.

It is also worth to mention the *League of Nations* (UN's ancestor) which could not prevent the initial German, Soviet and Italian aggressions (including the *Ribbentrop-Molotov Pact*, Hitler's and Stalin's plan of dividing post-war Europe). The start of the

second global conflict can be related to two distinct phases acting simultaneously: the German invasion in Poland, and the Japanese invasion in China.

2.2 Pearl Harbor. The US population was not at all eager to participate in this war, and the same position was adopted by the Government. The US leaders preferred to maintain the old 19th century perspective, that of being isolated from the European issues. But their quiet life was obliterated in the morning of 7 December 1941, when the Japanese Imperial forces attacked the US Naval Force stationed at Pearl Harbor. The conflict started after the 1931 Japanese invasion of Manchuria. The USA imposed certain penalties for the Empire's actions. The most important one was the oil embargo. 80% of Japan's oil came from America. If Washington had not cancelled the embargo, then Japan's oil would have lasted only two more years. The negotiations between the two sides brought no positive result and the emperor ordered the attack on Pearl Harbor. Japan wanted to neutralize and prevent the American fleet from initiating any operations in the Pacific.

The USA was not ready for such an attack. The US generals were expecting an attack in the Far East, in the Philippines, Indochina, or Thailand. Therefore, the Pearl Harbor base had its unmanned weapons lacking the required ammunition, the aircrafts not being ready for an emergency situation, and other similar problems. The generals also thought that the geography protected Pearl Harbor from torpedo attacks, thus solving the previously mentioned problems.

The emperor did not want his army to attack without a declaration of war. Therefore, Tokyo sent the "14-part Message", which stipulated that Japan put an end to any diplomatic relationship with the USA (it was not actually an accurate declaration of war); but the Japanese embassy in the USA had problems transcribing the message, and the message was delivered to Washington a few hours after the attack. The Japanese planned a three-wave attack, which lasted 90 minutes and killed 2,403 killed and wounded 1,178. Furthermore, eighteen ships were destroyed (including 5 battleships), 188 aircraft destroyed and 159 damaged. The Japanese lost fifty-five airmen, 9 submariners, and 103 aircrafts (29 destroyed and 74 damaged). The following day, the USA entered WWII.

2.3 The European and North African War Theater. The USA entered a new military global conflict. But this one was going to be much tougher than the previous one. After long debates, Washington's leaders finally adopted Franklin D. Roosevelt's plan of focusing first on neutralizing the Axis forces present in Europe and North Africa, and only afterwards on the Japanese forces.

The first major operation of the US Army was the invasion of North Africa, *Operation Torch.* The Allied commanders believed that neutralizing the German troops situated on those territories would enforce their military force in the Mediterranean Sea and therefore, they could prepare an invasion in South Europe. This operation lasted 8 days, from 8 to 16 November 1942. The command of this operation was given to *General Dwight D. Eisenhower*. The plan of this operation consisted in the invasion of Morocco, Algeria (belonging to Vichy France), and Tunisia. Occupying the territories belonging to the Nazi puppet state of Vichy was not hard (some of the French generals even welcoming the invading troops). But now, the Allied had to prepare a much harder battle, the invasion of Tunisia, or the decisive blow which would close the African theater. And steadily, the liberation troops occupied important territories. After the Axis defeat in *Operation Capri*, the famous German general, Rommel, asked permission to retreat his troops from Africa. He was refused and replaced. This was the beginning of the collapse for the Axis powers stationed in Africa. In the following period of time, they lost more and more territory. Furthermore, the Allies cut down the Axis supply routes. Eventually, the Italian and German troops stationed in Africa had to surrender. From Tunisia, the allies initiated their European conquest. *Sicily* was the first one on the list. This territory was important because, if conquered, it would open the road for occupying Italy's mainland. The allied army was led, again, by Eisenhower. Fierce

battles occurred for every km of the island's territory. The German reaction was to retreat form the Western part of the island in order to create a stronger, compact army, capable of slowing down the Allied advancements. And in the beginning, this decision proved to be successful, the Allies having unsuccessful attempts of occupying territories like Catania for example. But slowly, the Allies managed to break through the Axis lines and to occupy important strategic points like Palermo, one of the Axis supply routes. And this determined the German leaders to retreat their troops in Italy.

