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Nuclear Security Culture Self-Assessment in a Radioactive Material Associated Facility

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The following publication summarizes the short history, fundamentals of International Atomic Energy Agency's Nuclear Security Culture programme in general and provides details of the recommended self-assessment methodology.
A preliminary Nuclear Security Culture (NSC) self-assessment is presented on the basis of the 026 Nuclear Security Technical Document (NST) Draft in a special case of a radioactive material associated facility. Besides the purposes described in the 026 NST Draft, to test the level of the NSC level inside the facility and the problems, the roots of the problems and possible conclusions in it, the main goal was to test the conformance of the guidance itself and the preparedness and attitude about the security self-assessment of the facility. Even though the direct answers and the results are not allowed to be publicized, the conclusions will be instructive for associated facilities as well as for competent authorities.
Keywords: *nuclear security culture, self-assessment, assessment, survey, focus group*

Introduction – International Experience

Fundamentals of Nuclear Security

Nuclear security [1: 15] is prevention and detection of, and response to theft, sabotages, unauthorized access and illegal transfer or other malicious acts involving nuclear and other radioactive materials and associated facilities and activities. The IAEA Nuclear Security Series (NSS) publications [2] are consistent with the nuclear security related international instruments such as the Convention on the Physical Protection of Nuclear Material [3] and the Amendment thereto, [4] the Code of Conduct on the Safety and Security of Radioactive Sources, [5] the Supplementary Guidance on the Import and Export of Radioactive Sources, [6] the United Nations Security Council resolutions 1373 [7] and 1540 [8] and the International Convention for the Suppression of Acts of Nuclear Terrorism. [9]

Background of NSC Self-Assessment Draft Technical Guidance

The first implementing guide level document was published by the IAEA in 2008. The NSS No. 7 [10] provides a model for nuclear security culture including the visible and non-vis-

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ible elements of NSC based on a general organizational culture model. Nuclear security culture is defined as "the assembly of characteristics, attitudes and behaviour of individuals, organizations and institutions which serves as a means to support and enhance nuclear security." [10: 3]

In 2013, the IAEA published NSS 20, [11] "Objective and Essential Elements of a State's Nuclear Security Regime, Nuclear Security Fundamentals." Essential Element 12c of NSS 20 is "Developing, fostering and maintaining a robust nuclear security culture."

026 NST Draft [12] provides a comprehensive methodology for evaluating the level of nuclear security culture. Deductions in this publication focus on security culture assessment in organizations operating facilities using or storing radioactive material.

The IAEA Nuclear Security Plan for 2014–2017 (Plan) reaffirms that a sustainable nuclear security culture is needed to manage activities involving nuclear and other radioactive materials. Under the framework of the IAEA Plan, implementing sustainable nuclear security in States requires adequate time for the institutionalization of a functioning nuclear security culture. The Plan provides a roadmap for achieving these goals. [13]

The fundamental of the Hungarian regulation is Act CXVI of 1996 on Atomic Energy [14], which contains a basis for the peaceful use of nuclear energy. The fundamental document of nuclear security regulations is Government Decree 190/2011 (IX. 19.) [15] on physical protection requirements for various applications of atomic energy, and on the corresponding system of licensing, reporting and inspection.

By the No. 7 – Implementing Guide on Nuclear Security Culture, the Hungarian Atomic Energy Authority (HAEA) also published the versions of the guidance, the HAEA: FV 6. [16] Guidance of Nuclear security culture and by the NST 026 the Hungarian Guidance draft: Nuclear security culture self-assessment. [17]

NSC Self-Assessment – Concept and Practice

The purpose of nuclear security culture *self-assessment is to provide a clear picture of how much nuclear security is part of the organization's culture.* Security culture self-assessment's key role is to develop the organization's nuclear security culture:

- it has a heavy focus on perceptions;
- regular assessments help managers to understand the reasons for an organization's patterns of behaviour in certain circumstances, because the first step is up to them to take. At first they have to show a good example for the employee;
- it helps to devise optimal security arrangements by understanding the deeper ground;
- it also helps to predict how the workforce may react to the unknown.

The process involves evaluating the key characteristics of nuclear security culture in the organization by comparing what the culture is at present to their optimal parameters. Such evaluations must specify certain indicators as reference levels. The nuclear security culture indicators perform four main functions:

- monitor the level of security awareness in the organization;
- determine and improve tools and procedures for mapping nuclear security;
- provide guidance for making a strategy to improve nuclear security;
- motivate the management and staff to take any actions necessary.

The main difference relating to audit-type assessments is that the intangible human elements are in the focus, not the technical issues. The results will rarely point to specific actions and still less to an immediate response. To change culture within an organisation is a long-term challenge.

Self-Assessments Methods by the 026 NST Draft

The IAEA's draft technical guidance NSC self-assessment considers the main questions why different security-related issues emerge, what the root causes of problems are and how nuclear security and nuclear security culture can be enhanced.

The 026 NST Draft describes the four basic assessment techniques to measure the level of NSC. Every method has its own advantages and disadvantages and for an optimal assessment we have to choose carefully from them. We have to take the advantages of the methods and minimize the risk of an inefficient survey. For example, we can combine the methods or make more assessments to check results and processes inside the organisation.

Interviews play a significant role in cultural assessment because they allow the flexible questioning and follow-up questions. This eases the task of getting at the deeper tenets of an organization's culture. Focus-group sessions are more effective for exploring broader security-related issues. They also yield a large amount of information over a relatively short period, but also less valid and trustworthy. Training and briefings for interviewers should ensure that they behave respectfully while showing empathy and open-mindedness. It demands the most time and effort both from the facility and the interviewers also.

The *survey* is a much more convenient way to obtain input from a large number of employees. Surveys are easy and quick to complete, helping minimize work disruptions while encouraging a high response rate. Even though it is the most cost-efficient way to assess the workers it is the hardest work to make it relatively valid and trustworthy.

Document reviews can take place prior to self-assessment to familiarize the team with past security incidents and help to determine NSC. There are three types of document reviews. Reviews can inquire into *(a) the literal meaning of documents*, helping the team to determine certain work to be carried out; *(b) interpretive meaning* that goes beyond the document's literal wording into the overall context; and *(c) inferences* that provide wider context and an opportunity to achieve far-reaching conclusions. A document review is a labour-intensive process with administrative limitations, because not every document is available.

The purpose of conducting *observations* is to record actual performance and behaviours in real time under different circumstances, especially during normal work, training sessions and emergency drills. Observations are a well-established, time-tested, commonplace tool for managing security. There are two basic approaches to observations as a tool of security culture self-assessment: fact-based management observations and opinion-based cultural observations. Observation can help not only to understand data collected through other methods, but also to design questions for valuable insights. [12]

Self-Assessment in Hungary

Gamma Technical Corporation

GAMMA Technical Corporation is located in Budapest, Hungary and was founded in 1920, and during its 90-year existence became one of the largest companies producing NBC defence instruments in the Eastern-European region. The reputation of the facility has been established by the expertise of engineers who contributed to the field's technical development with many inventions and registered patents. [18] Gamma was the first in Hungary to develop and produce nuclear and chemical defence instruments in the 1960s, and is still continues to develop instruments with the purpose of protection, for the use of the Hungarian Defence Forces, the Hungarian Civil Defence and for environmental protection.

Nowadays, in addition to the production, maintenance and authentication of earlier developed instruments, the company develops and introduces several environment protection, civil defence and military used instruments and devices. Among them are civil and military use radiation measuring devices, scintillation crystals, monitoring systems, and meteorological stations, KML ADR, RDO–3221 KOMONDOR Light Armoured Vehicle. [18]

The common characteristics of devices based on military requirements are accompanied with customer friendly services. The 5th generation of Gamma's instruments aims at exploring the sources of these hazards, considering also NATO compatibility requirements. Products are developed for reliable operation even under extreme environmental conditions and are suitable for being used as an integral part of other systems. Manufacturing and development are maintained in accordance with ISO 9001:2009 and NATO AQAP 2110:2006 quality control systems. [18]

Process of the Preliminary Self-Assessment

There are some features that influence the method of the assessment; the most important ones are the size of the organisation, the composition of its workforce and the current and projected security risks. The cost of the self-assessment programme should be continuously estimated and factored into the organization's budget. A good self-assessment is a step-by-step process which combines methods and takes as many of their advantages as possible and avoids disadvantages and unneeded costs.

The preliminary self-assessment consists of similar elements to the final self-assessment, which is described in the 026 NST Draft. First stage of the process is to launch a self-assessment team, which in this case consists of the author, and in professional questions I recourse continuous consultations to Horváth Kristóf.[5]

The next step was to decide which method would be sufficient for the preliminary assessment of Gamma Technical Corporation. Considering the presented methods a focus-group session seemed to be the best decision with competent personnel as the radiation-protection officer, a specialist who is responsible for the physical protection and another manager, who has previous nuclear power plant working experience.

5 Deputy Director General of the Hungarian Atomic Energy Agency

Before the assessment a short presentation was delivered about nuclear security, NSC and the upcoming development of self-assessment technical guidance and regulations. The optimal methods of the assessment and the personnel attitude to the assessment were discussed. According to the previous expectations, the facility was cooperative and proactive about the forthcoming assessment and the innovation possibilities. During the preliminary self-assessment certain demands of the facility had to be taken into consideration, for example sound-recordings were not allowed, it was performed as time efficiently as possible, and the results were not allowed to be publicized, only the conclusions about the method.

Regarding the implementation, a questionnaire was sent to the participants before the focus-group session and they had a couple of hours to fill it in and think over their own questions. Because of the small number of participants and the effect of several years' experience of working together and the friendly atmosphere made it possible to ask direct questions and for straightforward answers in order to clear accidental misunderstandings. As described, it was not especially the actual answers, rather more the reactions to the questions and comments that were to be obtained as the purpose of the assessment.

Main Assignments and Questions of the Preliminary Assessment

Examples for security culture indicators of self-assessment were defined in the 026 NST Draft, Appendix II: "Security culture indicators for self-assessment". Accordingly, the preliminary assessment consisted of the following indicators: Visible Security Policy; Clear Roles and Responsibilities; Performance Measurements; Work Environment; Training and Qualifications; Work Management; Information Security; Operations and Maintenance; Determination of Staff Trustworthiness; Quality Assurance; Change Management; Feedback Process; Contingency Plans and Drills; Self-Assessment; Interface with the regulator (and law enforcement bodies); Coordination with off-site organizations; Record Keeping. [12: 33–44]

The questions were purposely very similar or almost the same as in the related appendix and between three and five questions were asked for every indicator. The method of the sent questionnaire (which was the theme of the focus-group session) was a six stage relating scale. The purpose was to allow a future comparison of the self-assessment method with other nuclear associated facilities, since Paks Nuclear Power Plant Ltd has been already making safety culture self-assessments, and as a part of such safety culture self-assessments a method of a six-scale survey is used. The same method was used in 2014 for an initial NSC survey in order to facilitate the analysis and comparability.

Even though the questions and the indicators were the same as the self-assessment of the 026 NST Draft the difference lay in the purpose of the assessment. The previously described assessment in the 026 NST Draft tested Nuclear Security Culture. Contrary to that, my intention was to test the method of the introduced assessment in the 026 NST Draft, the recent knowledge of the staff about nuclear security and the attitude of the facility for the up-coming assessment.

In the interview my main questions were the followings:

- How is the facility related to the current assessment and the following survey?
- How well are the personnel aware of the attitudes about the competent authorities and legal background?
- How is the top manager related to physical protection and the self-assessment?

- What is the level of physical protection and Nuclear Security Culture?
- What are the differences between the level, knowledge and requirements in comparison to Paks Nuclear Power Plant Ltd?
- Does this kind of facility need an outside expert or specialist for the first self-assessment?

The purpose of the questions was almost the same as in the 026 NST Draft, in order to test the knowledge and the self-confidence of the personnel.

Conclusions

The first problem that was met in the focus-group session was the following question, which may also be an interesting challenge in future assessments. *"Staff members understand their roles and responsibilities for nuclear security and are encouraged to seek clarification when necessary."*

The purpose of indicators reveals the problems inside the organisations, which needed to be enhanced. At the same time, when indicators (especially this one) ask directly about a reprehensible attitude or act, it lays a big charge on both the assessment specialist and the personnel too. It is hard to evade such a direct question and not think it will be followed by direct consequences, maybe punishment by the management. In case of a written form it is evidence for the authorities and other organisations. We must find the best compromise between the availability and the trustworthiness of the assessment and usually the assessment specialist should solve this problem.

The conversation cleared up other issues. Even though the personnel is familiar with security issues, have only limited contact with international and nuclear power plant specific security definitions. One of the main conclusions was that in such facilities, that have limited access to nuclear power plants and nuclear security, for the initial and probably for the subsequent self-assessment an outside specialist is necessary. Because of the limited resources it is an important dilemma to decide whether it is worth permanently maintaining such a specialist with the needed knowledge or periodically designating someone to "diagnose" the "illness", the weak points of the NSC. Besides those described above, every case is a unique situation and it should be the results of cooperation between facilities and authorities to decide if external specialist is needed to be engaged or not.

An achievement was that personnel was positive about possible changes and innovations. The physical protection and security is one of the most important requirements of the facility. Not only the security of radioactive materials, but for whole product scale information protection and safeguarding are primary considerations. Regarding this, the high cooperation intention was not unexpected. Because the preliminary assessment was only with the experts in this field, further analysis is needed to declare this result on the whole organisation.

Another possibility to enhance nuclear security culture is to conduct a wider self-assessment analysis to reveal past security incidents and their root causes. These incidents could be the result of physical, technological or human errors. The objective of nuclear security culture development is to acquire such qualities of personal behaviour as personal accountability, adherence to procedures, teamwork and vigilance. It would be useful to start the self-assessment by examining some of these qualities and their derivatives. It depends on the size of the facility, but it would be useful to analyse the official and unofficial communication

(also with outsiders), connection net and hierarchy inside the organisation. The goal of the up-coming assessment is to check these hypothesises and questions. Subsequently, a three-tiered outcome model must be done, to translate results and possible improvements to the language of the personnel. And the most difficult issue is Stage 6 of 026 NST Draft, to discuss preliminary results throughout the organization and submit a final report for developing a follow-up action plan.

Expectedly the conclusions of the preliminary assessment and the self-assessment will be instructive for the associated facilities and also for the authorities.

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Industrial Safety Analysis of Accidents Involving Ammonia, with Special Regard to Cold-Storage Facilities

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Anhydrous ammonia is widely used in industry and it is one of the most dangerous materials produced, transported and used in largest quantities. From the viewpoint of industrial safety, this material is essential, as it is present at almost every branch office of disaster management, and the number of major industrial accidents involving ammonia has recently increased. In fact, few articles and literature deal with this issue.

The main purpose of the article is to remedy this deficiency as well as to provide professional help for first responders, members of the professional authority and the higher education students in the field of industrial safety.

Keywords: *ammonia, ammonium hydroxide, chemical reconnaissance, respiratory protection, protection of body*

Introduction

Before we dive into chemistry, practical industrial safety and chemical protection, the definition of first responder is in order. A first responder may be a firefighter (professional, volunteer or industrial), but according to the Government Decree 219/2011 (X. 20.) Hungarian on the protection against major accidents involving dangerous substances, the first responder may also be a "civilian" member of the so-called industrial intervention team at establishments obliged to develop an internal safety plan and an Operations Security Plan. [1] This article attempts to make this work easier and to offer a practical assessment of a dangerous material from the viewpoint of industrial safety and the related emergency planning procedure.

Anhydrous ammonia is one of the inorganic substances produced in the largest quantities. As a direct result of its wide use, industrial safety professionals and counsellors definitely encounter it at some point in their work. Establishments producing ammonia start with the production of the liquid anhydrous ammonia and then they manufacture the aqueous solution of ammonia, which is a raw material in chemistry acting as an intermediate and a processing aid in industry (mainly chemical industry). The wide range of uses of ammonia and the fact that it is often stored, transported and used in great amounts in residential areas make this topic an imperative issue.

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The paper attempts to present the use of anhydrous ammonia in cold storage facilities from the viewpoint of industrial safety, from planning for emergencies to emergency responses. Due to the complexity of the topic, the article will be published in two parts. The first one describes the physical and chemical hazards of ammonia together with the evaluation and impact analysis of safety risks, whereas the second one deals with emergency response. (Table 1)

Table 1. The summary of data needed to label anhydrous ammonia.
([2] [3], compiled by the authors)

UN number	1005
CAS number	7664–41–7
R-phrases	R10 Flammable R23 Toxic by inhalation R34 Causes burns R50 Very toxic to aquatic organisms
S-phrases	S1 Keep locked up S2 Keep out of the reach of children S9 Keep container in a well-ventilated place S16 Keep away from sources of ignition – No smoking S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice S36/37/39 Wear suitable protective clothing, gloves and eye/face protection S45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible) S61 Avoid release into the environment. Refer to special instructions/safety data sheet
H-phrases	H221 Flammable gas H280 Contains gas under pressure; may explode if heated H314 Causes severe skin burns and eye damage H331 Toxic if inhaled H400 Very toxic to aquatic life
P-phrases	P210 Keep away from heat/sparks/open flames/hot surfaces – No smoking P260 Do not breathe dust/fume/gas/mist/vapours/spray P273 Avoid release into the environment P280 Wear protective gloves/protective clothing/eye protection/face protection P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower P403+P233 Store in a well ventilated place. Keep container tightly closed P501 Dispose of contents/container to hazardous or special waste disposal collection site
GHS/CLP pictograms	

Industrial Uses

Main uses of ammonia:

- as an intermediate: production of nitric acid, fertiliser, bases, dyes, pharmaceuticals, vitamins, cosmetics, synthetic textile fibres, plastic;
- as a processing aid: photographic processes, cooling systems, insulation, ink cartridges, toners, diluents and paint removers, detergents, textile dyeing and treating;
- as a treating substance: treating paper, leather, rubber/latex, wooden and metal surfaces, electronics and semiconductor industry.

Further uses:

- a laboratory chemical, refrigerant (in cooling systems), heat treatments, ph-regulation and neutralisation, processing aid in food production;
- in the following products: water treatment materials, fertilisers, diluents and paint removers, photographic chemicals, detergents, leather and other surface treatment materials;
- in the following products: diluents and paint removers, insulation materials, detergents, cosmetics, hygiene products;
- excavation of metallic ores, removal of nitrogen oxide and sulphur dioxide (as a reducing agent).

The list above clearly demonstrates the wide range of uses of ammonia, but for the purposes of our paper, the main use is industrial refrigeration, as it affects the relevant division of almost all county directorates for disaster management.

Physical and Chemical Properties of Ammonia and Ammonium Hydroxide

The response team must bear it in mind that when anhydrous ammonia mixes with air, it reacts with moisture in it and ammonium hydroxide is formed usually in the form of a vapour-like cloud. (Table 2)

Table 2. Brief summary of the physical and chemical properties of ammonia and ammonium hydroxide. ([4] [5], compiled by the authors)

Properties	**Chemical compounds**	
Name	ammonia	ammonium hydroxide
Formula	NH_3	NH_4OH
Physical state; appearance	colourless, gas or dense, liquefied gas with distinctive, pungent odour, in the presence of water it can form ammonium hydroxide	colourless liquid with pungent odour, basic, unstable
Physical properties	Boiling point: –33 °C Freezing point: –78 °C Solubility in water at 20 °C: 54g/100ml Vapour pressure at 26 °C: 1013 kPa Relative vapour density (air = 1): 0.60 Autoignition temperature: 651 °C Explosive limits, volume % in air: Lower explosive limit: 16% Upper explosive limit: 25%	Boiling point: 37.7 °C (25%) 24.7 °C (32%) Freezing point: –57.5 °C (25%) –91.5 °C (32%) Solubility in water: in all proportions
Chemical hazards	Ammonia is a strong base. It reacts violently with acids and it is corrosive. It reacts vigorously with oxidants, halogens. It is corrosive to copper, aluminium, zinc and their alloys. While dissolving in water, it produces heat.	It may react violently with acids, strong oxidants, halogens, acrolein, acrylic acid, dimethyl sulphate, silver nitrate, silver oxide, hypochlorite, mercury, etc. Ammonia solutions are corrosive to copper, zinc, aluminium and their alloys.

Operation of Vapour-Compression Refrigeration Systems

Vapour-compression refrigerators remove heat from the enclosed space and transfer it somewhere else (to a clearly separated place) by circulating a refrigerant (characterised by appropriate properties). The refrigerant enters the compressor as a vapour, which raises its pressure and temperature as well. This high-pressure, hot vapour becomes superheated in the compressor. Next, the superheated vapour reaches the condenser, which is a special heat exchanger where vapour is cooled with cooling air or cooling water, and then it is condensed. The refrigerant is routed through the condenser, a coil or several parallel tubes, which rejects the heat extracted from the system to water or air. The condensed, liquid refrigerant then passes through a throttling device (a restriction with a small orifice, a capillary tube or a controllable

expansion valve). In the throttle, an adiabatic process occurs: the pressure of the liquid refrigerant suddenly drops and one part of it evaporates, which decreases its temperature to lower than that of the enclosed space. (This phenomenon is similar to the well-known process that occurs when a carbon-dioxide cartridge is pierced: the temperature of the cartridge drops so abruptly that air moisture around the leak freezes.)

The evaporator transfers the heat absorbed from the enclosed space to the circulating refrigerant and finally it is rejected in the condenser. At the end of the refrigeration cycle, the saturated refrigerant vapour leaves the evaporator and enters the compressor once again, and the whole process is repeated. [6]

From the viewpoint of the response team, it is important for them to become acquainted with the whole cycle, including the stages of compressed gas, compressed liquid and vacuumed gas. (Figure 1)

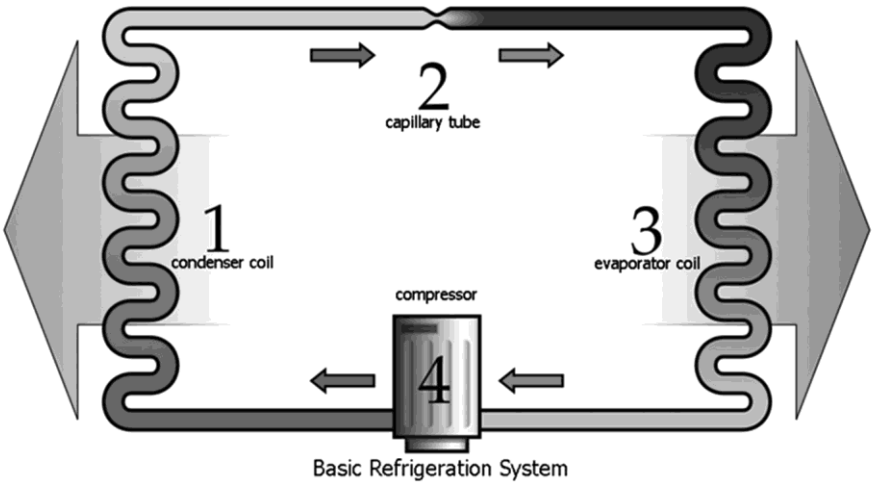

Figure 1. Simplified representation of a typical single-stage refrigeration system. Condenser coil (1), capillary tube (2), evaporator coil (3) and compressor (4). [7]

Potential Accidents and Related Hazards of Refrigeration Systems

The risks are basically associated with the physical and chemical characteristics of refrigerants in addition to the pressure and temperature in the refrigeration cycle. Inadequate preventive measures and responses might lead to the following events:

- damage or even explosion of fittings, including the risk presented by flying particles;
- release of refrigerant as a result of fracture or refrigerant leak due to poor design and maintenance, improper operation, repair or recharge;
- fire risk resulting from leaking refrigerant, which is flammable and explosive.

Anhydrous ammonia and its chemical compounds with oils, water and other substances in the refrigeration equipment chemically and physically affect materials in the equipment, for example as a result of pressure and temperature. If the chemical compounds have dangerous

properties, they may directly or indirectly endanger the staff, other equipment, the environment or even the population. The dangers coming from the pressure and temperature conditions are basically rooted in the combined presence of gas- and liquid-phase. Furthermore, the condition of the refrigerant and the various fittings depends on external effects as well, in addition to internal processes.

The Following Dangers Are Worth Mentioning

Due to direct effects of low temperature:

- materials become rigid;
- freezing of liquids in the closed system (water, saltwater, etc.);
- thermal stress;
- change in volume as a result of change in temperature;
- personal injuries as a result of low temperature.

Due to high pressure:

- increased condenser pressure caused by inappropriate cooling, the partial pressure of uncondensed gas or the presence of refrigerant oils or liquids;
- increased saturated vapour pressure caused by significant excess heat getting in the refrigeration system, for example when defrosting air-cooled water chillers;
- volume change (expansion) of the liquid refrigerant in closed space without the presence of gas, caused by the increase in external temperature;
- fire.

Due to immediate effects of the liquid phase:

- overcharged refrigeration system;
- presence of water in the compressor as a result of siphon effect or condensation in the compressor;
- liquid slugging in the pipeline;
- poor lubrication as a result of oil emulsion formation.

Due to release of refrigerants: [8]

- fire;
- explosion;
- toxic effect;
- irritation;
- frostbite;
- suffocation;
- panic.

Industrial Safety Assessment [9] [10]

In this part of the paper, the industrial safety assessment of below-tier establishments is introduced. In Hungary, the use of ammonia in cold storage facilities does not exceed the threshold level.

Threat presented by below-tier establishments is assessed on the basis of 5.3 and 5.4, Appendix 7, of the Government Decree 219/2011 (X. 20.).

To assess the threat of fire and explosion to assembly buildings, the extent of the consequences of major accidents need to be taken as the basis first. The threat is acceptable without further examination if thermal radiation caused by the fire does not exceed 8 kW/m^2, and the shock wave caused by the explosion does not reach 10 kPa in the given dwelling area or assembly building.

Threat of exposure to toxic materials without further examination is acceptable provided that expected death rate in case of a major accident is not higher than 1%.

The possibility of an accident has to be examined if its frequency reaches 10^{-8}/year. To determine this value, frequency analysis is used, which is mostly performed by HAZOP method in Hungary.

If the death rate of an incident with frequency over 10^{-8}/year is higher than 1% in a dwelling area or in an assembly building and exposure to thermal radiation is over 8 kW/m^2 or 10 kPa, the threat is considered non-neglectable.

In the case of a non-neglectable threat, responsibility is determined with the help of quantitative risk assessment as part of the standard assessment procedure in dangerous establishments. Individual and societal risks that come from the activities in the plant are expressed and evaluated according to Appendix 7, of the Government Decree 219/2011 (X. 20.).

Data collection and organisation, preliminary analysis

Before carrying out the analysis, it is necessary to obtain the instructions for use and maintenance of the technologies of the establishment. Based on the available documents, missing information can be requested from the establishment under investigation.

Compiling a list of hazardous materials present

In accordance with Appendix 1 of the Decree, the first step of the analysis is to identify which hazardous materials are present and then to carry out calculations to identify the establishment.

The general guidelines of the list are the following:

- In the case of a refrigeration system, the nominal (maximum) net weight has to be taken into account.
- The operator makes conservative estimates on the amount of the hazardous materials present.

According to the calculations, it can be determined whether the given materials listed in Chart 1, Appendix 1 of the Government Decree 219/2011 (X. 20.) reach the threshold level or not in the establishment under investigation. The identification numbers regarding the threshold levels are determined based on the summation rule laid down in Appendix 1 of the Decree.

If the result of the calculation does not reach 0.25, the establishment do not belong to any of the categories. However, due to the 1000kg of ammonia present, it has to be regarded as an establishment of high priority (and below-tier establishment) in line with Act CXXVIII of 2011 (Disaster Management Act).

Identifications of Dangerous Facilities

1. Analysis based on selection and indication numbers

Examining the characteristics of materials present in the establishment and potential inherent risks presented by them.

2. Excluding certain materials

In accordance with Paragraph 6, Article 9 of the SEVESO Directive and Appendix 6 of the Government Decree 219/2011 (X. 20.), safety reports and the quantitative risk assessment included do not need to contain certain substances which are present (in the plant or in any division of the plant) only in a state that cannot generate a major accident hazard. In the analysis, none of the dangerous materials present can be omitted or neglected as they might affect the requirements for exemption.

3. The selection process

If the safety plan is included in the Operations Security Plan, it is not necessary to consider the threat posed by each division of the establishment. However, it is essential to take into account the divisions that significantly contribute to the overall threat presented by the establishment. A selection process, the so-called *Dutch* method[5] was developed, which is based on the quantity of the materials present in the establishment and the technological conditions. Its purpose is to select establishments that need to undergo a detailed quantitative assessment. The selection process consists of the following steps:

- The plant has to be divided into separate establishments. In each establishment, the quantity of the material, its dangerous characteristics and the nature of the technology define the establishment's own risk. Indication number "A" signals the extent of the establishment's own risk. This number is calculated according to the procedure described below.
- The danger presented by an establishment is calculated for several points in the vicinity of the plant. The indication number and the distance between that point and the establishment determine the hazard itself. The level of the risk in the given point is expressed in the selection number S.
- An establishment needs further analysis if its selection number exceeds one at any point on the boundary of the establishment (or on the bank opposite the establishment) and this number is over 50% of the highest calculated selection number for all establishments at the point nearest to the residential area (that is already existing or just planned to be built in the future).

Effects of toxic substances can reach considerably farther than the effects of flammable substances. If we only select establishments with flammable substances, and the selection number of establishments with toxic substances is similar to the highest selection number, the establishment with toxic substances must not be neglected in the quantitative risk assessment.

5 Reference Manual published by the National Institute of Public Health and the Environment (RIVM) in the Netherlands is recognised as benchmark in our analysis. The purpose of this publication is to offer a uniform approach to the emerging practical issues in SEVESO analyses. Paragraph 3.4.6.10 of the literature cited deals with toxic gases with low reactivity despite being flammable and explosive (allyl chloride, epichlorohydrin, carbon monoxide, ammonia, etc.)

In the selection process, the database on the quantity of hazardous materials is consulted and those materials that are taken into account which are considered dangerous by Government Decree 219/2011 (X. 20.) on the detailed rules for certain procedures and activities related to dangerous substances and dangerous preparations. The results of the assessment are presented in a table.

Consequence analysis

To simulate the release of the toxic gas, the dispersion modelling common in disaster management is applied and the results of the calculations are illustrated on a map. (Figure 2)

Specifying the Zone of Ammonia

Probit regression

The expression "probit" itself was created by the blending of probability unit. It is a commonly used unit in statistics to study the relationship between dose and effect, that is, to what extent (in percentages) certain doses trigger a reaction in the experiment. We start from the hypothesis that sensitivity of the individuals is log-normally distributed, so the logarithm of the doses follows a normal distribution. The distribution shows the relative frequency of a reaction at a certain log-dose value. To start with, the percentage is transformed into a probit by dividing the standard normal distribution into parts with a lot of similar cases. To avoid negative numbers we add 5 to the normal deviate and the result is called the probit. Tables are available to generate probits. [11]

$$P_{let} = 0{,}5 \cdot \left[1 + erf\left(\frac{Pr - 5}{\sqrt{2}}\right)\right]$$

$$Pr = A + B\ln\left(\int_0^t C^N dt\right)$$

P_{let} = probability of lethality;
Pr = probit value;
C = concentration [ppm];
n = substance-specific exponent;
t = the exposure period;
A and B are constants.

The relationship between the probability of lethality and the concentration of NH3 can be determined with the help of the probit values proposed by the *Rijksinstituut voor Volksgezondheid en Milieu* (RIVM):

A = –15.6; B = 1; N = 2 (Determining the toxicity of ammonia.)

The proposed probit values can be used if the concentration is expressed in units of mg/m^3.

- Red zone represented on the map: after 30 minutes the expected probability of lethality = 1 (it corresponds to NH3 concentration of 4348 mg/m^3)
- Ochre yellow zone: after 30 minutes the expected probability of lethality = 0.1 (it corresponds to NH3 concentration of 2509 mg/m^3)
- Lemon yellow zone: after 30 minutes the expected probability of lethality = 0.01(it corresponds to NH3 concentration of 1678 mg/m^3)

The consequence analysis of a hypothetical scenario by applying the methods above

The 8.4 m^3 separator tank in the refrigeration system contains ammonia to 80% of the total volume, when the tank splits open and scenario G.1 follows (found in Table 3.3, CPR 18). As a result of a LOC event, 5168 kg of ammonia at –8 °C is released. The pressure in the tank is 3.15 bar. Ammonia is a gas lighter than air, so its spread is defined by meteorological conditions, especially the external temperature. Typically, in winter ammonia leaks form "thick clouds". (Table 3)

Analysis conditions:

- To illustrate the most serious consequences, D5 atmospheric conditions are hypothesised, following internationally accepted practices.
- The value of the articulateness of surface corresponds to industrial or suburban areas.

Table 3. The brief summary of a hypothetical incident involving ammonia.
(Generisk Kft, compiled by Kocsis Zoltán)

Characteristics of the scenario	**Value**
Total amount released	5168 kg
Amount immediately released in the atmosphere	448 kg
Release time	immediate
NH3 flux	–
Air temperature	20 °C
Humidity	50%
Wind speed	5 m/s
Pasquill class	D
Altitude of release	3 m
Articulateness of surface	0.03 m

Toxic effects of ammonia

The program is called *Breeze Incident Analyst* used for modelling.

The probit relations between concentration and lethality are calculated on the basis of the above mentioned description.

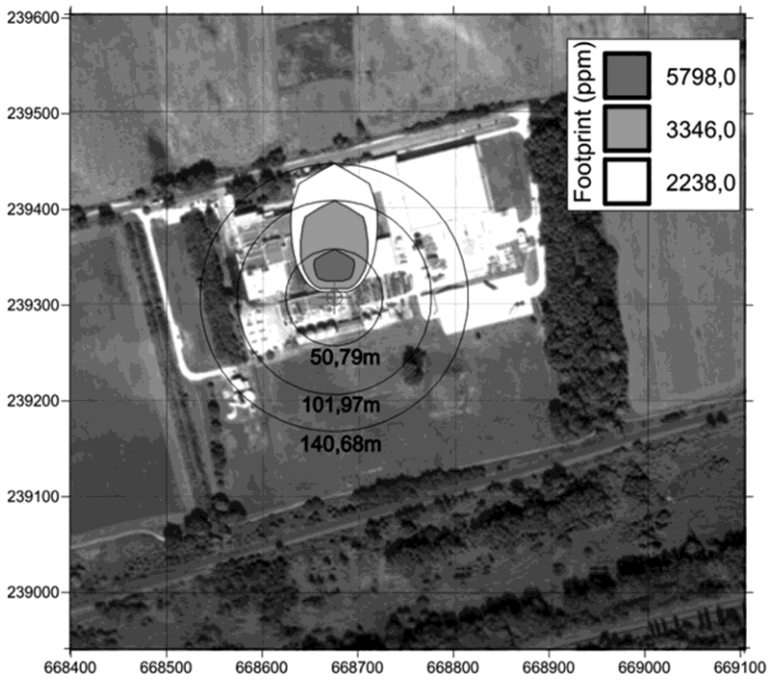

Figure 2. The map represents the various danger zones of a hypothetical incident involving ammonia. (Generisk Kft, compiled by Kocsis Zoltán)

Based on the results of the consequence analysis, the following statements can be made: (Figure 2)

- The radius of zone P = 1 (4348 mg/m^3) [5798 ppm] at 1 m height is 51 m.
- The radius of zone P = 1 (2509 mg/m^3) [3346 ppm] at 1 m height is 102 m.
- The radius of zone P = 1 (1678 mg/m^3) [2238 ppm] at 1 m height is 141 m.

Summary

All potential threats posed by anhydrous ammonia in cold storage facilities are discussed in the paper. The procedures supporting risk assessment of the establishments are described, namely the threats to personnel or even the population in the surrounding areas. Dispersion modelling can predict the vulnerability zones and the probable consequences of an accident involving anhydrous ammonia, which provide details for a thorough operational safety plan essential for the mitigation and relief following accidents in cold-storage facilities.

These plans are advantageous because no unnecessary safety costs are imposed on the operator. Disaster management and the emergency unit of the establishment can prepare for the risks and their consequences. The personnel and the affected population, being aware of the risks, can be properly prepared to follow necessary instructions smoothly (e.g. evacuation) coming from the authorities.

The paper describes an example of a potential event involving ammonia and depicts it on a map together with the solution.

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The recommendations and guidelines of Rijksinstituut voor Volksgezondheid en Milieu (Netherlands National Institute for Public Health and the Environment were applied in this paper. (www.rivm.nl/RIVM)

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Thoughts about the "Magyary Programme 2020"

GÁL András Levente[1]

Our aim with this study is that those readers interested in the Hungarian govern- mental work of 2010–2014, and who intend to assess it but are not familiar with reading in Hungarian shall get an easily understandable overview from an internal perspective of the development of Hungarian public administration. In order to achieve the above this essay is a summary of the new approaches that – regarding the re-thinking of the Magyary Programme – are worth considering at the end of the previous government term and necessary before the EU programming period
2014–2020. To this end it continues to develop and elaborate the concept of the Good State of the Magyary Programme, in short it scans the results and deficien- cies in certain intervention areas of the past four years (organization–task–proce- dure–staff). Finally it summarizes the major challenges of a new type of Magyary Programme 2020 in 7 points, which the Hungarian state and Hungarian public ad- ministration, as a part thereof, shall respond to – as far as the author is concerned. **Keywords:** *Magyary Programme, Good State, government, public administration*

Introduction

From a nearly four year perspective it is obvious that in the spring of 2010 Hungarian po- litical life got a real, "historic" opportunity by popular mandate to renew and improve the operation of the state including public administration. In a country which, over the past more than 20 years since the regime change, arrived at such a vulnerable situation that jeopardized its actual sovereignty. The voters' high expectation was the background of the two-third majority possessed by the centre-right political power governing. The voters' expectation was – of course, roughly summarising the internal ratios and nuances – that the government shall find a solutions for the development of the Hungarian economy and certain sectors, so that Hungarian people's lives will noticeably improve and thus their self-esteem in relation thereof. Briefly the state shall do its duty and serve the nation rather than the interests of a narrow elite, foreign expectations or abstract doctrines. The economic crisis of 2008 revealed in every field of life that a governmental operation lacking harmony with social reality is paralyzed dramatically fast and is unable to withstand the distortions of external and inter- nal interests. The citizens and leaders of enterprises tormented by the economic crisis, from many points of view, could not show generosity in the issue of how much strength lies in the government beyond the measures providing good prospects and a life fit to live, all within a reasonable time. However, the composure of the members of the government shall illustrate

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– due to the very spectacular failure of the distribution models of Kádár[2] and Medgyessy Péter[3] – that the state – and its economic operation as a part thereof – needs to be rebuilt, so that its measures and renewals not only meet the requirements of today, the perspective of some (4) years, but also of the traditions of the Hungarian state development – by reason of firmness –, and – by reason of persistence – the ever faster emerging challenges of the future.

There were three further characteristics of the situation of the spring of 2010. On the one hand, there was neither time nor was it possible to gain time; on the other hand, some leeway had to be provided in almost every significant field of public administration and economic policy, because this was the only possibility against time. Thirdly, the sound of the unrivalled experience of the first Orbán administration[4] – and partly the Antall administration[5] – echoed in the ears of the leaders charged with the re-organisation in 2010: no uneasy compromise shall be made because the institutions of the state, the same way as human joints, are quickly eroded by sprained operation. It was in connection with the fact that those who remembered the blockade of the taxi drivers, the campaign about bread for 3.50 HUF, the "expertise" nostalgia, and the referendum of dual citizenship knew that proactive communication is needed while a series of governmental measures are being taken, the issue of what is done and why it is done by the government has to be explained to the people at a good pace, honestly, with appropriate media and time-energy efforts – emphasising consultations. Slogan brevity has to be used to express first the problem, and then the solution, because if the solution is there right away it will often cause a problem.

Besides the activist state image – this is how it was described, among other terms – the problems with public burdens (crisis taxes), indebtedness (deficit), the pension system (un- noticed speculative risk, high costs), and employment (possibility of work instead of the dole as soon as possible) had to be defined.

The renewal of the state has extended to almost every field of its operation. It was this overall transformation in both width and depth (from the Fundamental Law to medicine supply) which made the evaluators, who hardly knew the external and real voters' demands, answer with harsh criticism. Nevertheless, it is noteworthy that the Hungarian public opin- ion – mostly supportively – coped with the difficulties and adapted to the changes, caused by the renewal, with patience, compared to the neighbouring states or the reception of the reforms following the regime change. It was a great opportunity in public administration that besides the disciplined governmental two-third majority no professionally undemanded compromises had to be made which would merely be interpreted in a power-technique way, but plans could be made and execution could be carried out in a principled way. We can say this without any professional arrogance and with the acceptance of the role of the *politicum* towards public administration, on the other hand acknowledging that the best climate for administrative development is when the governance is not influenced by reasons of either fright or coalition bargains.

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2 Kádár János was a Hungarian communist politician. He was the Interior Minister between 1948 and 1950. During the revolution of 1956 he supported the Soviets. Being the leading personality of the communist regime, the era between 1957 and 1989 was called the Kádár-era.

3 Medgyessy Péter was a Hungarian politician and the minister of finance in 1986-1987. He was the Prime Minister of Hungary between 27 May 2002 and 29 September 2004.

4 It was the fourth administration after the transition, between 1998 and 2002. The prime minister was Orbán Viktor.

5 It was the first administration after the transition, between 1990 and 1994.

The situation of the domestic policy by 2009 – i.e. the foreseeability of the election results with a high degree of certainty – made it possible for the new government to carry out its necessary tasks with a series of carefully elaborated and fully prepared measures in a unique way, compared with the previous election years. It was characteristic that the analysers and evaluators (and, besides others, the opposition as well) could only follow the actions in sev- eral fields, besides the rhythmical progress going on since then, with considerable delay. Thanks to this planned powerful opening overture the political leaders of the country could finally divide the four-year term left until the next elections into two parts according to the natural order of things. The easiest way to describe the first part of the governance is the adjectival construction of "administrative governance" (i.e. structural changes, creating new systems of principles and interests, "we rethink everything"), whereas the second part is that of the "political governance" (i.e. actually presenting the results of the changes made, closing the conflicts, "we justify everything"). A significant product of the administrative gover- nance was the Magyary Programme (MP),[6] whose issue of 11.0 (10 June 2011) and 12.0 (31 August 2012) exhaustively took into consideration the occurrences and plans in the course of the renewal of public administration by creating new concepts, i.e. it was a report and strategy at the same time. Exhaustiveness meant that, according to the intent of the authors, no single administrative event or activity can be left out of the interpretation domain of the MP, in other words the Magyary Programme, with its four intervention areas, and e.g. with its definition of the so called overall task, is some kind of Mendeleev table of the rich and colourful administrative universe. It is clearly visible from other countries adopting several crisis management measures introduced by the Hungarian government since 2010, or daring to make changes simply following the Hungarian example, the Magyary Programme, which significantly founded the efficiency of the governmental work, also attracted foreign interest. The programme, however, was published with this aim, with the intent of certain adminis- trative development know-how, i.e. it is adoptable, possible to be fully or partly applied by other – occasionally foreign – public administrations and administrative operation(s) due to its character of listing the term of claims[7] and its comprehensibility. [1]

The spring of 2014 was the time of the parliamentary elections, and two further elections (European Parliamentary and local elections), and thus it was the start of a new government term on its merits following 2014, including administrative governance and, at the same time, a new seven-year programming period of Hungary as an EU member began. Based on the above it is time to prepare a broader strategy different from the yearly Magyary Programme,

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6 ibid. http://magyaryprogram.kormany.hu/

7 1. a program and not a plan, i.e. it develops continuously;
2. overall, i.e. it includes every phenomenon and measure;
3. understandable, i.e. learnable especially for the administrative staff;
4. addressing, i.e. it relies on the emotional commitment of those taking part in its execution;
5. is of value content, i.e. it drafts its aims along the values supporting the national development as part of professional rationality;
6. its main aim is specific and detailed: efficient national public administration;
7. it enables taking into consideration the abundance of phenomena and changes: organization-task-procedure- staff;
8. adoptable, i.e. it adopts the changes of temporarily great intensity created by politics or external circumstances as overall task (e.g. proactive communication);
9. it has a task approach, i.e. it has an accountable action plan with the task for the renewal appropriations, responsibility and deadline thereof.

which creates a common surface in the target and concept systems of the Hungarian public administration for the coming years. This renewed programme not only takes into consid- eration the internal duties but also considers: how Hungarian public administration, which has already been aware of itself, shall prepare in the medium term for the coming years until
2020, where and how it shall prove its aptitude.

This discourse is one of the studies founding the strategy of the "Magyary Programme
2020", which are being made one after the other throughout the year 2014. We suppose here- under that the readers are somewhat familiar with the bases of the Magyary Programme, so those previously described in MP 11.0 and MP 12.0 – due to the expected briefness – have only been detailed if it is especially necessary, particularly in case a new concept emerges.