The Battle of Italy started. This operation lasted 13 days. Italy was already weakened. Following the defeat in Sicily, numerous anti-war movements occurred, and Benito Mussolini had to resign and leave Italy. The Allies hoped that Mussolini's removal from power would determine a weaker Italian army resistance, and therefore could eliminate Italy from the Axis Powers, and weaken Germany. And indeed, shortly afterwards, the Italians surrendered and joined the Allied Forces. Hitler decided to retreat his troops in Rome and stay there as much as possible in order to halt the Allied advancements towards the German borders and to protect the vital oil supplies from the Balkan area. But the *Wehrmacht* was just a shadow of the former fierce army, which obliterated in the past the European armies. Germany was pushed out of Italy and the entire world was waiting for the decisive blow.

And this decisive blow came in *Operation Overload*, led brilliantly by the same Eisenhower. The assault was one of the major ones in the history of warfare and was made with the help of 8 navies (divided into the Western Naval Task Force and the Eastern Naval Task). The most difficult task was given to the American Units, who had to occupy the best fortified beach, Omaha. After heavy long battles, the Allies occupied important strategic points, and gave the Americans the opportunity of launching *Operation Cobra*, which penetrated the German lines and from that point on, the Nazis' days were numbered. Germany was surrounded. From the West, Germany felt the pressure imposed by the Allies. And in the East, the Nazis had to face the fierce and powerful *Red Army*. The *Wehrmacht* tried one more counteroffensive, in the *Ardennes Offensive*, but it was an unsuccessful attempt. On 2 May, 1945 Germany surrendered. WWII in Europe was over.

2.4 The Pacific War Theater. But there still was the problem of Japan's Army, which destroyed everything in the Pacific area. The first major battle on this theater was the *Battle of the Philippines*, in which Japan occupied these islands. The Philippines were protected by a weak US Army (most of the troops were deployed on the other war theater) and by inexperienced Filipinos. The Imperial Forces smashed any form of resistance. Roosevelt predicted that America would lose this battle and ordered General MacArthur to leave Philippines and head to Australia in order to become the leader of the Pacific Allied Forces. This decision would represent one of the key elements of the American victory in the Pacific. Japan continued afterwards its Asian conquests and managed to win in battles like the *Wake Islands* or the *Invasion of Indonesia* (which was an important oil provider). Afterwards the Japanese initiated the *Solomon Islands Campaign*. The Imperial Forces wanted to build important airfields, which would cut down the supply routes between the USA and Australia. The Japanese managed to build some of these airfields, but they were not able to use them at their full capacity, mainly because of the problems imposed by the American counteroffensives. The first important US victory came in the *Battle of the Coral Sea* (some say the most important naval battle of WWII). This battle was also the first battle in which aircraft careers engaged in direct confrontation. The allies managed to halt the Japanese expansion. The Allied forces were aware now that Japan had its weaknesses. Chronologically, the next battle was the invasion of the *Aleutian Islands*, part of Alaska, which would last almost a year, not because of the military power held by the two sides, but because of the remoteness of the area. The victory belonged, as well, to the US troops. But the next battle was one of the most important Allied victories in WWII, the *Battle*

of Midway. Japan tried to trap the US fleet in Midway Atoll in order to determine the USA to capitulate. The battle started with Japan's attempt to gain air superiority, which would have allowed ground troops to occupy the desired territory. Numerous US aircrafts were destroyed, but Japan failed its goal, and, furthermore, the USA attacked its fleet. This result was important because it crippled the Imperial Fleet. Japan did not have enough time to recover.

Japan was pushed to its mainland after the *Guadalcanal Campaign*, in which the Allies managed to secure the supply routes between the USA and Australia, and more importantly occupied *Henderson Field* from where they could launch attacks on Japan's mainland. The battles of *Iwo Jima* and *Okinawa* were the first Allied attacks on Japan's territory. The Imperial forces knew that the end would come, that they were going to lose those territories, and eventually the war. But still, there were blood baths for every inch of territory. The USA occupied Okinawa and Iwo Jima, but knew that a much harder mission will be the occupation of Japan's mainland. And that is why the US Government took the decision which shaped the post-war world: the use of the atomic bomb. The Americans applied *Project Manhattan*. They picked *Hiroshima* and *Nagasaki* to be their targets (they were important military, supply points). *Little Boy* (Hiroshima) and afterwards *Fat Boy* (Nagasaki) were launched. In a few seconds, more than 200,000 people died and approximately 70% of the cities were destroyed. Japan was in a state of shock. Shortly afterwards, the Emperor ordered Japan to surrender. WWII was over finally.