The Concept of the Good State

The primary question of the Magyary Programme is one of the most exciting topics of the boundaries of administrative sciences, state theory and political sciences in the years of 2010: what makes a state good, and within this, public administration?! And if we classify it in a scientific way, of high quality, how can it be measured in order to qualify, i.e. how can an index be created that enables a temporal and/or geographical comparison.

Our first statement (1) is that the painstaking search for the good state and good-state-in- dex does have a history, which – as we will see, or rather as far as we are concerned – is partly a wrong turn and partly deficient. Every successful (sub)sectoral index (1.1) can be consid- ered an antecedent which measures the gross national income, inflation or employment. It must be obvious that, although these indexes are based on in-depth research and complex surveys, their complexity cannot be measured to the assessment and examination of the over- all operational indexes of a state. As a matter of fact, they are one of the indexes of a sector in themselves, i.e., as far as we are concerned, they are at least by three graphs, generalising levels lower than the good-state-index. Thus we have to take into consideration that it will be difficult to reach a value which can be expressed merely by a number, as, even in case of stable elements, it shall be subject to considerable discretion what measurement/qualification and weighted index number shall be considered in a summarized, aggregated value. No won- der that most of the institutes proceed by publishing long sequences/qualifications that often risk perspicuity (OECD: Government at a Glance, IMD: World Competitiveness Ranking, WEF: Global Competitiveness Report). [1]

Another determining antecedent is that almost all of the trials of the good-state-index cre- ation consist of developing competitiveness measures (1.2). It is not surprising since behind certain arts the second most global (signal) system is the international economy. As such it demands its own language, and, according to its own logic, measures the countries and states' activities in a wide – according to its ambition in a full – range. They are good and quality methods in their own way but there are three reasons why they cause a sprain if we are looking for the good-state-index by using them. One of them is (1.2.1) that it primarily takes into consideration the aspect of the economic operators, and the expectations and de- mands of the part of public good of the other two, namely the individual and any community (from family to public bodies, churches and with a priority to the nation) do not appear. The other sprain is (1.2.2) that they describe the "present". They cannot evaluate either the past, tradition determined by the actual state movement in state development and public spirit, or

the future demanding a complicated historical, political and diplomatic analysis as multiple scripts. The third sprain mainly lies in the subject (1.2.3). The international institutes carrying out these measures are determined by ideology regarding the importance they attach to the free movement of capital, or the acceptance of the protection of internal, national market. This unique modernism, alongside the values dominating the current world economic ideas, is rather impatient with the concept of nation, church or the institution of a closed hierarchical big family. Moreover, there are cases – if the objective description is phase one – where the measure is transferred to not merely a toneless evaluation (second phase), but to the third phase, the conversion and persuasion in a proactive way. We might briefly say that the evalu- ation, the creation of the good-state-index shall not only be carried out from abroad, a global height, from the enterprises point of view or in the present.

Based on the above the good-state-index being developed merely from the measures of competitiveness may sink quickly in the swamp of complexity with the development of the existing sectoral indexes so that it is not even able to comprehend the real and overall objec- tives of the state and, according to this, cannot appropriately qualify it in its entirety.

Our second statement refers to another typical method of good-state-indexing. We get the result similar to the above if we evaluate the state not as an entity organising and developing the economy but as one that is a lawmaker and creates legal certainty (2). That is, we examine how good the state is in lawfulness and equity, how fair it is. The basis of the good-state-in- dex creation, however, can be – instead of economic competitiveness – the further develop- ment and elaboration of certain international human, civil, liberty rights or anti-corruption, transparency measures. There are good (sub)sectoral indexes and statistics available also in these cases, but considering these reports the global toneless and impatient point of view and choice of value against the local facilities appear here as well. In this case it is not the big community of economic interest but rather of missionaries having the image of making the world better that we see busily leaning over the keyboard in front of the screen. Further- more, these assessments of the "defenders of basic rights" also focus on the present, "today" in the analyses, and in this case, characteristically, too much focus is put on the individual extending his/her rights of liberty (the interests of communities may be neglected), which often erodes state operability as the absolute requirement for the existence of the good state. From our point of view seeing the state exclusively as a circumstance necessarily limiting the individual leads to the fact that from a certain point of view these indexes are interesting feedbacks for the operation of the state, but they cannot be considered as a general and single standard.

This is how we get to the point that the measure and indexing of the good-state has to be carried out on a new basis. Our proposal for developing the good-state-index by elaborating and further developing the logic of the Magyary Programme in the course of the 2020 Strat- egy is as follows:

1. The definition of the concept of "good" cannot be avoided. As for our standpoint the goodness of the states, according to the logic of the state as one of the products of human culture development, is not absolute but relative, it can be closely related to the adjective "compliant", i.e. whether it is compliant with the expectations of the citizens, communities and enterprises of the state. At the same time, the extension regarding timeline 3 must be indicated: it is about the citizens, communities and enterprises of the past, present and future. Furthermore, how well does it progress as self-compliance

in the process of community and legal institution evolution of humanity and state de- velopment, in other words is it able to transmit and develop itself or does it fail and dissolve vis-a-vis other states. The same is going on in case of the state as in case an institution (university), community (a selected one) or concept (intellectual trend) is humanized, anthropomorphised, thus identifying it with the operation of the individu- al. It is done in the interest of a better apprehension and the relation of sensibility and sense. The inevitable consequence of this is that the instinct algorithms awaken, the "beastly" issue glimmers even in the depth of the dominance fight – often clarified in animal metaphors of caricatures as well – of the states: who will be bequeathed in time. Finally, the third compliance axis as the only external compliance is: to what extent does the operation of the state serve the conservation and development of mankind and a liveable earth. It could not be demonstrated better than through the example of the Chinese economic development with its unique, mainly harmful environmental side-effects. We must see that the latter two compliance axes and standards hardly ever appear in certain indexations.

2. "Goodness", as "compliance", provides that not exclusively absolute values but the values, expectations and compulsions to comply, which affect local aspects given by the citizens/communities/enterprises of the state, nation, and sometimes the global as- pects, also appear (e.g. the role of religion, family). It was exactly the religious com- munities' attitude to material goods that differed from the so called modern western attitude that showed in the first welfare surveys what effects the circumstances beyond economy have on the "mood" and performance of certain societies and even of certain enterprises, which cannot be described by macro- and microeconomic concepts (yet).
3. We consider the "state" as an institution having power, i.e. the strength of influencing and sapping will, since the predicates emerging in the Good State concept, according to the definition of the Magyary Programme, need strength and power: "it creates a balance, enables claim enforcement, and provides protection".
4. In case of state assessment we apply the conservative way in the triple division of the branches of power. Namely the governance/public administration – judiciary – legis- lation/*politicum*. In case of these three branches of power it is important to name each aim and expectation defining the overall operation, from which the particular indicators shall be broken down. Considering the parts of the checks and balances system with organisational structures we have to define briefly what the expectation is in the aspect of their appropriate operation, since some have the expectation for "goodness" similar to judiciary (constitutional court, ombudsmen), while others to public administration (self-regulatory organisations) by their nature, and others, however, enrich the interest-articulation world of the legislation with further dimensions (forums, councils to reconcile interests).
5. Regarding the "limits of the state" it is a serious dilemma in the course of the index creation that those who are asked about their well-being, satisfaction, and in this re- gard about the good and compliant operation of the state declare how they actually set the limits of state responsibility. What is the state's responsibility and why is it rewarded with a reason, and what is an improving or ruining circumstance indepen-

dent of the state? Taking into consideration the four intervention areas[8] of the Magyary Programme it shall be clear, from our standpoint, that the way to determine the limits of the state is the extending interpretation, i.e. if any state or administrative element of the above four is present the evaluation, indexation of the state has necessarily oc- curred, consequently it is enough if the state organisation, task, procedure or staff can be apprehended in the course of the phenomenon, an event which gives the subject of evaluation. [2]

1. Table. The compliance and expectation system of the Good State Index. [3]

<table>
<tr><td colspan="8">good = compliant</td></tr>
<tr><td colspan="3">internal compliance</td><td colspan="2">self-compliance</td><td colspan="2">external compliance</td></tr>
<tr><td>individual – community – enterprise (1.1)</td><td colspan="2">past – present – future (1.2.)</td><td>operability of the state (2.1)</td><td>state development and conservation (2.2)</td><td>development and conservation of mankind (3.1)</td><td>Liveability of the earth (3.2)</td></tr>
<tr><td colspan="8">state = institution of power
its parts = branches of power</td></tr>
<tr><td colspan="2">1. executive power – governance</td><td colspan="2">2. legislation – politicum</td><td colspan="2">3. judiciary</td><td colspan="2">4. checks and balances</td></tr>
<tr><td>public administration</td><td>Self-governance (in transferred governmental authorities)</td><td>lawmaking</td><td>self-regulation</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">efficient and national</td><td colspan="2">representative (democratic – plural) and life-like</td><td colspan="2">lawful and just</td><td colspan="2">1–3. according to the nature of the institution</td></tr>
</table>

The results related to the good-state-index, which were taken into consideration in the earlier Magyary Programme publications and the efficiency indexes of competitiveness and the rule of law assessed therein, are still far from the above approach. However, it is essential to bring the above, kind of deductive and the rather inductive proposals which were included in several measurements closer to each other. From this mental back and forth bridge build- ing we can successfully reach an interpretable description evaluating the good state, and after it has been comprised, the good-state-index, which is really acceptable and usable in profes- sional and political public discourse.

8 Organisation – task – procedure – staff

The First Years of the Magyary Programme

According to the expectations of the Magyary Programme the work was begun "for the sal- vation of the Nation and in the Service of the Public" in each of the four intervention areas at the same time with good revolutionary zeal in 2010. The frameworks of this essay are not appropriate to exhaustively take into consideration the results, the necessary corrections, the obstructions of progress or shortages. Thus we only review the most important ones. In the first place it is the new Fundamental Law which came into effect on 1 January 2012 and the cardinal acts, which provided state administration with a more consistent and modern frame- work than the previous one regarding both organisational and task systems. Considering the fact that by the time the Fundamental Law took effect the renewal of public administration had been in progress for one and a half years, so while drafting the Fundamental Law excit- ing and important lawmaking and empiric feedbacks might have been/were given (the legal status of government officials being removed from the general public official framework, the description of regional administrative system and its restoration with the county/district system according to the Hungarian historical traditions, re-establishing the relationship of local government and state administration regarding the tasks of public administration and institution maintenance). [4]

Organisation

Within the framework of the Magyary Programme, after having created the overall state organisational cadastre in the field of organisations, the legal and economic consolidation of state administrative organs and background institutions have been carried out successfully. This draw made it possible that the number of organisations decreased from 649 to 320 with- in a year, i.e. to more than half of it. Thus from 2011 the state administration was free from parallelisms and legal or economic disturbances, which destroy efficiency, and was able to take over the significant role of institution maintenance and law application (primarily of authority) from the local government system. The administrative task-load, which had been moved fast this way, reached its final place in the sectoral organisations maintaining insti-tutions in the first case – after the transitional task performance of the government office, and in the second round in the government office system by the establishment of the district government office / government window (one-stop-shop). There are still significant constric- tion and consolidation tasks ahead regarding the sectoral institution maintenance system and sectoral task integration, and the task integration of government offices, which were pushed to the second phase in order to maintain operability with necessary gradualness. At the same time, in case this phase is significantly delayed or fails, the efficiency improvement of the whole restructuring might be jeopardized, thus its sense might be queried if it is considered merely the concentration of power/scope. The post-assessment shall not be rejected so that after certain scopes have been reinterpreted, moved, dusted they might as well get back to the scope of local government, public body and civilian, as some kind of devolution, if the execution close to the scope justifies it.

The 8 ministries, which took over from the previous 13 or even more fragmented minis-
terial model, successfully passed the exam, notwithstanding that the centralization of several

sectors in one sector demanded considerable efforts especially from the staff concerned, after the formation of the government. The closing of the sectors (e.g. healthcare, education, cul- ture, social, sport) classically competing with each other (primarily for budgetary funding) or the opponent sectors (budget and economy development, agriculture and environmental protection, public administration and justice) in governmental and parliamentary operation made a firmer budget management more possible than before. It enabled the parallel imple- mentation of great sectoral reforms and finally set the healthy balance of sectoral interests in certain laws. The organisational realignments carried out in the government term show that in certain cases corrections were needed in order to enable a more efficient operation. Such fields are primarily the National Development Agency (NDA)[9] and intermediate bodies, the organisations dealing with innovation and the institution system of foreign economy. Certain realignments within the term can be explained by the governance split in time (administrative and political) as elaborated above, including the government control and communication being transferred from the Ministry of Public Administration and Justice to the Prime Minis- ter's Office, and later the development policy being transferred from the Ministry of National Development to the Prime Minister's Office.

It has greater and greater significance that the government officials' magistrate shall have the best possible equipment for efficient task performance, including working conditions from the placement in an office to IT tools, whether it is a computer, electronic signature or other entitlement. This was enshrined in the Ereky Plan, which was created as part of the Magyary Programme. In this field the schedule of the call for funds is slower than expected, and at several points not even the reasonable level was reached due to the – often exaggerat- ed – moderation expected from public administration (namely that according to the citizens' judgment other sectors are more preferred). It is a significant development of the past four years that according to the new task allocation between the state and local governments, the 19 counties of Hungary, primarily dealing with local development policy, will be able to cooperate with the gradually developing European Territorial Associations (EGTC/ETT), which actually establish their institutions as cross-border counties.

Task

Within the framework of the Magyary Programme, finally, the overall Hungarian state task cadastre was prepared, which was the basis for one of the most significant deregulation jobs of the past 25 years. However, it is important that the next phase of deregulation, be actu- ally noticed by the administrative customer; this still lays ahead. This is the time when the legal and enforcement regulations at decree level can be shredded further by the politically evaluated task cadastre. It gives the basis of the work that, in one of the main fields of in- duction regarding legislation, a cut never experienced before, was successfully made in the world of governmental strategies and bodies, and the order did not relax even in the second half of the term. After four years of experience we can say that the organisation and task compliance has accurately been carried out in public administration, but regarding the pro- cedure simplifications and the staff performance appraisal connected to them it was only the strategic documents that have been drafted, the new systems have not been implemented in

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the practice of daily process. Lacking this neither the majority of the customers nor the staff can feel what it is like when, according to the expectation of the Magyary Programme, the machinery of the state operates by concentrating on the task-responsible-deadline triad free from slag (without down-time, in a professional way and in a way to reach the objective – c.f. procedural guarantee). The excuse for this deficiency of the implementation of the Magyary Programme is that Hungarian public administration had to handle extraordinary realignment of authority mainly in the field of tasks in order to implement the Fundamental Law and the cardinal acts (new local government and state administrative task allocation, new public bod- ies and organs specified constitutionally). Without providing the one-time resource necessary for the restructuring and besides handling the staff redundancy exceeding 15% to keep the deficit limit as well as economic blocks Hungarian public administration has succeeded in implementing almost the whole reorganisation. The next term will obviously deal with the fine tuning and minor corrections.

The institution of the so called "overall task" has lived up to its expectations. In cases of task groups created alongside the actual, in certain cases domestic or international – but mostly temporarily existing – key demands the tousle of administration has not occurred, but public administration as an organisation adapted, reacted to it in its procedure and with the transfer of staff. This was how it acted when it was about overcoming our weakness in e-government, or when proactive communication was necessary due to the attacks on the Funda- mental Law, cardinal acts and patriot economic policy, most sharply from January 2011 on. Alongside the concept of "overall task", within the framework of the necessary legislation, the essential progress was successfully achieved without the distortion or formalism in the three further intervention areas defined in the Magyary Programme: simplification/reduction of administrative burdens, accountability/curb corruption, and providing equal opportunities.

Procedure

The deficiencies regarding the procedures have already been mentioned above. Although the administrative procedures have become simpler and the time of the procedures shorter, in ac- cordance with the Hungarian traditions of public law the political and administrative adjust- ments have been made both at government and county and district levels. However, massive improvement will only be achieved at the beginning of the term by the actual application of IT developments being implemented in the next term (electronic signature, governmental cloud computing, fully standardised service environment, e.g. records management), and by the circumstance that the elimination of parallelism and rivalry created and bore due to power technique considerations. For the future the lesson must be drawn that regarding (the NDA and the system of public procurements) the governmental resource allocation (especially the EU funds) the performance of the state improved slower than expected, which not only slowed down the economic growth but was also a chief obstacle to the renewal of state(ad- ministration). Unfortunately this is the case even if the improvement can be demonstrated in comparison with that of the previous governments.

Staff

The fourth axis of the Magyary Programme is the staff. It was crucial in the area of staff development that even at the beginning of the term – supported by a Constitutional Court decision – the civil public service was successfully lifted from the interpretation environment of employment nature, similarly to the defence and law enforcement service. Not only did it give a higher rank to those concerned but also gave the lawmaker sufficient leeway to define public service and within this the career path of the government officials[10] on new bases with high principles, and build the institution system of staff management efficiently.

It is crucial that, together with the organisational consolidation, the standardisation of staff positions and remunerations be carried out; there has been a significant change towards a fresher staff and increase in quality (the system of the Hungarian Public Administration Internship, ReGeneration). The professional ethic norms have been prepared, by the end of the term the training, further training and examination system had been renewed, and the system of residence allowance for the government officials' magistrate have been prepared. The delay is significant but reasonable, since the introduction of a scope based appraisal sys- tem elaborated in details is expedient with a new career and remuneration system belonging to it. Regarding the career path the civil staff is slightly lagging behind the defence and law enforcement staff; at the same time it is obvious that in case of the latter there has been major pressure on the government to compensate for the elimination of early retirement.

The fact that the institutions of staff management were established in time and they op- erate in a balanced way, and especially the three public professional branches being har- monised by the National University of Public Service in BA studies as well as the human resources centre of the Office of Public Administration and Justice, and that the Hungari- an Government Officials' Magistrate and the Hungarian Law Enforcement Magistrate have been set up are the guarantee that at the beginning of the next term the necessary career and staff management developments and their implementations can be carried out in accordance with the economic capacity of the country.

Magyary Programme until 2020

It is important that, after forming the new government in 2014, or at least early 2015, the an- nual issue of the Magyary Programme (14.0) similar to the issues of 11.0 and 12.0 regarding their concrete nature is prepared which takes into consideration the deficiencies and gives the method of correction and duties at close range. It is also necessary because the planning ideas of the programming period 2014–2020 and the demands of earthly reality shall coincide more accurately compared with the previous period. Besides this, some valuable work has to be done, which considers the perspective until and beyond 2020, alongside the challenges

10 The career path elements of the government officials' magistrate according to the Magyary Programme:
1. professional ethic norms,
2. scope based system,
3. recruitment,
4. appraisal,
5. career and remuneration,
6. training, further training and examination system,
7. state care.

and possibilities, where and how the Hungarian state and Hungarian public administration as a part thereof have to prove that it is really good. In other words, it is efficient and national, and able to act for the salvation of the Nation and in the service of the Public. The processing and sorting of organisation/task/procedure/staff have started to enable the state to give the necessary answers to the visible or perhaps just susceptible developments; where and how we can give answers that astonish even the judgment of history so that in the long run Hungary and the Hungarian nation progresses thereby. At the same time we shall bear in mind (by giving up our own interests only to the necessary extent) that we are members of different international communities. It is crucial that this "Magyary 2020" shows the importance of the state and its abilities in certain cases with such acuity as the frosty crystal clear awareness (even among the civilians) in the time of war how much a powerful army is worth and what it is good for.

Let us take into consideration what Hungarian public administration has to cope with, besides the everyday tasks and responsibilities that are determined by the Fundamental Law and ranging to the orders of minister as basic operation.

1. Accelerating external and internal operation and, accordingly, a dramatically decreas- ing reaction time are necessary, consequently the organisational order has to be cut and standardised further, the "administrative mechatronics" providing administrative automatization has to be established with sufficient e-government support, which re- lieves the burden of administration to an extent that enough resources and proper at- tention are given to the priority and special cases.
2. Handling the increasing influences regarding state sovereignty and the efficient opera- tion of public administration (cf. lawfulness), i.e. the relationships of domestic legisla- tion and law application, domestic and international judicial forums and international legislation, and their adversarial interaction have to be assessed continuously and from a standardised and preventive aspect. The system of administrative arbitration is worth examining after some years of adjudication experience, and also proactive and preven- tive solutions have to be found for the efforts unreasonably limiting state and national sovereignty.
3. The changing world economic competition which is becoming more and more intense, and in this regard Hungarian public administration is the maid of the Hungarian econ- omy, consequently public administration has to be a competitive advantage for the economic life and Hungarian economic policy in each of its sectors by continuously analysing the solutions of the competitors and allies more thoroughly than previously.
4. The IT protection of the citizens of the state (communities and enterprises operating in its territory), i.e. besides the military and financial/economic capacities the global IT world and its dominant actors (Google, Facebook, etc.) have become a power factor by now. Thus the matter is how the state can protect its citizens, their personality (profile) existing in and retroacting from the virtual world so that at the same time it does not over-exercise its power, does not restrain or take away popular, useful (indispensible) opportunities or applications. By now it is a priority but not an easy basic task of the state. It shall be obvious that in this new IT system much more and different tools are needed than merely data protection, and the traditional security system of privacy or consumer protection. Finally we have to be prepared that the techniques are being developed fast in order to establish the institutions, and find economic, legal and infor-

matics solutions, similarly to the era prior to the civil state, so that the citizen is with- drawn – even unwillingly – from the sovereign jurisdiction of the state. Accordingly, the state has to act with due caution and preventively primarily to protect the long-term interests of its citizens.

5. Providing natural and energy sources, i.e. in the aspect of the development of public administration the demand for natural and energy sources will become greater in the foreseeable future. Should they be available and protected in Hungary, or being trans- ferred from abroad the competition and fight for them will be stronger and fiercer both by financial, political and administrative means.
6. Interpreting and handling the informal (not state) centres of power at global and re- gional level, the state, however, is not expected to die suddenly even in the 21st century, the out of touch public administration (often extreme formalism, disproportionate legal protection), which is globally experienced – due to the complacency as a result of peace and welfare – give birth to more and more important and influential systems of power; making them visible, understandable as well as their handling are as important as evaluating the statistics and formal state operation of other countries, the latter of which were satisfactory in Magyary's era. It is a part of this that Hungarian public administration shall have an active (not at all offensive) role in every system of inter- national membership.
7. A more proactive service of the perpetuance of the Hungarian nation, i.e. Hungarian public administration has to proceed with understanding care and absolute commit- ment so that the nation finds a really thriving and improving path – although it is often the decrease of the decaying processes that can only be seen – in its numerosity, culture, health and assets, independent of the current state borders. It is also part of this approach that we pay attention to the deprived, and creating opportunities shall be a part of everyday operation, i.e. not only shall we raise the nation but also keep it together. [5]

According to the research plan the above 7 challenges have to be met by public adminis- tration within the Magyary Programme 2020 so that it does not have to be a state document in each of its element or approach, but there is a chance for diversity of genre and authors.

Closing Remarks

The progress of the Magyary Programme, its successes and failures, due to the nature of the programme, got less exposure than, for instance, the events of the fight for the country's economic independence. Despite this we have to see that in the past four years the Magyary Programme was one of the strategies which remained the main stream of the development ac- tivity regarding the sector of the government during the whole term, and provided meaning- ful results even in one term. Consequently, as far as I am concerned the Magyary Programme is worth being continued as the interpretation framework of Hungarian public administration development, and all those who made efforts for the success of the Magyary Programme despite the often limited resources in the past four years were on the right side.

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Strategic Culture: The Facets of Foreign Policy and National Security

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The Hungarian foreign policy and strategic policy have gone through radical changes in the past twenty-five years. It has deepened since the beginning of the 21st century with the shifts in international politics being on the agenda. There is a new political viewpoint emerging which involves a new philosophy on internation- al security, describing it as being an attribute of the strategic thinking for solving the international crises by bringing forward the re-evaluation of national security. The scope of this paper is to present the changes that occurred on the strategic lev- el, concerning national security, embedded in the strategic culture, which emerge from the transforming foreign and security politics.
Keywords: *strategy, strategic culture, foreign policy, security policy, national security*

Introduction: Trends in the 21st Century

After the turn of the millennium there have been in-depth economic, political and social chang- es on the international stage of which only part had been foreseeable. Globalization and the system of mutual interdependence have gotten stronger. The non-western, mainly Asian soci- eties have established their own economic potential and on that basis they have built their new military capability. The wars fought against Islamic terrorism have gained new impetus and new, radical actors have appeared on stage. The number of collapsing, weak states has multi- plied. Contagious diseases and pandemic illnesses have multiplied, and the world economy, world politics and security are aligning themselves along new paths as a consequence. The pre- vious trends have been crushed under the new circumstances created by the shifts, uncertainty grows, instability intensifies and new, unexpected events come up. There have always been great, pivotal changes that gave new directions and turned the flow of history over the long run, qualitatively transforming societies. All the segments of the social and economic structure have changed, from the techno structures, through the institutions, to the ruling principles.

Today's techno structure is composed of information technology and communication techniques. Being in strong interaction with them, the structures of the economy are un- dergoing transformation. The revolution of the information and communication techniques interlocks with the development of a knowledge based society, which is characterized by a postindustrial structure. [1]

In the light of these changes we can state that thinking about the future has become an everyday activity and scientific planning has become indispensable, embodied by a mid and

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long term strategic scheme. In terms of individual states, the definition of new security policy goals has become necessary, and so has the assignment of the necessary instruments, while both assets have to rest on reality and must be feasible regardless of the changes in the inter- national circumstances.

The scope is not as much the precise forecast of the future, but *"to help the decision-mak- ers outline the future, change the leaders' behavior and break the suffocating shell of stereo- types, by the means of which more cautious decisions can be made, and a greater flexibility can be achieved for a state or an organization to face the challenges of the future."* [2: 36]

Strategy and Strategic Culture

"Strategy" originally is a Greek-Latin common expression from the domain of the military. Its use is linked to activities concerning commanding armies and initially it denoted the art of winning a war, specifically of leading, moving, positioning and supplying the armies. Essentially, considering its core and aim, it did not mean the struggle for total destruction of the enemy by all means, but the struggle to achieve victory. In the professional periodicals of the 1960s it was only sporadically used, but from the 1980s the word "strategy" was predom- inantly used in other contexts than the military. Its use became widespread in the domain of economic and political life, in culture, and in relation to several social phenomena as well.

In Liddell Hart's description "strategy" is no other than the employment of the military forces and tools for political purposes. André Beauffre has a similar opinion when he speaks about "the art of employing military forces for political purposes." [3: 24–25] Samuel Hun- tington's definition of strategy comes from the idea that "the specific objectives of the polit- ical leadership" rests on a certain premise. Namely, that the creation of strategy happens at the highest political decision-making level, tracing the main objectives and tasks that pertain to all institutions and organs of an individual state, among them, armies. [4] The starting moment for all strategies is an anticipatory vision of the future, a kind of forecast, which of course, not being foreseeable, and prone to be influenced by the unexpected, cannot be accu- rate. In concordance with the vision of the future values and sets of interests can be delineated and also can be the external set of conditions, that is, the possibilities, the threats and dangers which precede the call for taking measures. [5: 20] We also consider a part of the process the materialization of the goal itself and the evaluation itself, in unison with the definition of "strategy" and with the ability of giving reactions and making modifications as responses to the circumstantial uncertainties. The first and foremost component of strategy is the princi- pal, or the political one. It outlines the essential values and interests of the state and defines the instruments, techniques and conditions on which the goals can be achieved. It entails the need to formulate or define the dangers that threaten those values and interests, too.

In relation to the circumstances, when strategies are designed, the ensuring of relevance and coherence is a basic requirement. Relevance is the criteria which involves that only those factors and tendencies should be taken into account which are among the circumstantial ele- ments and are related to the values represented. Coherence is the synthesis of the circumstan- tial factors and processes, that is, those activities, which are priorities for the country and with which the state can and is willing to cope. The interests give answer to the question of why a strategy is needed, the circumstances to where that strategy has to be implemented or carried out. [6] Similarly important is the time factor, as the strategy outline is a process going on in

the present, while analyzing, drafting and anticipating the aspects of the future, in the light of past events, are the factors of continuity.

By its nature, strategy is twinned to forecasting and it is aimed at the formulation of the method for a future activity, moreover, it is linked to interrelated social and natural process- es forming huge, complex systems. Twisting the definition, we get "stories" of the future, through which we can recognize the ever changing details of our environment and thus we can exploit them.

Given the purposefulness of the strategy, its relationship with the future can be defined within the framework of the interdependence of vision and forecasting. According to a wide- ly accepted concept, the vision of the future coincides with the system of strategic targets; in other words, with the distant condition for the achievement of which they want to employ the strategy. In this case one may regard the strategy as the main part of the vision, which is the difference between the present situation and the desired situation. From another perspective, the vision of the future is linked to the strategy through interests and circumstances influ- enced by the vision of the actor, who in our case is the decision-maker.

Strategic Culture

The present day strategy has to be built upon the interests and circumstances developed with- in the network of the present and past impacts. It has to be an organic part of the strategic culture. The definition of "strategic culture" is as multi-colored and multi-layered as that of "strategy" itself.

As Jack Snyder put it, it is a sum total of ideals, supposed emotional responses and fixed habits that characterize a national strategic community that have been acquired either through education or through following previous role patterns. [7: 9] According to Snyder, the stra- tegic culture fundamentally influences the strategic decision-making and the notional frame- work of a strategic discussion. Ken Booth says that the strategic culture has an impact on what the rapport between two individual states is in the light of security issues. In his opinion, the notion encompasses the traditions, the customs, the set of values, the behavioral patterns, the symbols and the actions of a nation, its adaptability to the circumstances and also the problem solving methods in cases of military threats and the employment of the army. A. M. Johnson describes strategic culture as a result of a socialization process in which the de- cision-makers exert influence on the different strategic approaches and processes and at the same time, they modify them. [8]

Longhurst's formulation of strategic culture states that it is a summarization of constant views, opinions, standpoints and the practical processes of employing the military which are implemented within a long period of time and which are typical of a certain nation. Accord- ingly, Longhurst attributes great significance to the decision making power and the actions of the elite, because it is the elite which defines the strategic objectives and accepts the important decisions. He adds that the negative events have a strong influence on the strategic culture as a result of which the strategic culture may undergo certain changes. "The logic of strategic cul- ture then, resides in the central belief that collective ideas and values about the use of force are important constitutive factors in the design and execution of states' security policies." [9: 7]

Monica Garuip joins Longhurst when defining strategic culture as the sum of all the in-
struments guaranteeing security. [10: 41]

At present the most accepted use of the term, strategic cultures, beyond its reading in the military sense and by having become a political definition, is that it is a kind of measurement for the effective security politics to face new challenges, threats and even cooperative needs. It seeks for answers to questions like what vision of security stands at the base of the security policy of the individual states, which are the common norms, ideals and convictions that outline the security policy and defense goals in a society and define the forms of action. It is the state or goverment itself that defines which are the factors that endanger its security, or in other words, its strategic environment, and how, and with what instruments or forces can it act against them.

The definition does not relate only to the cases of the individual states, but also to the level of the international communities, regarding the new kinds of challenges and threats and regarding the requisites for cooperation and duties. It gives the guidelines for an effec- tive security policy. The European Security Strategy accepted by the European Council in December 2003 seems to support that, by stating as an objective the following: "We need to develop a strategic culture that fosters early, rapid, and when necessary, robust intervention" for Europe as a global actor standing on an international order, and based on effective mul- tilateralism. [11] The notion is also used in NATO terminology, which relates to collective defense, the cooperative security, crisis management and common actions of key importance, emphasizing the importance of the strategic partnership with the EU. According to Alexan- der Siedschlag it is the system in which the military power of the NATO member states is cumulated. [12]

The Transformation of Hungarian Strategic Culture

Hungarian foreign and security policy has undergone radical changes since the change of regime through the transformation of the basic values and interests, involving the transition from the Warsaw Pact membership to NATO membership, then to full adherence with the Eu- ropean Union, expanding in all respects Hungary's opportunities to action. The country had to define its place, its national interests, and the modes of representing those interests within the framework of a fledgling and constantly changing international security system, which is reflected in the strategic culture and goes along three distinct stages:

1st period: the end of the Cold War, the dissolution of the bipolar world order, the period of democratic regime change, when the opposition of physically blocked countries, extort- ed to act so by overall military means, dissolved in the region. The geopolitical status of the country changed profoundly in the discussed period. Germany was reunited, the Soviet Union and the disintegration of the Czech-Slovak Republic and Yugoslavia left 22 new in- dividual states behind, and the number of the 5 neighboring countries around Hungary grew to 7, out of which 5 were entirely new. The process of transition brought along the kindling conflict in the Balkans once again.

There emerged a need to set up a new system of strategies and institutions, as the national goals and instruments lying in the middle of the strategic thinking called for a re-definition of the political aims of security policy and the foreign economic policy, close- ly following. Some frameworks have had to be clarified, like the status of the country, its national interests, the ways of representing those interests and moreover, the frames, the character and the size of the international participation. National interests outlined the stra-

tegic tasks of the internal and external politics of the state which were aligned along the so called three pillar structure:

- the Western integration;
- the placing of neighborhood relations policy on a new basis, that is, regional cooperation;
- then minority rights, first and foremost the enforcement of the rights of the Hungarian ethnic minorities in the neighboring countries.[2]

At the beginning of the process, after the political changes of 1989–1990, several options opened up – though their political reality varied and differed, Soviet troops were still sta- tioned in Hungary until mid-June 1991 and the country was still a Warsaw Pact member.[3] The only real alternative was the political and military integration with the West. In practice, the country got into a situation in which the old security system did not perform any more and the new one had not started yet, and as a consequence the individual national security policy had to be formulated and devised. The basic principles of security policy and the homeland de- fense of the Hungarian Republic, adopted in 1993, reflect the strategic thinking of the period. They were "products" of a transitional era when the former Soviet doctrines did not prevail any more, but the western way of thinking had already cast a light on them.

2nd period: reaching Euro-Atlantic integration, whose two important milestones are the accession to NATO in 1999 and to the EU in 2004. In the focus of the tasks accompanying the process were the integration of the various organizations, the effective participation, the efficient assertion of interests and the active cooperation in their renewal. Thus the first pillar of the Hungarian foreign and security policy was set and at the same time the consensus started to crack which originated from the differences along the so called Status Act (concerning ethnic Hungarians living in the neighboring countries). As a re-definition of foreign policy priorities and among the strategic goals we foresee Hungary as a com- petitive country within the EU, a regionally successful Hungary and a country which feels its responsibility for the fate of the world. In the latter role, the country takes part in the international peace and crisis-management operations, and also, Hungary has an active role in the fight against terrorism. [13] In its foreign policy, serving the national interests of the country, Hungary takes part in military operations not as much with its numerical power but with its participation and presence. "So if the country takes an active part in the various tasks and brings good results, it will gain adequate weight and it will have opportunities to benefit the other areas of its interests or to gain the friendship or partnership for supporting its goals." [14] On the level of strategies, the basic security and defense principles – still in

2 When defining the external policy triad, the issue of neighbor policy and the questions related to ethnic Hungarians was both a historic necessity and an interest of the state. The policy of integration, at the same time, was influenced not only by political, but by economic factors as well. The two were connected within the system of the bilateral basic treaties aimed at stabilizing the relations with the neighboring countries and considered to be the conditions for joining the Euro-Atlantic community.

3 Out of these alternatives the possibility of neutrality comes as the strongest feature. The individuality and reliance of self-power was one of the possibilities, though these ideas did not have a real basis even in those times. The possibility of reforming the Warsaw Pact remained alive in common thinking. The idea of NATO membership, as a guarantee for the security of the country came up on 13 Apr,il 1992, in Gyula Horn's (then MP) out-of-agenda speech. Parallel to these aims there appeared the need to bring to life of a new, common, European security system, as well as a constructive Central-European policy, which preferred a model of neighboring countries cooperating tightly in areas like economy, politics, defense and culture – "the Danube community model."

force – of the Hungarian Republic adopted in 1998 overwrote the act of 1991 and formed the base of the National Security Strategy accepted in 2002, then modified in 2004, and also formed the base of the first National Military Strategy of 2009, and the Foreign Policy strategy in 2008.

3rd period: the determining and most radical event of the cycle was the global financial and economic crisis of 2008, and the beginnings of the ever strengthening and challenging cyber technology attacks in 2007/2008.[4] The instability of global space continued expand- ing.[5] The questions of external and internal stability intertwined with terrorism "strikes" with renewed forces and organized crime and its close companion corruption. Global climate change became a significant factor on the palette of challenges with the fight for freshwater and natural mineral resources, with the fight against the spreading of virulent diseases or the issue of migration.

Meanwhile the environment of security in Europe and Hungary has changed, too. On the one hand, as a positive element, Croatia joined NATO and the European Union, on the other hand, as a negative are the crises in the neighboring regions. The Arab Spring in 2011, set the Middle East on fire, and has left problems and tensions which remain unsolved, to be sure further turmoil is yet to come.

In 2014 the Ukrainian–Russian conflict implied not only a military threat for Hungary, but having an impact on the Hungarian minority policy and on the energy policy and further negative effects on the various segments of economic life. All of these have called for a new wave of revising the strategic goals.

The new political governing cycle wished to signal its start by re-defining public law, embodied by accepting a new constitution, named the Fundamental Law, establishing a new constitutional structure for Hungary and the related system of strategies. The priorities of foreign and security policy have become regional politics, including the protection of the in- terests of the Hungarian ethnic minorities, and the Euro-Atlantic orientation, in other words, representing the national interests in the EU and in NATO. A further priority was the politics of "global opening". This set of viewpoints was somewhat modified in 2014 as summarized below:

1. Issued after the 2011 EU presidency, defined as a document of strategic character "Hungary's Foreign Policy after the EU Presidency" [15] alludes to a value-based and value-driven foreign policy. In other words, the goals are defined along the values, and the government envisions an ideal position that is practicable and consequently, it defines the interests as a road to achieving the objectives. Not only are the instruments paired to the goals, but the goals are paired to the values. In this respect the 2014 foreign policy outlines reflect a new set of views as a contrast. To the expense of the values it prioritizes the Hun- garian interests, which reflect long-term, real-political thinking in perspective, opposing the dominance of the actual group interests of those in power. The point of reference, in this spirit, is not the system of organizations of which Hungary is a member, like the EU or NATO, but the national interests, which come on the top of the community interests, so the

4 The series of attacks against Estonia and Georgia in 2008 cast a light on the ever strengthening role of the information operations and cyber-warfare. The states had to realize what new threat has appeared; with the use of information technologies any information infrastructure can be destabilized and neutralized.

5 Compared to the year 2008, the peace conditions have improved in 51 states, but have deteriorated in 111 states. www.galamuscsoport.hu/tartalom/cikk/390320_vilag_bekemutato_avagy_egyre_dragabb_a_bekesseg (downloaded: 28 01 2015)

main task of diplomacy is to represent national interests, to which the values attach, with the accent on national interests.[6]

2. In 2014 the responsibilities of foreign policy got enlarged with a new segment, which is the external economy. The foreign political decision-making process in the near future will become external economy focused. Its duty will be to represent Hungarian economic interests. The foreign affairs strategies do not change, but their tools do: in order to expand export, new foreign markets have to be conquered and workplace creating investments have to be attracted. Hungarian businesses have to be supported in their efforts to appear on the international arena. The cornerstones of new foreign policy are fixed on the following:

- new foreign market possibilities have to be secured, export has to be expanded. The aim of government is to make one third of the overall Hungarian export go outside the EU by 2018, meanwhile to make grow or give a new impetus to the eastern opening policy, which is a reflection of the shift of the stress going on in the world economy and change in politics, as a consequence of globalization;
- sub-serving the success of Hungarian businesses abroad, and supporting Hungarian participation in international calls for tender;
- new, workplace creating investments should be attracted and international companies should be convinced about the prosperity of investing in Hungary.

The security policy also has to adapt to the above drafted new foreign policy ambitions, as the changes in the strategic perspectives left the three pillar system of priorities untouched.

Implications on the national security services

The national security policy is an organic part of any governing policy in the same way as the condition of success of Hungarian foreign politics is the real secure political goal. Funda- mentally the all-time leadership has to be aware of the international circumstances in which the country lies, of the changes undergoing in the security environment and with the threats emerging from those changes, of the place the country takes in the international structure, and of its economic and political realities. The country has to find its place and tasks within the system of allies, and as a result, it should be in the possession of adequate tools to face the challenges. This set of assignments will appear when defining the duties of the national security services and the law enforcement organs, as their main role is to protect Hungary's independence, law and order and to provide the decision makers with the necessary infor- mation. On the one hand it manifests itself in the protection of the country from the outer threats, on the other hand it helps handling those inner conflicts which have a distorting effect on the functioning of the state and on the lives of its citizens. Though the national security domain is not in the possession of an individual strategic document, – its creation has been on the agenda for the past 25 years but there has been no consent in accepting it and having it accepted, – the concept along which it acts can be derived from the previously mentioned legal documents. Consequently, the viewpoint represented by the government concerning the policy of renewing strategies is reflected in the national security domain.

6 In my opinion – though it is not the aim of this paper to analyze current policy issues – there are three areas of the government's external policy which can influence the Hungarian margins of maneuver and the status of the country within the EU and the NATO and which have come up embracing the idea of national interests:
the role assigned to Russia, the immigration policy opposing the EU standpoint, and the newly defined Eastern opening policy.

The three cycles drafted in this paper with the shifts of stress can be followed in the transformations of the national security domain as well.

With the end of the bipolar world order and with the end of the Cold War era the national security services also changed, aligning itself to the new international norms and the require- ments of the constitutional state.

Act X of 1990, on the Interim Regulation of the Authorization of the Special Tools and Methods of Secret Services, and Act 26/1990, referring to the interim regulation of the tasks to be supplied by the national security services, then Act 125 of 1995, on the National Secu- rity Services designed the new structures, the managing and verifying mechanisms remained in force until 2011, without being shaken by Hungary joining NATO and the EU.

The risk factors existing previously, but back then not part of the strategic category (ter- rorism and arms trade), had to be re-defined, whereas the really new challenges like in- ternational organized crime, migration, the economic, financial crises, ethnic and religious tensions, illegal drug trafficking, the limitations on key-importance natural resources and the possibility of attacks against the information systems – had to be recognized, defined and then raised to a strategic level, first enclosed and defined in the 2002 National Security Strategy Act. At the same time, there has emerged the need to develop a strategic system in Hungary which reflected the viewpoint and the requirements of the government towards the law enforcement organs for creating an indivisible security of the nation.

Turning into the second cycle was not as obvious as one can see in the case of the armed forces. The decision making systems, that is the organizational structure did not change, but the tasks were modified.

These changes can be linked to the changes in the technological environment mainly, as they emerged from Hungarian membership in the international integration systems, charac- terized by an enhanced demand for high priority news materials and thirst for information. The information technological domain, the media, electronic communication and mobility starting at the beginning of the century and even nowadays – have gone through enormous changes. There was a time when the base of national security tasks and skills was laid down on the technical level. There has been a need to follow the changes of the technical environ- ment and to develop forward pointing developmental strategies ever since. [16: 226] A new objective was for the services to enter the international zone, which meant to detect and keep away the threats against the Hungarian forces and specialists in crisis management and peace keeping operations, as well as to start new forms of cooperation with civilian and national security organs of the allied countries and with NATO and EU intelligence and counter-in- telligence systems.

The significant changes concerning the national security domain arrived in the third cy- cle, but they became tangible only with the orders enforced in 2010, which re-drafted the institutional structure of the national security system. The management and direction of the unitary civilian national security domain – from which the Ministry of the Interior had been excluded by legal and political warranties – was re-defined along a new concept. The minister of the Interior has been the owner of the governing power over the National Security Special Service and the Constitution Protection Office (until 2010 named National Security Office) since 2011. In 2010 the minister of Foreign Affairs led the Information Office through his under-secretary; from 2010 the prime minister managed it through his under-secretary. With the armed forces the person in charge was and has ever been the Ministry of Defense, before

and after unification. The government re-regulated the working National Security Cabinet and as a support, it created the National Security Workgroup.

The changes listed above have brought along novelties in terms of tasks, and at the same time other issues have come up, like the problems of networks and information-security, as the essential questions of the 21st century, which need to be mentioned. At its center we need to put the ability to resist the attacks against the Internet information systems, the repression of information criminality and the internal and international cyber protection.

We have to mention the two events of consternation related to our topic, the WikiLeaks scandal in which several thousand diplomatic telegraphs and external affairs documents were aired; and the Edward Snowden case in which the US National Security Agency (NSA) data collection methods were unveiled, at the center of which was the telephone and Internet mass data scrutiny.

The implications on national security of the incidents above are unquestionable; in relation to Hungary there are three aspects of analysis: how can one guarantee discretion, what at- tempts have been made, or might have been made to observe the influence of foreign economic or intelligence interest groups on Hungarian public life, and what political, external and moral implications do the incidents have upon Hungarian–US and Hungarian–EU ally relations.