3. CONCLUSIONS

The USA was triggered in a war which they did not want to enter, but the Pearl Harbor attack determined America to join the allies. Heavy battles took place on the European and African War Theater as well as the Pacific one. It would be hard to imagine what kind of world we would have had nowadays if the USA had not entered the war. America shaped the course of the war and the postwar period. And even more important is the fact that the USA became a worldwide superpower and nowadays it has the status of a vanguard. The question is: for how long?

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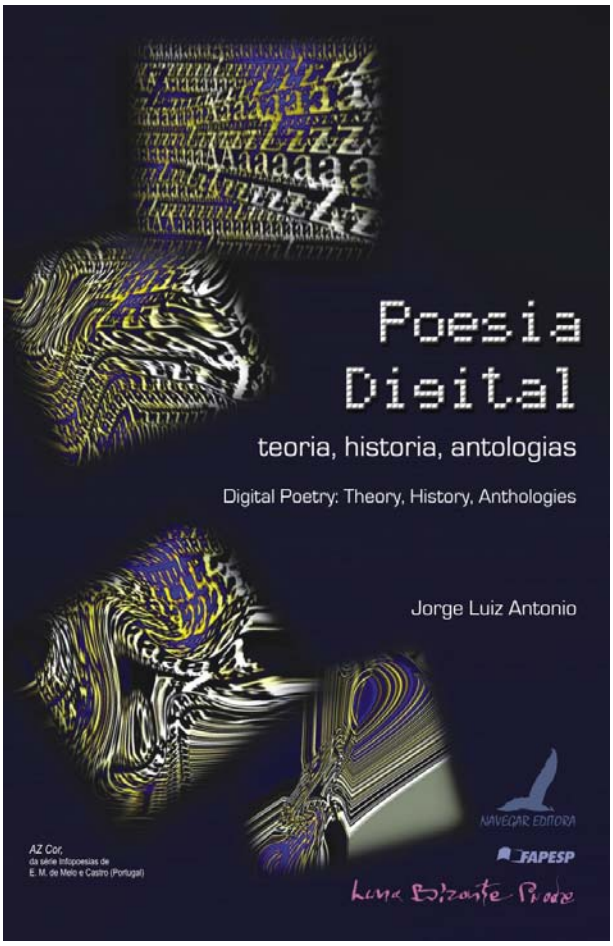
ON ANALOGIC EXTENSION OF DIGITAL POETRY *OR* THE SEMIOTIC NEGOTIATION BETWEEN CODES

Adrian LESENCIUC

"Henri Coandă" Air Force Academy, Brasov, Romania

Abstract*: This article intends to highlight the manner in which the work of the Brazilian scholar Jorge Luiz Antonio,* Poesia digital. Negociações com os processos digitais. Teoria, história, antologias*.fails to reflect the current artistic activity worldwide in the area of digital poetry*

Keywords*: Jorge Luiz Antonio, digital poetry, semiotic negotiation, codes, technopoetry* .



1. INTRODUCTION

The Brazilian scholar Jorge Luiz Antonio's work *Poesia digital. Negociações com os processos digitais. Teoria, história, antologias*, a result of research for more than thirteen years, built based on a doctoral thesis and representing „an expansive organism" (*organismo en expansión*) as Ladislao Pablo Györi named it, is impressive not only in size, but in contemporaneously, accuracy and ability to negotiate within the field of performance. The work consists of a printed book (in Portuguese) – an introduction to the area of digital creation -, joined by a DVD, that contains extensions as tentacles in graphic, visual, acoustic and multimedia (including links to digital poetry and critical texts of Web pages). The book and the DVD are the products of editorial activity of Navigar Editora from São Paulo (Brazil), of Luna Bisonde Prods from Columbus, Ohio (U.S.A.), and of Fundação de Amparo à Pesquisa do Estado de São Paulo - FAPESP (Brazil).

This 2010 version, the fourth in a series of editorial productions of J.L. Antonio regarding the generous theme of digital creation, offers for all the readers (including the hypostasis of cyber-reader) the possibility to come into contact with an artistic whole that addresses multiple senses, that invades a perceptive area untouchable by classical creation. Elaborating a critical work in the area of digital poetry needs means addressing through the agency of same media and codes used in the act of creation, as a metalinguistical reflection over an expanding production, the self production. Antonio is giving the reader acquainted with the interaction between the poetic code and the codes of computer programming languages a true multi-sensory performance, with critical nuances included.

First of all, the work should be regarded on the position where the negotiation between the author and the multi-sensory digital product is done. Unlike the simple reflection of the multi-sensory reality of the artistic creation at the level of the printed text, Antonio intends in-depth negotiation between the language of artistic production and the language of software. He understands that the author of visual poetry must dominate the technology, as Erthos Albino de Souza stated: „*The computer, for example, allows artist to try during his/her whole life. That is why poet must dominate* the *technology.*"[1]; therefore, Antonio does not avoid tackling about this aspect. Hence, we could count, on the one hand, on the huge effort of introspective action, of sedimentation of values relief, and of adequate relation with it. On the other hand, we could count on the huge effort of critical analysis of a enormous mass of poetical creations (from hybrid verbo-iconic construct to its multimedia applications), different languages and significations, studies, directions, cultural currents, groups, ideologies, and also of software and information technology, taken together with the labyrinth of signs poetically shaped. Understanding this need expressed by Souza and the exactly applying, Antonio considers as a goal the need of structuring the (global expanded) conglomerate of multisensory cultural products and manages ~~to~~ bring together the digital poetry and its criticism on classes and orders, in a particular way of organization, proposed and not imposed, opening the possibility of reconfiguration, transformation, reorganization of contents based on new and complex norms. The claim of completeness is not explicit, but Antonio's work brings it, through the default, into the actuality of reading. The work is continuously self-creating, the Brazilian scholar being able to confer the character of *opera aperta*.

Apparently, the work requires the analysis of interpretative grid of technologic determinism. Starting with the McLuhan's famous phrase, „*The medium is the message*", we could interpret the critical construct and the actual artistic production, in line with the expansion of nervous terminations of the reader/cyber-reader at the level of the entire production area (with global coverage). The area of dissemination and exploitation of digital literary creation apparently dominates the communicative relationships with the reader. Digital poetry has developed as a result of: the conscious use of different technologic poetic ends; the use of different graphic resources in electronic environment; the development of poetic practices as a result of the collaborative experience through e-groups; the extension of new virtual reality of digital (sound, kinetic, combined etc.) poetry production/distribution; the enrichment of virtual poetic field with the poetry realized by exploiting the artistic dimension of man-machine relationships (Antonio, 2010a:21). Therefore, the enhancement of negotiation between production codes is more important than the highlighting of production and dissemination space. The focus is moved, within the canonical scheme of communication, from medium/channel to codes, reader (implying the negotiation between the reader and the multiple codes of signs organizing, and the negotiation between codes), and message, continuously creative, circumscribed to an autopoietic loop (Maturana, Varela, 1980). In relation to the

[1] „*O computador, por exemplo, permite que o artista exprimente a vida inteira. É por isso que o poeta deve dominar a tecnologia*" in original

Jakobson's model of communication (*apud* Fiske, 2002:35-37), Antonio explains the act of digital poetic creation through the abandonment of referential function (regarding the scientific a technological dimensions) and through the predominance of poetic function. The author, the Brazilian scholar stresses, could intervene in the technological process and could create his own technology necessary for poetical signs production. This abandonment is enough in order to justify removing the claims of technological determinism extension, the claims of message subordination, and the referential hierarchy that characterizes the scientific-technological construct. Therefore, the intentionality of seeing the theoretical construct as a result of semiotic negotiations (with message and lecturer in foreground) becomes natural.