With globalization, technical development, the challenges of the information society, with the threats approaching from cyber space and with the unexpected events of our age, there has been a desire to satisfy the needs of society, where the need to satisfy the demands for national security on behalf of society will be a valued asset. [5: 20] Consequently, the task of the strategy will be the outlining of a vision, in other words, the ideological goals. The vision for the future defines the margins that have to be taken into account when setting priorities, and which has to be devised in such a manner that it reflects the prospective actions of response to the identified acts of threats which go far beyond the traditional military and civilian, external and internal, national and regional borders. [17: 93]

The projection of the national security domain, which is part of the strategic culture, and at the same time a central element of the national security system of values, serves the secu- rity and defense of the country by employing open, closed, secret intelligence, by collecting, analyzing, processing, utilizing and prognosticating information. In my opinion the future activities can be guaranteed if all personnel identify with the vision of the future which stands at the base of the concrete activity of service, and which is a vocation as described in the national security strategy and contains the following elements:

- the aspects of the forming stages of the country's internal and external threats both real time and in the course of time;
- identification of contingencies at a global, regional and internal level;
- the reality based prognosis of the changes in the region and the probable scenarios for managing the events;
- an inventory of the tasks and duties originating in the membership of an international organization and its national security aspects;
- the need to establish a system of relationships with non-governmental organization (NGO) actors, multinational and transnational companies, given their growing areas of influence and interest asserting activities;
- the positive and negative aspects of the new Hungarian foreign policy vision in terms of international assertion of interests and of transformation of security policy;

- the analysis and prognosis of the frame conditions of the security of the economy, the sustainable growth;
- the possibilities of changes of the internal security challenges which can be attached to global trends, or inner processes, be they political, economic, environmental or social, which expand to the raising of the level of crime prevention and criminal intelligence;
- the deepening of the national security tasks concerning critical infrastructure defense in relation to the principle of "overall danger", highlighting the security of information;
- the promotion of the further deepening of the integration processes, especially strength- ening the European identity and promoting the common internal and external security policy, in which a special role is assigned to the European External Action Service (SITCEN, Joint Situation Center);
- diagnosing and devising plans for decreasing the threats against Hungarian corps and specialists operating abroad as well as Hungarians in crisis management and peace- keeping operations;
- opening towards new areas whose set of problems has an effect on the national secu- rity such as producing trends concerning the energy security or obtaining information which help keep the country's fuel supply on a stable level;
- keeping an inventory of the other organs which cooperate with the national security organs with special regard to the agents' system of interests and exceptional tasks;
- strengthening the relationship with the civilian populations and a clearer relationship with the open public;
- broadening cooperation with other branches in the process of crisis management;
- devising more effective operation plans to avoid parallelisms and strengthen organi- zation potential;
- the re-definition of the intelligence and counter-intelligence tasks in the light of the security challenges of the 21st century, whose first component is the relationship to the private secret services as such and the second is the integration of the novelties appear- ing while applying instruments and techniques and devising the legal background for all those above;
- adequate response given to the challenges of the social information and the informa- tion technology revolution ;
- the preparation for the information warfare in terms of its national security aspects, the prevention, management and declining of the risk factors and events concerning the information security;
- producing knowledge-surpluses in the domain of information technology by develop- ing coordinated analyzing-evaluating skills and by adequately processing data existing at our disposal;
- the strengthening of the human resources, motivating the personnel and facilitating the decrease of fluctuation and quitting;
- enhancing the prestige of national security work.

Summary

The real base for getting to know the future is the utilization of knowledge obtained by ex- perience, and the base of the preparation is professionally driven common thinking. One key question of planning is what has changed and what has not and what balance should be cre- ated between the existing skills and the expected threats, taking into consideration national interests and values.

Global-regional trends in relations are transforming in the 21st century. The effect of these changes have been felt in the development of the political culture whose changes after the democratic turn gave the basis of a new strategic system and strategic culture. Some of the experts say the process is not yet balanced and not yet finished.

Presently, I believe, new opportunities have emerged due to the changes in world politics which have been highlighted in this paper from a national security aspect. We certainly can- not foresee whether the new ideas will stand firm among the challenges of the global world, whether they will be accepted or rejected in the light of our relationship with our allies, or how far will the new ideas fit the direction of changes of the global field of force.

Change is perpetual, but the tempo of the changes is not, and the three cycles of changes of the last 25 years drafted in this paper exemplify that. It is a time of globalization, in which instability is the most widely used notion and in which the unexpected events have speeded up. The domain of national security has a complex task of reacting, preventing, unveiling the reason elements, stating relations in a way to be usefully built on a real value and interest system in military, economic, technical, scientific and other areas, including the coalition commitments.

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Law as an Instrument of Fighting Against Chemical, Biological, Radiological and Nuclear (CBRN) Terrorism

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This contribution deals with the legal impacts on the protection of population against a specific form of terrorism. As a reference element for exploring the sub- jected, a regulating mechanism of legal character was selected by the author.

As the assessment of the regulation of all CBRN components are outside of the framework of this article, the author limited his survey to the area of combat chemical agents and industrially dangerous chemicals provided. The survey model applied can be utilised by other means as well.

Keywords: *regulation, law, regulating means, chemical terrorism, CBRN, population protection*

Features of the Problem

All too often we are reminded that terrorism continues to inflict pain and suffering on people all over the world. The existence of the threat of terrorism and its significance highlights the rightful interest of the society in paying due attention to the protection of population. It is the aim of that process to correctly diagnose a potential terrorist attack (or the handling of its effects) or to specify it as a serious threat, and to make an ultimate rational decision con- cerning its solution.

Terrorism takes on many forms and utilises various means to enforce its aims. The terror- ism of our day may be occasionally called *superterrorism*, meaning that it is capable of using chemical, biological, and radiological and nuclear weapons (CBRN terrorism). Even though the production and use of those weapons are strictly regulated by a number of international treaties, it is not entirely possible to prevent abuse. This is namely the case of chemical weap- ons which are surprisingly easy to obtain and yet highly effective when used.

The potential use of CBRN means, for terrorist purposes, it is undoubtedly to be considered one of the most dangerous forms of terrorism. Aside from chemical weapons created for the purpose of armed conflict, there are terrorist methods and means possessing the character de- scribed that do not utilise weapons or weapon systems; they exploit industrially produced toxic materials which can be disseminated in purposeful attacks aimed at peaceful infrastructure.

In its aim to fulfil its base functions, including the securing of the safety [1: 6] of the population, society is obliged to be able to resist the perils that can occur unexpectedly and threaten lives, well-being and property of citizens, as well as their living environment. The most suitable instrument for ensuring the optimum efficiency of the security system is its regulation.

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A particular position in the regulation systems is occupied by normative legal systems, from which the law creates rules of behaviour (legal regulations) which are also of significant influence on the quality of social relationships that ensue in the course of the protection of the population from CBRN terrorism being secured.

Nowadays, authors from neighbouring countries have writen scientific papers concerning new challenges of CBRN defence, from technical [2] or administrative aspects. This paper focuses on legal issues.

Protective Means – Regulations

Due to its overall intricacy, it is nowadays quite necessary to view the safety and protection of people as a complex system. If we are to examine the mechanisms ensuring the functioning of a particular part of the security system of the Czech Republic, it is appropriate to examine it from the vantage point of the elements securing its optimum functions. The most suitable instrument for retaining the optimum efficiency of the security system is its regulation.

Regardless of the era, it has always held true that human society cannot function with- out utilising a certain number of regulatory mechanisms. [3: 161] Their aim is to ensure social interaction, solve conflicts ensuing from differing needs and interests of individuals or groups, and supply society with an order necessary for its existence. It is the only way to ensure social reproduction and to prevent entropy, towards which social life has an intrinsic tendency. [4: 29]

In general, regulation (be it executed by human factor or an automatic device – a regula- tor) is a directional or guiding conduct. In the context of society, regulation is the influence or control imposed on human or social behaviour by means of rules, precautions and restric- tions. In terms of physics, regulation is direction supplied with feedback. We are speaking of maintaining a certain value in a constant degree or one that changes according to a certain rule. Regulation is then applied in order to dispose of the discrepancies detected. As opposed to regulation, control is direction lacking feedback. [5: 6]

Regulations, at the same time, both condition and warrant order in a society. Without them, social interaction would be scarcely possible or at least much more difficult to exercise.

By establishing fixed rules of social cooperation, these regulations outrule case-by-case negotiations, prevent numerous conflicts and supply human conduct with steady forms.

They are therefore of assistance to people in the matter of deciding on a particular vari- ant of behaviour (the problem of free choice) and accommodate their need for assurance in social relationships. Regulations help maintain order in society by eliminating conflicts and deviations. [6: 161]

The functioning of public administration towards ensuring safety (protection) of people is supported by regulations (regulating mechanisms) in the form of various kinds of measures and precautions. In this context we can identify regulations that are in their character:

- organizational and technical,
- economical,
- legal,
- other.

Legal Regulations

As has been mentioned, a human society is a complex mechanism that for its operation requires certain forms of regulation. If we operate on the anthropological premise that the human species merely exists within groups and that a human being is free and possessed of the ability of reproducing the world by means of thought (in terms or language) and choosing between alternatives of behaviour, then it appears vital to bring this freedom into accord with the freedom of others.[2] [7: 66–67]

One of the most efficient means of regulation of the behaviour of both individuals and groups is undoubtedly normative regulation using restrictions, directions and permissions; or, certain norms of conduct. Dynamic and purposeful regulative systems of this kind are referred to as normative systems. In regards to the character of the norms of conduct two kinds of systems are distinguishable: non-legal normative systems[3] and legal normative systems. Law occupies a particular position among these systems, since it presents itself as a set of rules of conduct of a distinct form created by the state and enforceable by the state. These rules of conduct (legal regulations) administer various categories of social relationships, among others those concerned with ensuring safety and protection of population of a particular country or an alliance of countries. [8: 162–168] Regulations of this kind consist in legally ensuring (for the population) the use of interests protected by law – for example, property is not considered the most important of these interests, since there are other, higher aspects of general well-being such as personal protection, honour, good, individual freedom and indi- vidual (or group) safety.

The process of regulation is usually defined by relevant formal aspects of certain pieces of information, inferred from the legitimacy and activities of the authority conducting the regulation.

In the field of legal regulations, state is traditionally the (organizational) authority cre- ating law. It is the characteristic feature of the way authority operates that the quality of the subject is projected into the information created by the form of a specific quality of said infor- mation, that is by form of its normativity (normative value), or the character of the regulation of the particular social relationship according to the idea of the authority which creates the regulations.

Legal regulations – legal norms can be in this context considered rules representing cer- tain alternatives of conduct, that aim to reach the satisfaction of the needs of a person both as an individual and as a member of a group. Nevertheless, man, being a thinking individual, is capable of volitional conduct. This marks the contrast between the individuality of a human being, their interests and aims, and the necessity of being a part of a group which is essential to the survival of an individual. [9: 104]

The relationship between freedom of an individual (and the ability to act independent- ly based on one's own will) and the possibility of reproduction being available only when living within a group is formulated by Kant, who stated, *"any single thing in the natural*

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2 "Law is therefore a summary of the conditions under which it may be united together with the arbitrariness of one another according to the general law of liberty, justice ... Universal law of justice is thus: Deal outwardly so that the free use of your whim could coexist with the freedom of every man according to general law." [7: 66–67]

3 Author's Note: for example, more or less binding religious rules, rules, etiquette, etc.

world works based on rules and principles…". [7: 48–49] This means of administration is referred to as power. Power is thus capable of defining human conduct – that being realized by formulating (defining) the way of conduct required and ensuring its being followed. By formulating the kind of conduct required by power, a norm is created, which acts as a binding rule of human conduct (a regulation). A norm of this sort then becomes a part of the system of social administration which carries certain defining aspects. These aspects include its regu- lativeness and generality. The regulativeness of a norm is that it represents a certain direction as to a distinct kind of conduct, which puts restraint on the choice of alternatives of conduct of an individual or a group. Since the normative (legal) mechanism of the regulation of pub- lic security is the main referential component of the thesis, it is vital to present here specific aspects of legal regulations, which are: the connection of law and the authority of state, the universality of law, and the specific form in which law is formulated:

- State, represented by the bodies of state administration and self-government, is the subject of the creation or recognition (see international norms, European norms), as well as the subject of ensuring legal norms.
- The whole society (population in a broader sense) organized within the state that pos- sesses a system of public authority, is the addressee of legal norms. This means that the system of legal norms is an all- encompassing system within the society, and a legal norm is therefore a general regulation of state authority.
- A legal norm – regulation – has a form established or acknowledged by public author- ity and it is formulated in one of the forms of sources of law.[4]

The Protection of the Population of the Czech Republic from Chemical Terrorism – Regulation

The Czech Republic consistently reinforces security cooperation with countries that have successfully resisted the threat of terrorism, in an effort too participate in a joint approach. An important aspect of this understanding of international cooperation and exchange of informa- tion is participating in the activities proceeding within the European Union. Included are the aspects that the Czech Republic is currently trying to resolve or deems necessary to resolve in the immediate future. These are the topics projected in the contents of *Národní akční plán boje proti terorismu* (National Action Plan to Combat Terrorism) and *Bezpečnostní strategie* (Security Strategy). [10] Most attention is being paid to the regulations concerning the pro- tection of the critical infrastructure and the protection from an abuse of chemical, biological and nuclear substances by terrorists.

The current law of the Czech Republic includes the legal regulations necessary for as- sessing the ministries and other central bodies of administration, the administrative bodies of regions, municipalities and selected legal and physical persons with the tasks concerning the protection of population. Legal regulations concerning dangerous chemical substances in the Czech Republic issue mainly from the SEVESO directives accepted by the European Union.

It is namely the Act 59/2006 Coll., concerning prevention from grave disasters caused by selected dangerous chemical substances or chemical products, in the definition of subsequent

4 Author's Note: Sources of law are forms in which the objective law is provided. Usually it will be the rule of law by the state authorities with legislative powers (normative legal acts), legal customs, and the normative character of the contract (international agreements), precedents, and general legal principles.

bylaws (the law concerning preventing grave disasters), Act 239/2000 Coll., concerning the integrated emergency system and the changes in certain laws, in the definition of subsequent bylaws, and Act 238/2000 Coll., concerning the Fire Rescue Service (FRS) of the Czech Re- public and the changes in certain laws, in the definition of subsequent bylaws. Order of Min- istry of Interior 380/2002 Coll. concerning the preparation and carrying out of the tasks for the protection of population defines and specifies the individual tasks. Thus are created the basic legal conditions for ensuring the protection of population, property and environment, connected among others to grave emergencies caused by selected chemical substances, fires and other technical and technological disasters of large extent, in addition to the treatment of emergency situations in supplying drinking water and provisions, in power supply and in gas and heat, and to grave terrorist attacks using CBRN means.

The system of prevention defined by the law concerning prevention of grave emergencies is a set of regulations that concern objects and facilities which contain dangerous chemical substance or product in the same or larger quantity than that set by the law.

The legal regulation administers:

- the duties of legal or physical persons who are in possession or who use the object or facility;
- the classification of said object or facility into respective groups based on the sort and quantity of the selected dangerous chemical substance or product;
- providing information to the public accompanying prevention of grave emergencies in said facility;
- the execution of state administration in the area of prevention of grave emergencies caused by selected dangerous chemical substances or products.

Integrated Rescue System (IRS) represents the base of coordination of tasks and ap- proaches of its respective units during the preparation for extraordinary events, during the rescue work and settling work, in terms of protection of population from CBRN terrorism. The dominant role in the system is represented by the regional fire rescue crews that consti- tute autonomous organizational units of the state. It is this subject of IRS that represents the most important element in the system of protection from potential CBRN terrorism. Research has been carried out that examines the influence of legal regulations over the efficiency of this element and also evaluates the capability of the subject as to fulfil the requirements laid out by the regulations.

The Fire Rescue Service of the Czech Republic and the fire rescue units fulfil tasks in the department of public security, technical interventions and fire protection during any extraor- dinary events and crisis situations including state of war. The FRS organizes IRS and partic- ipates in creating the emergency and crisis plans. It ensures and coordinates organizational and technical measures in the field of the protection of the public; particularly the warning, shelter, evacuation, survival in crisis and humanitarian aid.

By the Government Decree 165 (25 2 2008) *The concept of the population protection in 2013 with a view to 2020* was approved. This policy, similarly to the policy of 2002, em- phasises the need of information and education in the field of the protection of population, reinforcement and material provisions to the units of IRS, the responsibility of ministries, central administrative bodies, municipalities and legal and physical persons for the protection of population. The evaluation of the preceding policy revealed that the system of protection is functioning. It is nevertheless possible to ask if the same can be ascertained as to the risks

ensuing from CBRN terrorist attacks. In the following time, measures of both non-legislative and legislative character are accepted, which are included in the proposal tooptimize the current security system in the CR. One of the factors limiting further improvements in this department, especially those in the field of material provisions, is the financial budget.

The following demonstrative enumeration lists the most important legal regulations that influence chemical security:

- the Ministry of Foreign Affairs Decree 96/1975 Coll., the Convention on the Prohibi- tion of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction;
- Act 19/1997 Coll., Some measures related to the prohibition of chemical weapons, as amended;
- Decree 208/2008 1975 Coll., implementing Act on some measures related to the pro- hibition of chemical weapons;
- Act 350/2011 Coll. of Chemical substances and mixtures and amending certain acts (chemical Act);
- Decree 103/2006 Coll. (21 03 2006) to establish principles for the definition of emer- gency planning zones and the extent and method of preparation of external emergency plan;
- Decree 250/2006 Coll. of L., (23 05 2006) laying down the scope and content of safety measures of physical protection of property or equipment assigned to group A or group B;
- Government Decree 254/2006 Coll. (24 05 2006) on the control of hazardous sub- stances;
- Decree 255/2006 Coll. (22 05 2006) on the extent and manner of reporting on major accidents and the final report on the occurrence and effects of serious accidents,
- Decree 256/2006 Coll. (22 05 2006) on the details of the system for preventing major accidents;
- Mandatory Instruction 16/2002 Methodological Instruction the Department of Envi- ronmental Ministry of the Environment Risk assessment for the possibility of cumula- tive and synergistic effects of a serious accident;
- Mandatory Instruction 06/2006 Methodological Instruction of the Ministry of Envi- ronmental Department of the Environment for "Assessment of an object or device selected hazardous chemical substances or chemical products and to general legal obli- gations or individuals doing business" under Act 59/2006 Coll. on accident prevention;
- Methodological Instruction of the Environmental Risks Department of the of the Min- istry of Environment for the procedure for processing the document "Proposal for the inclusion of an object or device in group A or B" pursuant to Act 59/2006 Coll. on accident prevention;
- Methodological Instruction 9/2006 of the Environmental Risks Department of the of the Ministry of Environment for processing document "Principles, objectives and pol- icy to prevent accidents and "Description of the safety management system" pursuant to Act 59/2006 Coll. on accident prevention;
- Methodological Instruction 10/2006 of the Environmental Risks Department of the of the Ministry of Environment for the procedure for processing the document "Safety Report" by Act 59/2006 Coll. on the prevention of major accidents;

- Mandatory Instruction 04/2007, Methodological Instruction of the Environmental Risks Department of the of the Ministry of Environment for "Provision of information on the occurrence and effects of serious accidents" under Act 59/2006 Coll. on the prevention of major accidents;
- Mandatory Instruction 05/2007, Methodological Instruction of the Environmental Risks Department of the Ministry of Environment for "Preparation of written docu- ments to determine the area of emergency planning and preparation for external emer- gency plan" pursuant to Act 59/2006 Coll. on accident prevention;
- Mandatory Instruction 23/2007, Methodological Instruction of the Environmental Risks Department of the Ministry of Environment for the procedure for processing a document entitled "Analysis and assessment of risk of serious accidents" under Act
  59/2006 Coll., on accident prevention,
- Mandatory Instruction 24/2007, Methodological Instruction of the Environmental Risks Department of the of the Ministry of Environment on the scope and method of processing the document "Assessment of the influence of human factors to the object or equipment in connection with the relevant sources of risk" pursuant to Act 59/2006
  Coll., on Prevention of serious accidents.

There is also another area consisting of Czech legal regulations oriented towards count- er-terrorism activities. The basic premise of a successful fight against chemical terrorism is the ability of the respective government bodies to obtain, accumulate and forward informa- tion of the intentions and activities of terrorist structures to competent subjects in a timely manner. The authorities disposing with this competence are the intelligence departments and the law enforcement authorities.[5] The efforts of the security forces play the role of prevention in this process. Its aim is to reveal any eventual terrorist activities (preparation for an attack) at their inception. Cooperation of the police forces and the intelligence is crucial in this pro- cess. Both forces complement each other and cooperate. Intelligence plays an important role in the phase of latent preparations for a terrorist attack, the police force on the other hand possesses the executive authority (e.g. for the commencement of criminal procedures). The surveillance and prosecution of a particular culprit (or a suspect) is also a matter of joint ef- fort. International collaboration in the pursuit of persons responsible for acts of terror plays a crucial role in this matter as well. [11: 706]

Following the government resolution of 2006 to coordinate the activities of intelligence agencies of the Czech Republic to analyse information vital for the security of the country, with special emphasis on the fight against terrorism, The Security Information Service was designated as a coordination point for accumulating and analysis of information concerning terrorism provided by Czech intelligence. The National Focal Point on Terrorism was estab- lished by the Police of the Czech Republic in 2009 and came into permanent operation in June of the same year.[6] [12]

From the point of criminal law regulation, Czech law allows for prosecution of the entire scope of terrorist activities.[7] To illustrate the situation further (and to substantiate the reality of the threat of chemical terrorism), allow me one remark from the resources of the police

5 Author's Note: law enforcement proceedings are regulative according to Czech police, prosecutors and courts.

6 The Strategy for combating terrorism for years 2010 - 2012: Measures aimed at minimizing risk and impact of potential terrorist attack on the Republic and against the interests of the Republic abroad.

7 See in particular para 311 – terrorist attack – Act 40/2009 Coll. Criminal Code.

unit for combating organized crime: *"there continues to arise a number of offers for illegal sale of these dangerous substances, that are in the area of the Czech Republic most often of- fered by Slovak, Ukrainian, Russian and Hungarian citizens. Czech citizens are often used as intermediaries in these transactions. The material offered is said to have originated in most cases from the countries of former Soviet Union."*

Conclusion

Protection of the population – applying the optimum regulation system in regards to the safe- ty of citizens, including protection from CBRN terrorism, is a vital function of the state. It is an obligation of the state to create a security system that is necessary and to maintain this system in a working condition.