2. THEORY

Moreover, the work is divided into three main parts, announced in the subtitle: theory, history and anthologies. The first part, *Teoria*, opens with a multilevel analysis of above mentioned semiotic negotiations – the object of the actual critical analysis, between poetry (the code of poetry, or in the Romanian poet Nichita Stănescu's terms, 1990, *limba poezească*, poesese language) and computational technology - realized at the level of man-machine negotiation, at the level of verbal and nonverbal codes mediation, at the level of creator's intervention in computational technology with poetic purposes and aiming at the realization of intersystem transmutation (poetic-technologic). The man-machine mediation involves two training steps, two early stages in the act of digital act production: the conceptual technologic apparatus assimilation necessary for the production and the assimilation of machine code of intervention and transformation of its predominant function (pragmatic/referential/objective) into poetic function. The next stages are more complex and refer further on to the entire creative arsenal. For example, in terms of mediation between signs and codes, the possibility of a new poetic language birth is revealed. This new language is structured on the verbal language, containing hybrid insertions, with enhancer indexical/iconic, sound, kinetic or mixed role: „*Thus, the word, essence of the poetry, negotiates with the image and the drawings of the letter and of the handwritten word or graphically manipulated one and it interferes in them for the production of the visual poetry; with the sound, to produce sound effects (sound poetry); with the animation, to produce movements of words, letters and images (animated poetry); with the physical space, for the three-dimensional poetry*"[2] (Antonio, 2010a:26). The result of these negotiations is not the simple addition, easily expressed by: ***poesia*** **+** ***tecnologia*** **=** ***tecnopoesia***. The result is dynamic, and the technopoetry, seen as „*poetização da tecnologia computational*", represents the result of a continuous and profound semiosis, involving a „linguistic body" in transformation, where semiosis could be understood only within the limits of its dynamic production: „*The semiosis is the result of this "meeting"* [n.t.: between the codes of poetry and informational technology], *and the significances that poetry and computational technology produce are what we have denominated as technopoetry, with the objective of firming the idea that it is the poetry that produces meanings and not the computational technology itself, as one thinks when he/she is talking about the subject*"[3] (Antonio, 2010a:27). Therefore, the technopoetry is a reflective attitude and not a mechanical creation. The Jorge Luiz Antonio's interpretive mastery on technopoetic

[2] „*Assim, a palavra, essência da poesia, negocia com a imagem e os grafismos da letra e da palavra manuscrita ou manipulada graficamente e interfere neles para a produção da poesia visual; com o som, para produzir efeitos sonoros (poesia sonora); com a animação, para produzir movimentos de palavras, letras e imagens (poesia animada); como o espaço físico, para a poesia tridimensional."* in original.

[3] „*A semiose é o resultado desse „encontro" e as significações que poesia e tecnologia computational produzem é o que denominamos de tecnopoesia, com o objetivo de firmar a idéia de que é a poesia que produz significados e não a tecnologia computational em si mesm, como se costuma pensar quando se fala no assunto"* in original.

phenomenon is not related only to the ability of analyzing the natural relations of constituting the creator act, but also to the ability of constructing similarities with dominant literary theories or currents. The negotiation between poetic and technological codes raises the interpretation of repeated realistic intentions of analyzing a reality, simulated by the computational technology and artistically recreated. In relation to the romanticism, the digital poetry creation act could have macrocosmic sizes: „*The technopoet is put, as the romantic poet, as a technodemiurge*"[4] (Antonio, 2010a:28). Under these conditions, culture does not surrender to technology, but it tames as, not long time ago, it was intended taming nature. The difference consists in the fact that now, a new virtual reality gives rise to a parallel phenomenon, more precipitated and intense in combustion than the previous one.

Fragmented in the printed product (the book, with the role of initiation in the area of debates), the Antonio's theoretical discourse continues in .pdf format on the accompanying DVD. The DVD captures the multiple facets of experimental attitude manifestation of poets that proposes himself to negotiate with technology, that exceeds the critical stage regarding the amputation of the poetic act by the implant derived from the technological determinism (interpreted in the manner in which Baudrillard, 1997:12, replying to McLuhan's challenge, referred not to neurotic terminations' expansion of the TV viewer to a planetary scale, but to prosthectic organs added to the body of flesh, closed in the hyper-reality of the screen, cord connected to it). In this case, the author discovers new territories and new frontiers in pushing negotiations between codes, only by accepting the challenge of the technopoetic semiosis. Starting with the stage of insufficient technology knowledge, the poet, willing to push his own knowledge and creation beyond the imagined limits, reaches a stage of assimilation of programming codes and of conscientious change of technologic approach by allocating a poetic finality. The machine becomes a simple tool, subordinated to poetic purposes, while the final product is derived by the (self-)creator process: „*the product of technology and/or of machine is converted/transmuted in poetic project/machine-poetry*"[5] (Antonio, 2010b:10, teoria.pdf). In other words, regarding the production code, we could find, in fact, in the depth of the act of creation, not only an authorial negotiation with the machine language, but, rather, a semiotic negotiation between poetic, artistic (taken into account the other arts insertions, that give rise to verbo-iconic, verbo-sound, verbo-kinetic or any other multiple and multidimensional combination aggregate, even smelling or touchable, if we refer, for example, to Carlo Belloli's *corpi di poesia*) and technologic language. In essence, the playful use of technologic language offers to the other two figured and polysemic types of languages that extend their rhizomes into other fields, more fertile, as in technology and cyberspace, the possibility of recreation the Saussure's dimensions of codes: paradigmatic and syntagmatic, respectively the possibility of their enrichment based on the interpretation of a code partially agreed with the readers. These two dimensions can be found in Antonio's work both in original meaning and in the interpretative perspective of Dubois, Pinto and Decio Pignatari. It is worth noted that the poetic, artistic and technologic language contain similar basic structures, like the human genome, genetic reducible to a formula, common to the entire geographical space of technopoetic production, however preserving the particular character: „*the technopoetry consists of a type of „international" poetry, but it remains particular, national, regional, personal*"[6] (Antonio, 2010b:20, teoria.pdf). The particular negotiation between poetic and artistic languages was the subject of numerous studies. I tried to elaborate a particular perspective of interpreting the natural verbo-