The ability of the state authority to enforce legal regulations represents one of its basic at- tributes. Attempts of the responsible authorities to "force" the public to identify with the sys- tem of regulation or to participate actively in the process, stands in contrast to the principles of a democratic state which allow only minimum (and only in the form of a law) interference with personal and personality rights.

A regulation mechanism functions best when functioning preventively, or at least flexibly in regard to reacting to external change. The process of changing legal regulations in the area of the protection of the population from CBRN terrorism is, according to experts, too lengthy and unable to react to new demands in a timely or adequate manner.

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Forensic Mark Examination of Vehicle Keys

ELEK Imre[1]

The inspection of a key by an expert mark examiner covers evaluation of tech- nological traces, presumption of origin, falsification related mark examinations, search marks of duplicator and sampler equipment, as well as identification, rec- ognition of shape characteristics and therefore decoding. The author on the basis of his several decades of experience demonstrates that a vehicle key belonging to a car is the most important safeguarding gadget, what kind of marks it may bear, and how it could be read in the aspect of forensic tool mark examination.

Keywords: *Forensic tool mark examination, key duplication, copy traces, individ- ual characteristic of tool marks*

Introduction

In accordance with crimes against property it is often important to find out the way the loca- tion was approached and the method the lock was operated on by the perpetrator. In case of closed rooms or vehicles the mechanical lock or its assigned key may become a tool mark car- rier. Tool marks may also reflect the formative equipment on tool mark group and individual specialities level, but it may be practical to determine the forming mechanism as well. [1–7]

Lock examination is interconnected to key examination, which occasionally determines the result of lock examination, because it might be necessary to examine the adapted and used keys to clarify the circumstances of the illegal lock opening.

Of the above mentioned, key duplication and its circumstances are the focus of the fo- rensic key examination. This kind of key examination has importance when it is necessary to investigate and to verify widely the illegal lock operation, whether during the examined occurrence the perpetrator could have used a duplication of the key and the sampling source of this duplication could have been one of the keys in proper use. Typically these examina- tions are related to vehicle theft, therefore discussing certain issues of key examination is based on vehicle keys.

Aims and Methods

My intention in writing this essay was to demonstrate the mechanical key as the special car- rier of mark characteristics in the light of observations which were acquired during the daily routine examinations. To achieve my purpose I used my experiences from my daily profes- sional routine work, international bibliography, several examiner tools and microscopes. Be- cause of the identification of manufacturer marks, manufacturing trace particularities, during the forensic examination of the key, reference samples and databases from manufacturers are

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required. With the complex examination of the key, there might be a possibility for answering the following questions:

- How many keys were adapted to the original set and what kind of functions did these have?
- Were the mechanical code of the examined keys the same?
- Are the keys' mechanical codes equal to the manufacturer's adapted mechanical codes?
- Are these keys original, duplicated or from the aftermarket?
- Could be the damaged mechanical code of the grooves be reconstructed?
- How did the damage of the keys issue?
- What level of the keys' usage shabbiness can be determined and is this in accordance with the usage period of the key? (In case of vehicle keys it may pertain to usage peri- od, mileage and lifetime.)
- Is it possible to detect a duplicator sampling on the keys' milling, if yes, when could it happen during the key usage or rather the vehicle usage period?
- Are the manufacturer notations (profile code, transponder code, logo, and other nota- tions) original or have they been changed?

Results and Discussion

Key Types and Development of Mechanical Code Systems

The appearance and the mechanical code of the keys are changing constantly. The change is caused by various effects such as technological progression, security aspects, changing of standard settings, enhancement of user comfort, optimizing protection against environmental effects, improvements in function safety or rather other manufacturer considerations. There were multiple generational changes in the past 30 years, for instance in the automotive in- dustry and the development of vehicle locks' mechanical codes. The sprung-pin system locks were replaced by the wafer-pin system, a central lock was introduced, within the wafer-pin system symmetric milling was formed, beside the traditional milling the inner course keys appeared, in addition to this systems well known simple-, double- and four-course. With the headway of smart systems the mechanical key's practical function has lost significance, one after the other keys appear with hidden mechanical milling.

Key Duplication and Key Producing Technologies

Of the known crimes to mark examiner experts there are many types of key duplicating and key making: such as making a cast, taking a photo, making a key for a disassembled lock, key making by impression method, handcrafting a key by knowing the milling code or making it with special cutting dies, and duplicating the key by a key duplicator machine with a sample key. Regarding the formation of marks, the key duplicator machines are basically divisible into two groups.

There is the non-capable key duplicator and key making machines for sample key mount- ing. These machines – in view of the milling code – work with the proper set of indentation depth and with linear stepping. Thus functioning equipment have no importance in the aspect of the duplicative key, since that key is out of touch along the equipment.

There is the equipment which clamps the duplicative key in a special clutch and scans the milling mechanically for instance with a depth guide or tongue. These key duplicator ma- chines have particular features, and after duplication the copy traces are well demonstrable. There are several systems in the scanning method of those key duplicator machines which are capable to cramp the duplicative key. Naturally, the condition of tool marks to be formed is the physical connection, thus in case of key duplicator machine types which optically detect the milling shape (e.g. with laser scanning) the marks of scanning are not identifiable.

There are other methods for getting the key profile and the information about the lock's mechanical combination, such as taking a photo, scanning or drawing. In virtue of visual information the milling and cutting code can be identified of the given key, and a proper key can be made. Aside from several vehicle types, this mechanical code information means
6-10 slides or rather pin positions with 4–6 different levels. On the basis of this information almost any mechanical key can be made, even in the case of keys with several mechanical code variations.

From the viewpoint of forensic mark examination the used duplicative sample might have significance, when mechanical connection is established between the milling machine and the key during the duplication sampling process.

Key duplicator machines with a mechanical scanner leave dynamic marks during the scanning process, but on occasion static mark components may be left as well. In each case, during the clamping process static marks are formed, and the dimension may vary depending on the quality of the material, on coating and on the gauge of the coupling force. [8] [9] [10]

The Presumption of the Keys' Ancestry and Origin, Possibilities of Identifying Duplicator Machines

It is significant to the manufactured original set of keys, especially in case of vehicle keys, that each element of the set was made with the same machine during the same process. Similar conditions during different manufacturing periods lead to similar surface and form characteristics. These, on group-characteristic level, eventually may manifest in individual speciality. Regarding the nature of the technological process it is possible to draw conclu- sions about group specialities or individual peculiarities. For example on the successively formed grooves the structure image of the mark gouge will be similar as well. This is verified by the numerous observations in the course of key examinations.

On the level of individual speciality it is also possible to examine the technological marks, rarely in case of dynamic marks made by milling, but in case of clamping, stamping and cut- ting tools the individual character is more likely to be formed. (Figure 1)

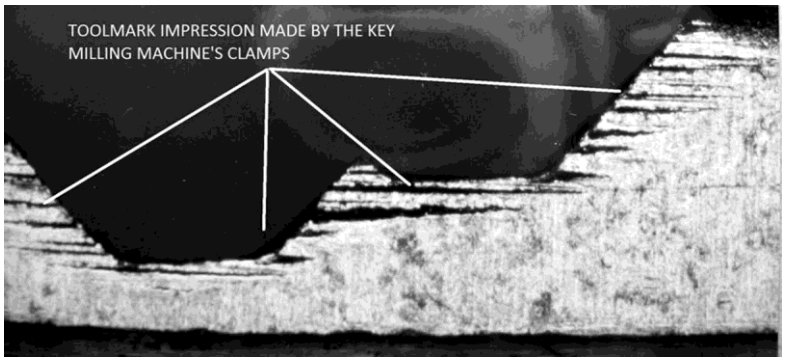

Figure 1. Static tool mark of a vehicle key-bit cutter. (Source: own snapshot)

Specialities of Marks Left by the Key Duplicator Machine's Clamps

On the key that is used for sampling, in each case the mark on the keys' bit or on the sides of the cuts is made by opposite acting surfaces, which is worked out in the form of a static mark (dent). As the cramping of the key to be copied requires accurate settings, the marks are also generated regularly (e.g. the mark runs straightaway with the fore-axis). The dimension and perceptibility of the mark substantially depends on the stock of the cramped key (in case of soft stock keys the dent is bigger), on the torque and shaping of the cramping tool (e.g. with the same settings a flat surface cramping tool leaves smaller mark than a corded one). In sev- eral cases the mark of the cramping tool is not generated adequately to make it possible to be examined. The surface of the cramping tools is worn out and damaged in time during usage, and these changes are imaged on the surface of the dents. These may be evaluated as the in- dividual characteristic of the mark, which may have significance during a later investigation.

By the combined examination of the general shabbiness and over-shabbiness of the mark it is ascertainable what kind of scale of shabbiness during and after clamping was formed on the key. Date-like time of the mark's formation cannot be determined, but the background information of the key's usage is possible to conclude; which part of the determined period the mark on the key was formed, for example:

- The mark was formed in the original state of the key and after the formation of the mark the key was in use for a longer period. In this case the time of formation of the mark is closer to the beginning of the given period.
- The mark was formed in the moderately worn-out state of the key and after its forma- tion the key was in use for a longer period. This statement refers to the formation time of the inspected mark is estimated at the middle of the key's usage period.
- The mark was formed in the firmly worn-out state of the key and after its formation the key was in use only a little. This statement refers to the formation time of the inspected mark is estimated at the middle of the key's usage period.

Characteristics of Marks Left by Depth Guide

On the grooves of classic cylinder lock keys (in case of symmetric grooves usually on one side of the blade) the depth guide leaves a regularly located dynamic mark through on a

positionally fixed key. As long as the scanner tongue is in good condition, thus its surface is undamaged, the working interface is sharp, in this case a husker type, parallel, groove struc- tured dynamic mark comes about. Occasionally by such marks, microscopic scale scissels, ram and deformative effects are discoverable. The depth guide may cause secondary changes during the duplicating sampling process, such as positive and negative deformation of the milling cross-section profile. (Figure 2)

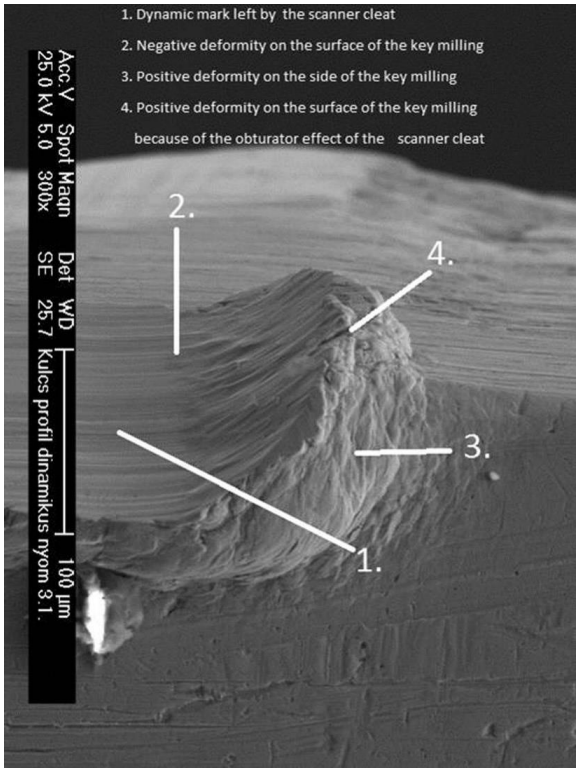

Figure 2. Scanning the cuts of an upwards milled traditional key with a key duplicator machine. The electron microscopic image of the depth guide in the final state of mark formation. (Source: Tóth Péter for HIFS physicist expert)

It is worthwhile to separate three relevant ranges of the scanner, because in regard to mark forming specialities those may be different. The first mark speciality is formed in the surroundings of the initial point, during which the static mark fragment of the depth guide remains. Even though this mark type is a small segment of the whole mark it still might serve added information sometimes for instance about the scanner stud's edge geometry and indi- vidual characteristics. The biggest scale scanning path belongs to the middle range, whilst the operational final state depth guide belongs to the third, and several deformities of key milling profile belonging to the latter. (Figure 3) These shape shifts may not be evaluated as individ- ual specialities but the usage shabbiness on distorted surfaces may provide information about the relative time of mark formation.

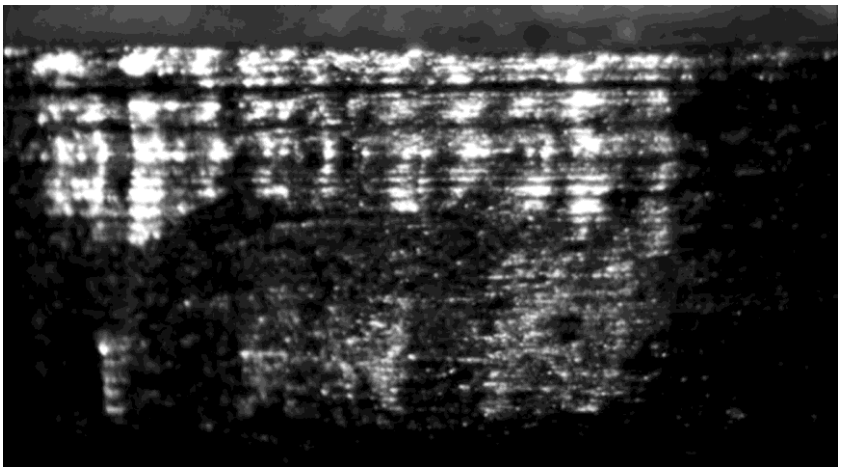

Figure 3. Microscopic top-view image part of a dynamic tool mark which was formed in the course of duplication sampling by a key duplicator machine's scanner on a traditional car key milling. (Source: own snapshot)

During sampling the key duplicator machine with depth guide may cause group distinc- tiveness level changes. One of these group specialities is that when in the mark the scanning angle or rather the range of the scanning angle may be mapped on the highest and the lowest steps of milling. Angle differences, are formed between the original top-view level and the scanned surface level, and represent well the key duplicator machine's structural perfor- mance, thereby giving details about the distance of the depth guide's suspensive tongue. (The operational edge angle of the scanner stud is denoted on Figure 2.) The depth guides' vertical course character is an arc in much of the key duplicator machines, and on condition that the key which is used for duplication sampling moves on a straight course during sampling and according to the heights of the milling steps the scanning cleat makes a different rotation, at particular parts of the mark it creates specific tracing. In case of traditionally formed grooves this tracing characteristic shows itself insomuch as on the horizontal parts of the groove steps it includes angle with the edges of the slant plane in alignment with the fore-axis. It is also the special mark formative feature of the depth guide that on the horizontal surface of the equal height cuts in the dynamic mark there are two similar groove structures mapped.

The side thickness of the rigger milled method produced cylinder lock key grooves is usu- ally between 1.5–2.0 mm, the length of the depth guide may be 5–10 times longer, therefore only a small section of the depth guide takes part in the interaction. Two statements might be taken on the basis of the mark's mapped dimension on the milling and general characteristic.

- It is ascertainable from the continuity and flatness of the mark that the scanning speed or rather the pressure by the scanner head was constant and this points to the fact that the mark was formed by an automatic machine (after the clamping of the key and the initiation of the duplicating process no human intervention happened).
- From the shortage of mark continuity and microscopic roughness it can be determined that the speed or rather pressure by the scanner head was varied, and this points to the fact that the mark originates from a manual (human meddling happened during the whole duplicating process) feeding key duplicator machine.

There is a less known method to duplicate the traditional milling of a key by scanning, which differs from those described above because the milling's shape of the duplicative key is not taken by continuous tracking but by forming the milling dents singly. This method may be used typically with cylinder lock keys and in the aspect of mark formation means a significant difference as compared to traditional shape follower scanning because other than dents no other tool mark is formed and for these marks the static mark formation is typical.

Beside the traditional upwards milled and cut keys the so called side milled keys are also used and the milling course is formed differently. In case of car keys this side milled con- struction means a simple or double milling course and within this an inner or outer course formation. The sampling technology of duplication of the side milled keys is different than that of traditional keys, because in case of these types of keys the scanning is done by a steel tongue. Going along the milling course of the linear pit milling machine the steel tongue leaves dynamic tool marks.

In dimension and position, different marks may be formed depending on the geometric size of the scanner tongues, the clamping precision and the shape of the milling course of the key being duplicated, and the intensity of the interaction. Depending on that the side, the end surface or the sharp edge the connecting point, the following mark types are created.

Dynamic Mark Formed on the Grooves of an Inner Course Key

This mark type is usually formed when the end of the scanner stud does not reach the lower level of the groove's course. The relative offset of the scanning cleat in its sheer position and the irregularity of the milling surface may cause different intensities during the imaging of the mark and may cause the deformity of the profile. On the figure below there is an example of a dynamic depth guide tool mark, where the intensity of the mark is stronger far from the level and getting closer to the level it disappears. (Figure 4)

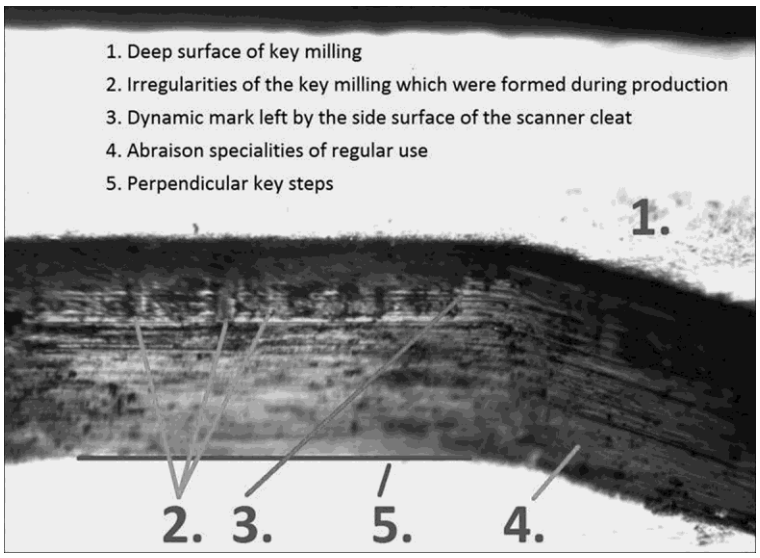

Figure 4. Microscopic image of the dynamic tool mark that was formed during the stud-scanning of a side cut inner course car key. (Source: own snapshot)

The Nascent Dynamic Mark on the Surface between the Steps of a Key

On the deep surface of the milling, the mark of the scanner tongue is usually formed when it reaches the lower plain of the milling course. By such settings, usually only a small section of the scanner tongue takes part in mark formation. One of the mark's characteristics is the tracing course of the milling and the back and forth moving scanner tongue. (Figure 5)

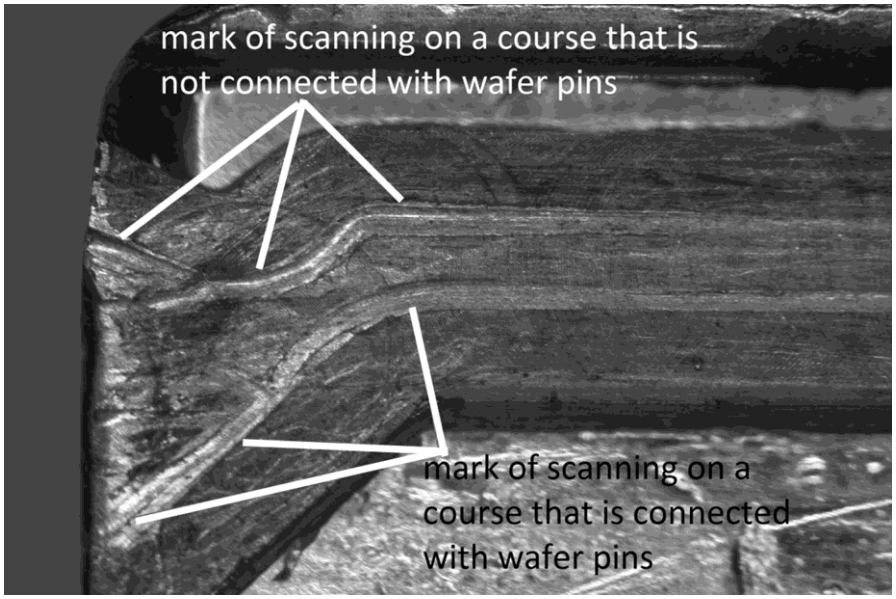

Figure 5. Part of an inner course car key milling about the surface between the milling courses. The dynamic mark of the key duplicator machine's scanner study. (Source: own snapshot)

Nascent Mark on the Surface and on the Lower Collar of Groove Steps

This mark type is mostly formed when there is a straight or an arched dip at the meeting-point of grooves and lower surface, and at the end of the scanner tongue there is no round-off or humbling and it is able to scan the cuts of the key deeply enough, e.g. certain BMW key types.

Concludable Implications on the Basis of Dynamic Marks

According to the common specialities of the dynamic mark, it is possible to deduce, what kind of course the marking equipment's scanner stud or cleat does during the mark formation process. The scanner head of the key duplication machine moves on such a forced course, whereby typical marks are left on the surface of the connecting grooves. This typical mark on the one hand reflects the individual characteristic of the scanner head, on the other hand serves information in reference to the construction of the key duplicator machine. These various mark specialities make it possible to differentiate the tool marks of scanning from any other mark types such as construction marks, different surface alterations of usage, spon- taneous impacts, and damages.

By the combined comparative examination of general and over-shabbiness of the key under examination it is possible to deduct consequences about what scale the shabbiness of the key might have during sampling as well as what scale of usage shabbiness arose after scanning. On the basis of these comparisons it is possible to assume the development of the mark through the whole period of usage.

- The mark was issued on a spick-and-span key, and after the formation of the mark, the key was in use for a longer time. In this case the formation time of the mark is closer to the beginning of the given period.
- The mark was issued on a moderately used key, and after the formation of the mark, the key was in use for a longer time. This statement refers that the formation time of the inspected mark is estimated at the middle of the key's usage period.
- The mark was formed in the firmly worn-out state of the key and after its formation the key was in use for little time. This statement refers to the formation time of the inspected mark and is estimated at the middle of the key's usage period.

The Formation of the Key's Shabbiness

During adequate use the key goes through different mechanical effects which produce vari- ous featured changes on the surface of the key. Out of these, the most significant are the lock operation related alterations as long as the key is used regularly. The lock operating related changes are formed dependent upon the shaping and stock material of the key, elaboration of high standards, structure of the belonging lock, condition of structure elements, contami- nation and environmental conditions, typically in chafing characteristic, damage of galvani- zation coat, oxidation and in damaged lock part caused key damages format. Forensic tool mark examination shows those wearing specialities are more significant which are typically formed along a forced path and overlap the tangential surfaces of sampling. One of the most typical key indicators is the milling which frets distinctively because of the interconnection with the tumbler pin or wafer pin.