[4] „*O tecnopoeta se coloca, qual o poeta romântico, como un tecnodemiurgo*" in original.

[5] „*o produto da tecnologia e/ou da máquina é subvertido/transmutado em projeto poético/poesia-máquina*" în original.

[6] „*a tecnopoesia se constitui numa espécie de poesia „internacional", mas que continua a ser particular, nacional, regional, pessoal*" in original.

iconic continuity in *Poezia vizuală* (Lesenciuc, 2006). But Antonio is not limited to this level of negotiation. He approaches the semiotic relationships between codes in terms of *forms design* constitution that, in line with the technologic code, becomes open to experimentalism, interactivity, semiotic interference (in reading). In the particular case of re-signifying the programming language, for example, the result of semiotic interaction is a particular type, named *code poetry.*

The result of multiple negotiation between poetic, artistic, and technologic codes is a new language, named technopoetic (or *tecno-artístico-poética*), characterized by a particular textuality (inter- or hyper-textual): „*the game of intertextual syntactic analogies, the intertextual multiple space, and hypertextual non-linear ways of electronic reading*"[7] (Antonio, 2010b:45, teoria.pdf). Drafted with the same intention, the critical Antonio's text *Poesia digital. Negociações com os processos digitais. Teoria, história, antologias* offers the option of an amplified and hyper-textual reading. The text is realized within the extended limits of technopoetic language by braches, links, multiple types of verbo-iconico-sound-kinetic construct. These features are highlighted through the rhizomatic structure of the other two parts of the work: *História* and *Antologias*.

3. HISTORY

The second part, *História*, is structured in four chapters: *Poesia, arte, ciência e tecnologia*, *Cronologia da poesia electrônica, Poesia digital* and *Poesia e computador(es).* The first chapter implies the history of four stages: from antiquity to the nineteenth, twentieth century: 1900-1950, 1951-2000 and XXIst century (from 2001 to present), and the second one three stages: 1959-1990, 1991-2000, respectively from 2001 up to present. The historical journeys in stages are prefaced by initial considerations, determinant in structuring the science/technology relationships with the arts. These relationships, understood through the agency of interference between the products of *homo sapiens/homo faber* and of *homo aestheticus* are not specific to the recent configured stages, but, rather, they characterize a continuous cultural negotiation: „*We can say that the poet always performs semiotic negotiations (mediations, interventions and transmutations) with any science and technology: he negotiates the word meaning in everyday use, social, cultural, or scientific, in order to establish a different comparative and metaphoric meaning*"[8] (Antonio, 2010a:33-34). We can understand, therefore, that the poet's cultural negotiation with the contemporary technology, that has, like culture, individual and social character, covers a rich set of interactions between texts, images, sounds, movements and space (two-or three-dimensional), realized through courses, exhibitions, conferences, meetings, festivals, printed or online publications, various storage media, but also through institutions, study groups, e-groups a.o.

The dawn of such cultural negotiations is situated in the Greek antiquity where, starting with Simis of Rhodes, Theocritus of Syracuse, or Dosiadas of Crete, we can find the first frames of verbo-iconic structures through wrapping texts in the shape of geometric objects. Illustrating the text with Simias' poem *The Egg*, original and translated in Portuguese by Jose Paulo Paes, Antonio reviews Antiquity and Middle Ages, and stops in the full modernity of the nineteenth century. Some standpoints of visual poetry are not missing, respectively of poetry in relationship with science, like: *Soneto figurato* of Giovanni Battista Palatino (1566), *Easter Wings* of George Herbert (1633), characteristic to Renaissance; Baroque combinatorial poems and/or shaped in different forms: Jean

[7] „*o jogo de analogias sintáticas da intratextualidade, o espaço textual múltiplo da intertextualidade e os caminhos da leitura eletrônica não linear da hipertextualidade*" in original.