Fivaz and Zanetta carried out a model experiment with a vehicle key, and in the course of this they regularly used the key more than 3000 times. During their experiment they proved that the mark of the key duplicator machine's scanner may be detected even after numerous uses. [10] [11] By means of ordinary use this lock operating number signifies around one year of usage. [12]

Mechanical Code, Individual Characteristic and Decoding of Vehicle Keys; Possibilities to Identify Vehicle Key and Vehicle

The mechanical individual nature of vehicle keys is provided by the shape of the milling course and the related mechanical code. Within the mechanical code system the number of the tumbler parts and the number of the belonging mechanical code steps determine in what numeral conglomerate individual nature can be defined. For example, in case of an unsprang wafer, rotational bolting, six-wafer mechanical code system (e.g. Ford, Jaguar), 4 mechanical code steps belong to each wafer pin. This means that in case of six key (closing) pins the possibilities of theoretical variations is 4^6 (4069). In practice this mechanical code variation is less since many wafer pin variations are not in use because of security aspects. On the basis

of these a Ford or a Jaguar car key may be considered individual in a few thousand number of items conglomeration. Because of the repeat of mechanical codes more vehicles might have the same key code and milling.

In case of many vehicle types it is also possible to define the key and/or mechanical code by the chassis number. In case of several key types the key's keycode (number of key label) and the mechanical code which characterize the real shape of the milling, are the same. The so called Direct Code is used in several types of Ford, Jaguar and Renault for example. Since the mechanical code repeats, no vehicle identification code can be determined or rather can- not be restricted to one vehicle identifier. This does not mean that a vehicle key cannot be assigned to a vehicle thread-mark. Several manufacturers keep a record and on the basis of which by chassis number the key code and mechanical code can be identified and it is enough to presuppose by the mechanical code of the car key to be checked which vehicle it belongs to. Based on the above there is a possibility to identify the vehicle's authorised key code and the vehicle key's mechanical code.

It is important to note that an opening test during which the used key opens the lock(s) un- checked does not mean mechanical code identification of its own, that is to say it can happen when the lock cannot be opened by the same mechanical code dispose key even one adapted to the lock. Because of natural wearing and ageing it may happen that a differently milled key could be used as a proper key. (Table 1)

Table 1. Based on the above, abnormal effects may originate for the following reasons.

The structural change that causes malfunction in key operation	**The method of detecting abnormal occurrence**
The usage shabbiness may reach such a level when a key with different mechanical code instead of the key with individual mechanical code, can be used as a proper key.	The presumption of the shabbiness level is possible by the optical examination of the lock's part or by endoscopic and borescopic examinations.
There was a mechanical code modification earlier in the lock.	Answering the question whether there was mechanical code modification in a given lock mechanism, is only possible after the collective examination of ratchet elements and comparative examination of shabbiness levels.
Member	Answering the question whether there is such a structural element in the lock that by way of its form-change and damage means obstruction in point of adequate actuation of the lock can be ascertained only by the examination of the inner structural components.
Presence of stock residue	Answering the question whether there is such strange residue or piece part in the lock that means obstruction in point of adequate actuation of the lock, can be ascertained only by the examination of the inner structural components.

Manufacturing fault	Answering the question whether there is such a manufacturing fault piece or ratchet in the lock that means obstruction in point of adequate actuation of the lock, can be ascertained only by the examination of the inner structural components.

Conclusion

This essay introduced vehicle keys as forensically interpretable tool mark carriers. In the focus of different mark types the technological mark specialities, the emerged shabbiness during ordinary usage and the possible duplication sampling mark formations were dis- cussed. Beside the individual and group specialities the partial results of complex examinations may enlighten the "key" details of originality and vehicle usage, which may serve as ev- idence in the course of the criminal investigation. These details are carried by different mark specialties. The tool marks and other changes on the surface of the key may answer whether the examined vehicle key was part of the original key set, if there was any copy made, ma- nipulated, or the observable shabbiness was in accordance with the usage data of the vehicle. In addition, the individual identification of the key maker or the key duplicator machines are also possible by the comparative examination of the microscopic tool marks. The reader shall come to know various methods of inspection by the particular mark carrier of trasologycal marks, as well as the information content of marks and the deductible consequences of these.

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The Role and Security of Money from the Aspect of Cyber Warfare

CSER Orsolya[1]

Security is one of the most basic human needs, which never appears alone, but always in response to an emergency situation. Internal security of a state means the protection of the political, social and economic order, and the elimination of hazards, such as the instrument of economic terrorism, cyber attack.
Cyberspace is a major arena of modern warfare. Attacks against it have made it important for banking systems that IT systems be developed in the most secure manner both inside and outside the organisation.
Keywords: *cyber-attack, financial security, IT system, critical infrastructure, IT operations, electronic service, bank security*

Security

Security is one of the most basic human needs, which never appears alone, but always in response to an emergency situation. [1] The danger of an attack against Hungary and its al- lies implemented by conventional weapons currently is minimal. Internal security of a state means the protection of the political, social and economic order, and the elimination of haz- ards, such as the instrument of economic terrorism, the cyber attack. [2]

For security, the uninterrupted operation of the economy and the assurance of the conditions for development are basic prerequisites, whose economic aspects are:

- *assurance of economic stability*: efficient economic structure, secure international trade relations, free competition;
- *establishing stable financial conditions*: moderate inflation, manageable debts and loans, stimulating interest system.

Financial security means the stability of the budget of the organisations belonging to the defence sector. Accordingly the government of Hungary is committed to supporting the bud- get of the Ministry of Defence in the 2013–2015 budgetary years at least in the nominal value of the scheduled budgetary contribution for 2012 in the Government Resolution 1046/2012 (II. 29.) [3] ensuring the budget sources to create defence expenditure and the conditions of long-term planning.

Hungary's defence expenditures to the proportion of the GDP – 0.65% in 2014 – are large- ly behind the expenditures spent for this purpose by NATO member countries (2.0% based on the NATO recommendation). In accordance with the Government Resolution 1046/2012 (II. 29.) the planned defence expenditure for 2014 is 0.655% of GDP, for 2015 0.6%. [3] Starting from the 2016 budgetary year there will be at least a 0.1 percentage point annual increase

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in GDP proportion until the amount of aid by 2022 – approaches the average of the NATO member states – reaching 1.39% of GDP. The planning of the budget quotas is available for the defence sector in accordance with this.

The main aim of the all-time expenditure target of the Ministry of Defence is to be able to defend Hungary's independence – with the cooperation of the alliance – with our country's volunteer army, filled up with professional personnel. Besides this, resulting from our NATO and European Union membership, performing international roles and fulfilling alliance obli- gations by participating in operations carried out by the UN and the Organization for Security Co-operation in Europe[2] (OSCE) to become capable of contributing to the strengthening of international security; and to fulfil the tasks resulting from the defence preparation.

The custody service at financial institutions is a closely related field to the topic of fi- nancial crises and their management. The conceptual structure and approach of the defence and war economy sciences can be implemented on a seemingly distant field like the banking community, which acts in defence of our values. [4]

One of the methods of economic terrorism is cyber attacks. It is an important question, since the aim is first and foremost managing financial crisis's and related bank tasks. Bank security is of critical importance, since a bank system may be targeted by a cyber attack in given cases. Thus it is necessary that an adequately secure environment should be assured in regard to banks, therefore security must be built into the IT systems. The reasons for the occurrence of exceptional events can be deliberate or careless behaviour, for example a cyber attack against an IT system, or the totality of unexpected events, for example a natural disas- ter. As a consequence of the given event, life and property security is seriously endangered, hindering or paralysing the normal operation of the bank. To anticipate and prevent these exceptional events, and to decrease the measure of the disadvantage that occurred, tight co- operation must be developed with local military and police organizations.

It is expected by the state, the actors of the economy and also civilians that these basic vi- tal or critical infrastructures operate with the highest security possible. [5] For the defence of infrastructure elements against terror activities, natural disasters, and accidents it is important that disturbance or manipulation of the operation of the infrastructures should be avertable and preventable, and as fast, exceptionally and manageably as possible.

National Security Strategy (NSS)

The concept of security is gaining a more and more expansive interpretation. In the continu- ously changing security environment these days, the challenges, risk factors and threats have already emerged – individual, society, states and regions, and global level – at several levels, and affect a wide range of individuals, government and non-governmental organizations, and transnational actors. By now it has become necessary to treat the political, military, economic and financial, social (within this human and minority law) and environmental dimensions of security together.

Based on evaluating the assets and interests, and analysing the security environment Hun- gary's National Security Strategy defines those national targets, tasks and expansive govern- mental tools, with which the EU and NATO member Hungary vindicates its national secu-

2 peacekeeping operations

rity interests in the international political and security system of the 21st century. [6] Those security elements which are present in case of a financial crisis – for example cyber attack against the bank system of the country – are important aspects of ending the emergency. The aim of the NSS is to provide direction for the government and the private sector in questions of security policy and including financial issues. Because of this, in its philosophy it follows an expansive and all governmental approach. The security of the country is a public affair, therefore one of the tasks of the strategy is to give a usable guideline in everyday life besides the professional circles in Hungarian security policy thinking.

The NSS defines all those factors that determine financial security in the operation of the economy of each nation state:

- cash supply – in case of bank crisis limitation of cash supply;
- instant deposit withdrawal panic – for example the Postabank scandal (February 1997);
- financial reserve – in the case of crisis situations;
- financial moratorium – limitation of money withdrawal from financial institutions. The 30th article of the NSS in 2012 is about financial security, giving a guideline to the government sector for managing and solving the problems of financial crises (for example cyber attack). [7]

To prevent and manage the conflicts of our age requires a global and expansive approach. Sustainable security and stability requires the expansive approach, aligned with each alterna- tive usage of the crisis management methods – including development policy methods – the integrated civilian and military approach and the capability development, and strengthening the cooperation of international actors. The expansive approach must be implemented on a national government level as well.

The national security strategy can only be successful and efficient in case of an all-gov- ernment approach, participation and responsibility, making the institutional frames meet the challenges and allocating adequate resources. The global financial and economic crisis gives an unprecedented challenge for the whole North Atlantic community. The long-drawn-out and deep crisis weakens the security institute system of the developed countries, among them, Hungary's, and the cohesion of the international organisations and co-operational frameworks, and decreases the resources that can be spent on strengthening security. All of this requires the innovative and more efficient concentration of the resources we have to strengthen our security skills. In this field, organizational cooperation continues strengthen- ing, and the importance of the conscious usage of the possibilities hidden in multinational cooperation. According to the 5th article of the North Atlantic treaty, collective defence is the cornerstone of Hungary's security. The active contribution to collective defence and security is the most important security political obligation of Hungary. The Strategic Conception of NATO sets those directions with which the alliance – adapting to the changed security envi- ronment – is capable of fulfilling its role as set in the North Atlantic Treaty (Washington Trea- ty) and assuring the defence of its member countries. Terrorism remains the significant global threat of our age that emerges in different forms in time and space, continuously changing, and endangering our alliance system and our common values. Hungary's terror threat is low, yet at the same time terror threats of foreign origin or against Hungarian interests abroad must be considered. Besides this, foreign terror activities may have security and economic consequences affecting our country.

Critical Infrastructures (CI)

Modern societies largely depend on technical and virtual infrastructure systems (energy sup- ply, drinking water supply, IT networks, etc.) whose complex system is characterised by their dependency on each other. Therefore, increasing the security of infrastructures became a primary concern in the security policy of the developed countries. The disruptions to the operations of these systems, and the temporary outage or destruction of certain elements have significant impacts on our daily lives, the efficient operation of the economy and the government.

According to the general definition, critical or vital infrastructures are "facilities or ele- ments of such systems that are necessary to fulfil essential functions of society – thus assur- ing especially health, personal and property security of civilians, economic and social public services – and the outage of which due to the lack of continuous fulfilment of these tasks would cause consequences." [8]

These infrastructures are partially owned by the state, partially by the private sphere, and are operated by both of them. Critical infrastructures may be damaged, dysfunction may occur in their functioning, or they may even be destroyed as a result of terror attack, national disaster, negligence, accident, computer hacker activity, crime and/or misconduct. The main areas for increasing the security of the infrastructures are putting the defence of individuals and societies, and the security of critical infrastructures on a higher level. In all three fields, the dangers and threats may have physical or IT origins, or may be caused by the complexity of the systems. The solution requires investigating the physical, IT and psychological level reasons of the new threats and risks, understanding their relationship/context, and managing them.

On the whole the CI are:

- those networks, resources, services, products, physical or IT systems, equipment, tools and the elements of that equipment;
- whose failure, disturbance, outage or destruction of operation;
- directly or indirectly, temporarily or long term may have a serious impact;
- to the economic and, social wellbeing of citizens, public health, public security, nation- al security, the national economy and the operation of the government.

Based on the definition of national critical system elements in Annex 2 of the Act CLXVI of 2012 [8] on the identification, designation and protection of critical infrastructures, finance can be considered a critical infrastructure sector.

Table 1. The sub-sectors of financial critical infrastructure. [8]

	A	B
	Sector	*Sub-sector*
17	finance	commercial, payment, and clearing and cash accounting infrastructures and systems of financial instruments
18		bank and credit institution security
19		cash supply

The CI extend to several economic sectors, among others banking and finance, transpor- tation and distribution, the energy industry, the system of public utilities, health care, food supply, information, and indispensable state services. Some of the critical elements of these sectors do not strictly belong to the concept of "infrastructure", but in fact they are such net- works or supply chains, which support the assurance of some basic product or service.

The possibility of catastrophic terror attacks threatening critical infrastructures is ever increasing. The results against the industrial control systems of the critical infrastructures can be very different. One of the types of catastrophic failure of the infrastructures is when the failure of one part of the infrastructure leads to the failure of the rest, causing a domino effect. This type of failure may occur as a consequence of a synergic effect of the infrastruc- tural sectors effect on each other. A simple example of this can be an attack against the energy providing public utility, if the energy supply stops other electrical devices – such as banks systems as well – may stop. The sequence of events following each other also may cause serious damage, and through the public utilities may result in the outage of bank and finan- cial systems. For the sake of the defence of critical infrastructures against terror activities, national disasters, and accidents, it is important that the disturbance or manipulation of the operation of infrastructures should be avertable and preventable, and as fast, exceptionally and manageably as possible. Therefore increasing the security of infrastructures became a primary concern in the security policy of developed countries. The solution requires investi- gating the physical, IT and psychological reasons for the new threats and risks, understanding their relationship, and managing them.

Cyber Defence

Cyberspace is a major arena of modern warfare. [9] Attacks against it have made it important in the case of financial and banking systems that the IT systems should be developed in the most secure manner with the coordinated use of hardware, software and or hardware. Based on this, cyber defence aims to maintain accessibility to information and information based processes in its own network IT systems, and to ensure the efficient usage of these systems equally in peace, crisis or conflict. Cyber warfare means network warfare materializing in the IT dimension. To put it simply, it is an activity to influence the confidentiality, integrity, and availability of critical IT structures using IT physical and human tools. The demands of de- tecting cyber attacks require tight cooperation and organised action between the developers, producers, distributors, administrators, users of the IT systems and the service provider, leg- islative and intelligence service organizations. [10] The operational speed of the attackers of IT systems may exceed the recognition and response skills, including human solutions. For the sake of efficient cyber defence it is primarily important to estimate the seriousness of the event (damage to the system, compromising, malware penetrating the system) by automated methods, and reduce the negative effects of those. The detection of attacks in time is a basic prerequisite of starting the recovery and taking the necessary countermeasures.

The threats that can be implemented in information warfare can be divided into four categories: "compromising, deceiving, interruption of service, physical destruction." [11] All four categories mean risk to those independent or networked weapons and support systems (bank systems), which largely depend on IT systems. The threat may originate from organ- ised powers (states) or unstructured belligerents (hackers).

Compromising can have different forms, for example the unauthorized acquisition of technology or software failure, unauthorised penetration of the system, use of malware, col- lection of data by intelligence services, or a psychological operation. To protect the auto- mated IT systems, in the first step the threats against them must be understood, for example compromising the data and information, partial or complete hindrance, damage to services. The best tool for countering this is training and tight cooperation between the operators and the users. As a preliminary examination, minimal information must be collected, probable disciplinary proceedings must be indicated, and a proposal for further investigation should be submitted. Assessing the damages after being compromised must be done by a centrally controlled system that consists of a central database and targeted developed programmes and projects. The security monitoring of IT systems is interception, reading, copying or recording of own official telecommunication, whose purpose is to provide material for analysis that en- ables the precise definition of the security level of the automated bank IT systems. In this IT environment, IT operations mean coordinated activity in the physical, IT and knowledge di- mensions which are capable of influencing belligerents by affecting their information, infor- mation based processes and information communication systems. The aim of IT operations is gaining information superiority, power and eventually leadership superiority.

The primary threats of IT operations are: compromising, damage to data, or breaking of an IT operation. In case of security problems, prevention, fast response, and minimising the damage can be considered a major task. In all of these tasks, the widespread usage of IT solu- tions appears with more and more emphasis. The diversity of the definition based on different approaches proves the necessity of cooperation for the sake of the defence of IT operations, risk related defence tasks, and training extended to all details.

It is widely accepted that a successful cyber attack would cause only a few casualties even in the worst case, but in regard to critical infrastructure services it may result in losses. For example, due to a successful cyber attack against a bank network, customers would miss the bank services until the experts successfully fix and restore the network.

The risk of attack through cyber space – by IT or other methods – in the case of the banks made it important that IT systems should be developed in the most secure way possible, in- side and outside the organisation. [12]

The financial systems have a very important role, since without their adequate operation a part or the whole of the financial processes would become unserviceable, or at least signifi- cantly hindered.

The Security of the Financial System

The macroeconomic cycle must continuously operate so that the perpetuity of the cash sup- ply, and by that real flows (production) may be assured. The protection against fake money and money forgery – in its physical form – means the importance of the protection and se- curity of money.

Financial service activities can be initiated and continued only in case of the existence of information and control systems to reduce operational risks, and a plan to manage emer- gency situations. To achieve this, it would be worthwhile to develop a practical scheme for the future – by the Best Practices (Best Practises) method already used in several fields – by which the financial authorities (banking sector) are capable of a coordinated and immediate

response to counteract attacks against them, and to anticipate and prevent exceptional events, and to decrease the measure of the disadvantage that occurred, tight cooperation must be developed with the local military and police organizations.

In case of the security of a bank system (bank security) the most important criteria are the following: [13]

- Financial service activities can be initiated and continued only in case of the existence of information and control systems to reduce operational risks, and a plan to manage emergency situations.
- The financial institution must develop a regulation system in relation to the security of its IT system used to fulfil its financial, auxiliary financial service activities, and must ensure the defence of the IT system to the ratio of the risks.
- In the regulation system, IT demands, the plan for the assessment and management of the security risk of the usage in the fields of planning, acquisition, operation and control must be covered.
- Based on evaluation of the result of the risk analysis, in proportion with the security risk there must be provided at least management procedures ensuring the self-defence of the IT system, closeness to its critical elements, control ensuring comprehensive- ness, and also a security environment which logs the events of critical processes in terms of the operation of the IT system, and is capable of the systematic (possibly automatic) and substantive evaluation of this logging, and offers the capability of man- aging irregular events.
- To fulfil its activity, to keep its records up-to-date and secure, the financial institution must implement the defence measurements justified by the security risk analysis, and must meet the following minimum requirements:
  - the IT system needed to provide the services, and auxiliary equipment to ensure the perpetuity of services, and in the case of non-availability of this equipment other solutions replacing them – ensuring the perpetuity of the activities and services;
  - such security backups and back up rend (type and method of the backups, backup and restore tests, rules of procedure) of the software elements of the IT system that enables the possibility of restoring the system within the critical restoration time of the service. These backups must be stored separately in a fireproof way for risk aspects, and, and must provide defence of the same level with the source system access of the backups;
  - a plan to manage the exceptional events hindering the perpetuity of its services. Consequently, bank security

activity is institutional thinking of all those planning, organ-
isational, managing, executive and controlling conditions, which serve the defence of their own objects, assets of the financial institution, and the security of employees and customers.

For managing exceptional events, the following can be defined:

- In proportion with the size, the character, order of magnitude, complexity of the fi- nancial, auxiliary financial service activity of the finance institute must have a reliable management system, and is obligated to apply efficient procedures to identify mea- sure, manage, track and report the emerging risks within its framework.
- Besides this, it must have written regulations of procedure, rules to measure, manage the operational risk, and emergency and conduct of business continuity plan to main- tain continuous operation, and to decrease the resultant damage caused by serious interruption of the conduct of business.

The security of the financial system is continuously threatened, for example catastrophes and war situations, and the activities of fraud and robbers. This is a potential attack against critical infrastructures, in this case against the banking sector, where an adequately safe en- vironment must be ensured and security must be built in the IT systems. High level manage- ment must be prepared against these problems, (NATO Crisis Management Exercise [CMX] exercises), and then acting together to stop the threat and restore the safe conditions, where the Hungarian crisis management system decision preparation and decision making proce- dures and the cooperation with the NATO headquarter and the member countries is practiced.

NATO Crisis Management Exercise

Our critical infrastructures are vulnerable and attackable. The experts cannot see any definite steps which would strengthen the adequate, complex defence of these networks –especially the bank and financial computer networks. All of that means that critical infrastructures are extremely vulnerable. The countries with advanced military and IT culture consider the de- fence of critical IT structures one of the most serious challenges of the beginning of the 21st century.

So far no such study has been made of a "Digitális Mohács" in Hungary, one that would take into account what chain reactions may be caused by an expansive sequence of activities including IT attacks relating to the critical IT systems, for example a cyber attack against our bank system – as was simulated in November 2012 during the CMX 2012 drill. One attack targeting the IT structures may cause operational malfunctions lasting for days in the country.

The main aim of the NATO CMX crisis management and cyber defence (attack against the bank system) drill was to make consensus decisions needed for united action against the challenges of our age: [14]

- enforcing the 5th article of the NATO treaty – the member countries acted together to prevent the attack and to restore the systems;
- practicing the decision preparation and decision making processes of the Hungarian crisis management system, and cooperation with the NATO headquarter and the mem- ber countries;
- for the CMX exercise the cyber attack in Estonia in 2007 served as an example (these days there are no "real" wars without cyber attacks).