[8] „*Podemos afirmar que o poeta vem sempre fazendo negociações semióticas (mediações, intervenções e transmutações) com qualquer tipo de ciência e de tecnologia através dos tempos: ele negocia o sentido da palavra em seu uso cotidiano, social, cultural ou científico, para estabelecer um outro significado, comparativo, metafórico.*" in original.

Meschinot, Habramus Marus, Quirinus Kuhlman, José de Assunção; art – science/technology relationships, prefigured by Cláudio Manuel da Costa, Edgar Allan Poe, Walt Whitman, Charles Baudelaire; figurative graphism of Lewis Carroll, specific to the beginning of industrial revolution and to its avalanche of artistic styles; Mallarmé's pioneering in *Le Coup de Dés* (1897) regarding structural elements, special syntax etc. The first half of the twentieth century, remarkable by qualitative changes brought in forefront by Marinetti, Apollinaire, Oswald de Andrade, V.V. Khliebnikov, Ezra Pound, Tristan Tzara, Raoul Hausmann, Bob Brown, e.e. cummings, James Joyce, determines the Brazilian scholar to consider the possibilities of digital poetry „development" if the recent information technologies would have been available at that time. The second half of the twentieth century, also marked by the Latin-American pregnancy (Brazilian, specifically), brings to the light of analysis the sound poetry of Philadelpho Menezes, the concrete poetry of Noigandres group (Décio Pignatari, Haroldo şi Augusto de Campos), the neoconcretism of Ferreira Gullar and Wlademir Dias-Pino, the tridimensional and kinetic poetry (E.M. de Melo e Castro, Regina Vater, Arnaldo Antunes, Pedro Geraldo Escosteguy), the mail art (Edgardo Antonio Vigo), the filmic poems (E. M. de Melo e Castro), the process-poem (Wlademir Dias-Pino, Álvaro de Sá, Neide Dias de Sá, Moacy Cirne) etc., in comparison with already silent European movement (French and Portuguese in particular), whose reference points were the potential literature workshop (Raymond Queneau, François Le Lionnais etc), the spatialism of Pierre and Ilse Garnier, the experimental Portugese poetry (Antonio Aragão, Herberto Helder etc.). In relationship to new media, we could mention *poesia eletroeletrônica*, due to the Brazilian Albertus Marques, produced in interaction with cinema, television etc., leading to the appearance of the holopoetry and brought into discussion by the semiotic negotiation between the poem textually reproduced and different supporting media. The dacontributions of Brazilians Augusto de Campos, Omar Khouri, Paulo Miranda, Arnaldo Antunes, Franklin Valverde, Marcelo Frazão, Carlos Vogt, Italian Enzo Minarelli, Germans Friedrich W. Block and Gerd Aumeier, Argentianian Ana Maria Uribe, Portugeses Antonio Preto and João Souza Cardoso etc., are representative. The chronology of the electronic poetry intends to map from the period of the first algorithms (1948-1958), or, more precisely, from the first stochastic text, *Nach Franz Kafka*, produced in 1959 by Theo Lutz (whose, in fact, is dedicated the entire ensemble book-DVD) to 2010. This mapping, influencing the perception of text in Borgesian manner: „*O fato é que cada escritor cria os seus precursores. Seu trabalho modifica nosso conceito do passado, como há de modificar o futuro*" (Antonio, 2010a:32), allows us wide the limits in definition. For example, digital poetry – identified with denominants like *computer poetry*, technopoetry/poetechnics, numeric poetry, cyberpoetry, informational poetry, electronic poetry – could be defined only in these wide limits: „*Digital poetry, in its various phases, consists in a techno-artistico-poetic language, and under this angle it can be read and appreciated. Digital poetry is a kind of contemporary poetry – made up of words, images, graphisms, sounds, elements animated or not, in most cases interactive, hyper-textual or hyper-mediatic, forming an electronic text, a hyper-text or a hyper-mediated connection. It exists in the symbolic space of the computer (Internet and digital network), the electronic-digital media that links to these components that represent the poetic form of communication. Generally, digital poetry exists only in this medium and expresses by this medium in its completeness and dominance*"[9] (Antonio, 2010a:41).

[9] „*A poesia digital, em suas diferentes fases, é composta por uma linguagem tecno-artística-poética, e é sob esse viés que ela pode ser lida e apreciada. A poesia digital é um tipo de poesia contemporânea - formada de palavras, formas gráficas, imagens, grafismos, sons, elementos esses animados ou não, na maior parte das vezes, interativos, hipertextuais e/ou hipermidiáticos, constituindo um texto eletrônico, um hipertexto e/ou uma hipermídia. Ela existe no espaço simbólico do computador (internet e rede digital), tendo como forma de comunicação poética os meios eletrônico-digitais que se vinculam a esses componentes. De um modo*

Positioned within the electronic space of the computer, digital poetry takes full advantage of transforming the Apollonian machines into Dionysisn machines (Lemos), offering the possibility of play and of situation close to the artistic act (Antonio, 2010a:44).

4. ANTHOLOGIES

The III[rd] part of the work, *Antologias*, intends, within the limits of already mentioned denominants in *História,* to highlight the typologies of digital poetry (using the specific denominants): hypermedia, hypercard, hypertext, network hypermedia, text generator software at Funkhouser; classical combinatorial poetry, visual poetry, dynamic visual poetry and dynamic poetry at Tibor Papp; hyper-textual fiction and poetry at Núria Vouillamoz; digitalized texts, new texts published in digital format, programmed digital texts (cybertexts), and web texts at Koskimaa etc. Antonio does not take a particular typology but, based on a profound knowledge of the digital poetry phenomenon, builds a particular typology of digital texts: program-poetry, infopoetry, computer-poetry, hyper-textual and hypermedia poetry, Internet-poetry, interactive, collaborative and performative poetry, poetry-code, migrant poetry and performative hybrid poetry. Such an organization has allowed the establishment of an anthology of visual poetry, with rhizomatic and fractal expansion. The Brazilian scholar includes authors from Angola, Argentina, Australia, Brazil, Canada, Chile, Colombia, France, Germany, Greece, Ireland, Italy, United Kingdom, Mexico, Netherlands, Portugal, Romania, Russia, Slovenia, Spain, United States of America, Uruguay that permanently marked this territory of mingling arts with science and technology. The anthology of theoretical texts is also remarkable, important references realized by authors from Angola, Argentina, Australia, Brazil, Canada, Chile, France, Germany, Italy, United Kingdom, Mexico, Portugal, Spain, Statele United States of America, Uruguay, like Jim Andrews, Augusto de Campos, E. M. de Melo e Castro, Chris Funkhouser, Ladislao Pablo Györi, Philadelpho Menezes or Clemente Padin being included, major names of digital arts theorists.

5. CONCLUSIONS

The splendid theoretical multimedia work of Jorge Luiz Antonio, *Poesia digital. Negociações com os processos digitais. Teoria, história, antologias*, is, according to the Canadian Jim Andrews, the first study at this magnitude related to computer and Internet possibilities to provide a space of the adaptive creation for the poet. A fundamental work with a strong didactic character, carefully organized and extensible in its edges, always inclusive and never completed, mapping an area within its fractal perimeter, *Poesia digital* is circumscribed in the line of critical reference text in the history of literature. The work, dynamic not only due to pulsations at the edges of its area, but also due to the untiring zeal of the author in order to update a content impossible to coordinate, is prefaced and postfaced by relevant names in the theoretical field of artistic production in interference with high technologies: Clemente Padin, Paulo Franchetti, César Horacio Espinosa V., Ladislao Pablo Györi, Regina Pinto, John M. Bennett, Jim Andrews or Francisco Soares. This fact allows me to give the possibility, in the line of such a work reception, that the conclusive argument to be formulated by one of these important names: „Poesia digital. Negociações com os processos digitais *is an organism in expansion (remember his earlier work,* Poesia electrônica*), that serves as undeniable proof for the link between technologic devices and the long-term human need of poetizing the world*"[10] (Ladislao Pablo Györi, *apud* Antonio, 2010a:13).

geral, ela só existe nesse meio e só se expressa, em sua plenitude e predominância, por meio dele." in original.

[10] „Poesia digital. Negociações com os processos digitais *es un organismo en expansión (recordemos su anterior* Poesia electrônica*) que sirve para testimoniar el vínculo insoslayable entre los dispositivos tecnológicos y la imperecedera necesidad humana de poetizar el mundo*" în original.

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