The experts drew attention to the fact that, in case of these types of attacks, one must primarily aim for prevention, since it is almost impossible to prepare for attacks planned and targeted by other organisations. Consequently, bank security activity is institutional knowl- edge of all those planning, organisational, management, executive and controlling condi- tions, which serve the defence of its own objects, the assets of the financial institution, and the security of employees and customers. The crisis concentrates the impact of the events, intensifying the reactions of people living in a country or the members of a nation. [15] The attention concentrates on the organisation in crisis, whose change is inevitable. In this case the majority of a country can be affected by the national (nationwide) crisis simulated in the article if the events planned by the terrorists occur. The period before the crisis can be called the stage of foreboding signs, when the warning signs multiply. It is quite often possible to determine that turning point after which the crisis is already inevitable.

The basic fields of crisis management are the following:

- *preventive*: prediction and evasive averting, prevention;
- *active*: prevention and repression of the growing and spreading of the threats - based on the imminent crisis's predicted by the appreciable signs;
- *reactive*: strategy and measures to eliminate the occurring crisis, i.e. crisis management policy.

Problem management can be divided into parts, which are the following:

- *diagnosis*: recognition of the failure and success factors;
- *assessment of the situation* ;
- *therapy*: operative actions to extinguish the problematic anomaly.

In case the counter steps are not efficient, the chronic stage comes, where the crisis broad- ens, serious damage occurs, and there is a very little chance of the solution. It is exactly to prevent this that the NATO CMX exercises are planned every year, when through simulation realistic situations are created, which may cause crisis situations. The bank security, which may be targeted by cyber attack in a given situation is an important aspect, hereby it is nec- essary that, in the case of banks, an adequately safe environment be ensured. Towards this, security should be built into IT systems. The reasons for the occurrence of exceptional events can be deliberate or careless behaviour, for example a cyber attack against an IT system, or the totality of unexpected events, for example a natural disaster. As a consequence of a given event, life and property security is seriously endangered, thus hindering, or paralysing the normal operation of the bank. To anticipate and prevent the exceptional events, and to decrease the measure of the disadvantage that occurred, tight cooperation must be developed with the local military and police organizations.

National Response System

The Estonian critical IT infrastructures [16] were attacked on the 27th April, 2007, by an ex- ternal Distributed Denial of Service (DDoS) attack that was supplemented with spamming, and defacing. The main targets were the computers of the Estonian Parliament, and the banks, ministries, newspapers and electronic media. The attack hit both Estonia and NATO unpre- pared, although its implantation required few resources.

In Hungary, so far, no incident caused by external attack has come to light, but in 2009, several IT errors occurred that blocked the operation of the given IT infrastructure. [17] This caused difficulties to tens or hundreds of thousands of people; it was widely covered in the media, and caused significant prestige loss for the operating institution.

Therefore Hungary also has its share of bitter experience in connection with the outage of IT systems, but the impact of direct, organised attacks for the time being is unthinkable.

In the operation of financial systems, in bank transactions, electronic services have an increasingly emphasised role in Hungary. The secure operation of these services is a critical question from a national security aspect, since without those the economic and financial functioning of the country would confront serious obstacles.

The legislature is trying to guarantee the security of these services by law, but in certain areas currently there are no standard technical recommendations which would determine the requirements of security, integrity and availability. [18: 192–194] [18: 414–417] Internation-

al trends and domestic experiences both show that electronic bank services are permanent targets of organised crime, hackers, and official organisations of other countries.

To provide a perfect defence would mean disproportionately high costs, however based on the principle of expectable carefulness it is necessary to securely develop the publicly ac- cessible services. That means that security thinking must be present already at the planning of the new applications. For bank services it is possible to develop security solutions on several levels. The security level of banks can be significantly increased, and thus the rising national security risk can be considerably decreased. The relationship between crisis management and the exceptional rule of law can be an important factor in ensuring that the solution of arising problems would be executable. After the events of Tallinn the crisis is nothing else than an emergency situation whose solution requires the coordinated action of several government organisations and local governments following the lead of the Estonian Government's crisis management committee. All of these means a serious threat to the security and cannot be managed with conventional tools.

Today in Hungary there is no standardised crisis management system, and creating it is not a realistic objective. In the Government Decree 278/2011 (XII. 20.) about the destination, duties, regulations of procedures, the obligations of the participants of the National Response System, in accordance with the NATO Crisis Response System [20] the demand for it was formulated earlier. The existing crisis management subsystems and the skills connected to them are divided by departmental segments; their cooperation often follows an ad hoc style.

Nevertheless the aligned implementation of the civil and military law enforcement skills is necessary, because of the conformity with the NATO Crisis Response System as well. [19] As a result of this, an expansive approach is necessary, which gives a complex answer to the complex challenges, implements aligned skills, extinguishes the duplicates, and forms cohe- sion in civilian and military law enforcement cooperation.

Summary – Suggestions

To perform financial service activities an information and control system to reduce operational risks and a plan to manage emergency situations is needed.

Based on the evaluation of the result of the risk analysis, in proportion with the security risk there must be provided at least management, procedures ensuring the self-defence of the IT system, closeness of its critical elements, control ensuring comprehensiveness, and also a security environment which logs the events of the critical processes in terms of the operation of the IT system,

Towards this, it would be worthwhile to develop a practical scheme for the future – by the Best Practices (Best Practises) method already used in several fields – by which the financial authorities (banking sector) are capable of coordinated and immediate response to counteract the attacks against them.

Nevertheless, examining the defence sector, for the armed organizations the stability of the budget has an extreme importance, by which planning predictability can be ensured for the future, and the capability development and the task based planning.

Financial service activities can be initiated and continued only in case of the existence of information and control systems to reduce operational risks, and a plan to manage emergency situations.

To achieve this, it would be worthwhile to develop a practical scheme for the future – by the Best Practices (Best Practises) method already used in several fields – by which the financial authorities (banking sector) are capable of coordinated and immediate response to counteract the attacks against them.

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Király Pál and the Hungarian Submachine Guns

SOÓS Péter[1]

Király Pál was one of the best-known Hungarian weapon designers, whose name has become a synonym for the submachine guns he constructed. His confusing per- sonality and puzzling career well reflect an eventful and chaotic period of 20th cen- tury Hungarian history. When his most successful creations, the Király submachine guns, were being developed, no experience regarding the military usage of such weapons was available at all. Consequently, when designing and manufacturing the weapons, the closely cooperating military supreme command and ammunitions in- dustry faced several initial problems. Although the continuing development proved successful, production capacity fell behind the growing needs of the military for au- tomatic handguns. The present work aims at introducing the famous engineer's life and activity, as well as the phases of weapon development and production history. **Keywords:** *weapon designer, WW I, submachine gun, armaments factory, weap- on development, breech mechanism, high performance cartridges, WW II, feeding problems, redesigning, subtypes*

Introduction

As in the case of other new types of arms, submachine guns were brought into being by the new combat conditions of WW I. Besides their small size and high rate of fire, the submachine guns were easier to handle in the trenches, mountains and in close combat conflict and facing technical obstacles. In the last years of the war attempts were made to transform self-loading, pistol cartridge firing handguns into automatic firearms, and special constructions made their appearance on the battle fields. The first gun of this type was the 9 mm Italian Villar-Perosa submachine gun, which was rather a sort of light machine gun. [1: 230–241] Several dif- ferent kinds of submachine gun, named "assault pistol" were used in the Austro-Hungarian army, and several factories and arms designers were involved in the construction of such arms, namely the director of the Arms and Machine Factory Plc., (Fegyver- és Gépgyár Rt., Budapest) Frommer Rudolf.[2] After the end of WW I, in compliance with the peace treaties, the Hungarian army was downsized and the capacity of military industry was considerably reduced. In order to circumvent the restrictions, many of the companies, in cooperation with the Ministry of Defence, carried out the new arms developments in secret, thus avoiding de- tection by international observers. One of the factories involved in secret arms developments was the Budapest based Danuvia Arms and Ammunition Factory Plc. (Danuvia Fegyver és Lőszergyár Rt.) carrying out arms development and manufacturing from the mid 1920s. The small but modern factory was specialized in manufacturing and developing automatic infan- try and board-arms. [2: 19–34]

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2 Hungarian weapon designer, 1868–1936.

The Life of Király Pál

Király Pál was born in 1880, in Budapest, and was one of the arms designers working to revive the Hungarian arms industry. Király, who was of noble birth, after taking a degree in mechanical engineering in 1902, attended a one-year training course for reserve officers in the Austro-Hungarian Army, and on the basis of his qualification joined the artillery. His took out his first patent for a semi-automatic pistol with simple blowback mechanism in 1910. In 1914, he was called up for military service in his regiment. In 1918, at the end of WW I, having earned an Artillery Captain rank, he became a reservist officer. From that time on, he dedicated himself entirely to arms design. Commissioned by the Ministry of Defence, be- tween 1921 and 1924, he designed a self-loading rifle and a light machine gun, after that he was hired by Swiss Industrial Company (SIG), located in Neuhausen, Switzerland. Although the exact title which Király had at the company is not known, he undoubtedly worked at the department developing automatic guns, headed by Gotthard End, director. Their most suc- cessful joint design project was the

Király-End (KE)–7 light machine gun, of which a few thousand pieces were exported mainly to the Far-East. Király was in charge of the design of the breech and feed mechanisms of the guns, which represent the core component of automatic guns. Apart from the light machine gun, Király's name is also associated with several self-loading rifles, of which only a limited number were manufactured. [3] In 1928, his relationship with the company man- agement must have deteriorated, therefore, he decided to pursue his activity in Hungary, at Danuvia Plc. In the 1930s he designed pistols, self-loading rifles and light machine guns, but none of them were put into series manufacturing. His most outstanding design achievements are the submachine guns bearing his name, which he designed from 1939, along with a large number of experimental arms. During the years of WW II Király continuously strived to improve his guns, in close cooperation with the Institute of Military Technology, an establish- ment of the Ministry of Defence in charge of military development. Following WW II Király was employed by the Ministry of Industry, but it seems his financial situation deteriorated considerably. He tried to draw the attention of the new Hungarian military elite to his inven- tions, but in vain. In order to resolve his difficulties, he attempted to sell his patents abroad, but this move did not pass unnoticed by the authorities. In 1947, he travelled to Switzerland again hoping to straighten out his finances with the help of his past connections. That was when he met his fellow citizen, Kovács Alexander, who had been given a free hand and five million dollars by the dictator of the Dominican Republic, Rafael Trujillo, to establish an arms factory. After negotiations lasting several months, Király finally accepted Kovács's offer and travelled to the Caribbean country. In the factory set up in San Cristobal Király Pál pursued his designer activity based on his experiences gained in Switzerland and Hungary, and managed to develop, together with his colleagues, a successful submachine gun range, named Cristobal. Trujillo was assassinated in 1961, which meant Király lost the ground from under his feet once again. To secure a living, he most probably tried to sell his patents and designs, of which the Dominican secret services must have disapproved, and presumably murdered the Hungarian arms designer, who was then aged over 80. [4]

The M 1939 Submachine Guns and Its Subtypes

After WW I no submachine guns were adopted in the reorganised Hungarian army until the mid 1930's, the rifles being considered were suitable solely for law enforcement purposes. The situation changed around 1938 when, using the experiences of ongoing armed conflicts, comparative trial shootings of the European top level submachine guns were conducted by the Institute of Military Technology.

The breakthrough technology was the patent for a gun jointly designed by Király Pál and Kucher József, leading engineers of Danuvia Plc., commissioned by the Hungarian Gendar- merie and the Police. The technical solutions which Király got to know during the years spent in Switzerland, especially the SIG MKMS submachine gun, represented the basis of the new Hungarian submachine gun. Both submachine guns, characterised by a full length fore-end, similar in shape and size, could be mounted with bayonet and folding magazine. Never- theless, the essential difference between the two guns was the unique breech mechanism featured by the Hungarian rifle. The complex, thoroughly machined breech mechanism was needed because of the high performance cartridges used by the Hungarian submachine gun. The Király submachine guns in fact did not fire the standard 9×19 mm Parabellum cartridge, commonly used by the European armies, but the 9×25 mm Mauser Export cartridges. The designers increased the energy absorbing capacity of the breech mechanism so as to design a relatively light gun capable of firing high performance cartridges. The breech mechanism was divided into two parts gliding on each other, with a separate and delayed blowback. The real innovation of the chief engineers of Danuvia Plc. was that, as opposed to the Swiss made submachine guns, the two breech-blocks were connected with a so called push-back lever, the positive push and friction were meant to absorb partially the blowback. The technical solution proved to be efficient, but the relatively complicated structure made production la- bour intensive and costly.

The new submachine gun having successfully passed the test in the presence of the repre- sentatives of the Hungarian police and Institute of Military Technology, Danuvia Plc. offered the model also to the Royal Hungarian Army at the end of 1938. Following a few minor modifications and succesful test shootings and field evaluations, the leaders of the Army adopted the new rifle under the name "submachine gun M 1939". It is mentioned in tech- nical reports on several occasions that the Király submachine gun is of an excellent design, surpassing submachine guns of similar use in many respects. Higher initial cartridge speed, lower weight, high capacity magazine and parts not requiring greasing were the features highlighted in the reports. Meanwhile, military experts differed about the possible uses of the submachine guns in the battle fields. They expected the Király submachine guns, because of their higher penetration ability and longer effective range, to replace the self-loading pistols and become a basic gun of the Hungarian Army. By adopting the Király submachine gun, the Institute of Military Technology made an important step towards a yet nonexistent category of rifles, the assault rifle with intermediate cartridge.

The adoption of the submachine gun M 1939 was not immediately followed by a larger order. Out of the first lot of 1566 submachine guns only 276 were manufactured for the Hungarian Army, namely, for its elite parachute battalion. However, parachuters complained about the length of the submachine guns, representing an obstacle during test jumps with

arms, and requested a folding stock version from the authorities. Thank to the joint efforts of the Institute of Military Technology and Danuvia Plc., the first subtype of the submachine gun, named M 1939/A, was designed with a hinge allowing the folding of the stock to the side, thus reducing the length of the rifle by one third. No original example was preserved of the submachine gun 1939/A.[3]

The process of adopting the accessories of the Király submachine gun took place in 1941–1942. The magazine case holding altogether six magazines, each containing 40 car- tridges was made of linen, allowing the fixing of a magazine loading machine, too. The magazine loading machine could load 10 cartridges simultaneously, the cartridges being kept together with a loading clip. The submachine gun could be carried with the help of the gun slings generally used in the army. The bayonet used for the M 1935 rifle could be attached to the submachine guns. [5: 70–74]

The military events of 1941/42 proved that not only the arsenal of elite troops was lacking automatic handguns. Therefore, the General Staff expected to use a significant number of submachine guns in the battle order "Huba" III. Upon the mobilisation of the Hungarian 2nd Army in spring 1942, the available number of Király submachine guns was not sufficient, therefore, the troops had to be armed with 5000 pieces of 9 mm MP40 submachine guns provided by the German Army. [6: 32]

Although the latter proved to be effective, the experts at the Ministry of Defence contin- ued to believe the future lied in the Hungarian submachine gun. Their objective was to put into service a gun which was smaller than a self-loading rifle but more powerful than the submachine guns. This plan did not fulfil the expectations for several reasons, one of which was that even a high performance pistol cartridge could not be efficient in a combat situation where a gun using a rifle cartridge was efficient. The other huge problem was the rifle shape itself. In spite of better shooting accuracy, better aiming accuracy and the possibility to attach a bayonet, the M 1939 Király submachine gun lacked precisely what characterised the sub- machine guns: easy handling and portability.

Nevertheless, the real problem regarding the Király submachine guns was of a different kind: the imperfect structure and the recurrent operational obstacles arising due to the lack of ammunition supply and low material quality represented the major shortcoming. In order to remedy the shortcomings, the charge of the cartridges was modified and reduced, the problematic parts were redesigned. As most of the feeding problems originated in connec- tion with the magazines, the 90° inclination angle of the magazines was changed during the experiments, and the movable ejector built in the breech mechanism was replaced by a fixed ejector installed in the receiver. Although the M 1939/42 submachine guns remained in the test phase, they created the basis for further developments. As it was essential that the stocks, which had been manufactured, went into service, the user manual of the submachine gun had to be completed with a few rules necessary for safe operation.

The M 1943 Submachine Guns and Its Variants

The idea of redesigning the gun created a new possibility for the decision makers as far as submachine gun standards were concerned. On the basis of military experiences it became

3 The computerised 3D reconstruction of the model was made by the employees of the Hungarian Museum of Military History in 2012.

clear that troops needed a lighter) weapon apt for close combat, allowing the quick change of the target rather than a low performance self-loading rifle. Consequently, requirements regarding dispersion pattern and energy of impact were mitigated, and Danuvia Plc. was com- missioned to design the lightened and shortened version of the Király submachine guns. Fol- lowing a number of trial shootings in which various test guns were used, the jury selected and serviced the best model, which became later known as the M 1943 Király submachine gun.

The design of this submachine gun fulfilled the needs of the army with its shorter barrel and shoulder-piece which could be folded under the fore-end. Based on the solutions of the submachine gun M 1939/42, the position of the breech and the magazine housing were mod- ified, which also implied the modification of the outer design of the latter. The possibility to fit the submachine gun with a bayonet was kept, and the sight and the firing-selector and safety lever remained unchanged. The M 1943 submachine gun fired the same 1939 M 9 mm Mauser cartridge. Although in 1942 attempts were made to redesign the Király submachine guns for Parabellum cartridges in view of an easier ammunition supply, the possibility was later abandoned.

In 1942, the Ministry of Defence made a large order of M 1939 submachine guns to Danuvia Plc., representing 45 000 pieces, the accessories and spare parts included. The adop- tion of the new model did not mean the cancellation of the order, and the factory was instruct- ed to start manufacturing the M 1943 submachine guns without delay. The manufacturing of the M 1939 submachine gun finished in spring 1944, and the total number of guns taken over reached 13 322 pieces. Having changed over to the manufacturing of M 1943 type, Danuvia Plc. planned to purchase new equipment and built a new factory hall. Even by working at an increased capacity, the factory could have kept the delivery deadline if continuous raw mate- rial supply was assured by the Ministry of Defence. The manufacturing of submachine guns became a priority for the military direction, which intended to involve the Metalware, Arms and Machine Factory Plc. (Fémárú- Fegyver és Gépgyár Rt.) in the production. The technical description and the drawings were handed over as early as in 1943, but due to machinery and raw material shortage, the bombings and the subsequent evacuation of the factory, mass production was never launched in the plant. [7: 306–311]

Unlike in the case of its predecessor, no detailed description nor reports were preserved regarding the usability and the characteristics of the M 1943, although it is most likely those feeding problems were still not resolved. In order to overcome operational difficulties and facilitate manufacturing, a simplified version of the gun with a one-piece simple blowback mechanism was designed. By changing the breech, the recoil spring and the receiver's end- cap, the M 1943 submachine guns could be transformed into a blowback version within field conditions.

Submachine gun manufacturing became an urgent issue in the worsening war situation, and the adequate solution seemed to be the further simplification of the gun. The last war- time version of the Király submachine guns, designated incorrectly as M 1944 Danuvia Plc. version, was designed in this spirit. In the design of the new version Király Pál was assisted by technical supervisor Győrik József. Their joint invention, the "blowback mechanism with loosely locked divided breech" returned again to the idea of two-piece breech mechanisms, in which instead of a lever a simple spring was mounted in the breech mechanism for recoil absorption. Cushioning the blowback impact was of major importance in the case of a so- called "compact" submachine gun. The shoulder-piece was completely removed, and the

fore-end was reduced to a barrel jacket around the shortened barrel. The receiver and the trigger mechanism were simplified, the magazine housing became fixed. It is not known how many of these submachine guns were manufactured, probably not more than a few pieces.

The manufacturing of M 1943 submachine guns was delayed several months due to the raw material shortage, which became alarming when the bombings started by the Allies in April 1944. First, the submachine manufacturing lines were moved into various cellars in Budapest, and later into different location in Western Hungary as the Soviet Army was ap- proaching the capital. Nevertheless, it was no longer possible to re-launch manufacturing. Presumably, 15 000 to 20 000 pieces were manufactured of the M 1943 model.

The partial dismantling and subsequent transporting or destroying of the manufacturing lines did not mean the end of the story of the Hungarian submachine guns in WW II. After the front passed, the workers of Danuvia Plc. returned to the Budapest factory, damages were assessed, a part of the machinery was made operational again, and the remaining raw materials were put on the inventory. As soon as the fights ended in the Transdanubian region a larger order of M 1943 submachine guns was placed by the direction of the new Ministry of Defence.

The Hungarian Army of the period between 1945 and 1948 kept the Király submachine guns in service, most likely until the existing stocks expired. The Soviet rearming after the communist overturn sealed the fate of the Hungarian handguns manufactured before and during WW II. In 1950, a part of the remaining Király submachine guns were transformed in Danuvia Plc. so they could fire the soviet M 1933 7.62×25 mm Tokarev pistol cartridge. The M 1950 version submachine gun actually used the M1943 spare part base, the only import- ant difference between the two versions being the barrel and the barrel jacket. It would be difficult to estimate the number of these guns as no documents were found in which they are mentioned. Based on the testimony of contemporary photos, the M 1950 submachine guns serviced second line armed corps, such as bridge, factory and railway guard brigades.

Summary and Conclusions

Even today the Király submachine guns are among the most widespread Hungarian WW II guns, they are the most prized treasures of public and private collections. Although they do not necessarily deserve to be referred to as “the best submachine gun of WW II”, as it can be often read on the Internet, it would be a mistake to underestimate their significance. The Király submachine guns recall a period when independent Hungarian arms design and man- ufacturing still existed, the military leadership displayed interest in innovative solutions, and tried to pave the way for new Hungarian technical development and products.

The Király submachine guns resemble other Hungarian armament products of the Second World War of which too few were manufactured and too late. Although these guns were not perfect technically, their unique and smart technological solutions classify them as outstand- ing products in Hungarian and international weapons history. Experts and laymen dealing with armaments worldwide consider them distinguished symbols of Hungarian weapon pro- duction during World War II.

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SWOT Analyses of Mapping Activities at the Ministry of Defence Zrínyi Mapping and Communication Servicing Non-Profit Limited Company

KULCSÁR Gábor[1]

The Ministry of Defence (MoD) Zrínyi Mapping and Communication Non-profit Lim- ited Company (Ltd) belonging to the Ministry of Defence was founded 1st January 2013, by uniting the MoD Zrínyi Communication and MoD Mapping Non-profit Lim- ited Company. In order to ensure the most economical operation, the primary aim of the integration defined by the founder was the revision and possible merger of the ca- pabilities existing in parallel in the two companies. The two predecessor firms would now work as one company, preserving all capabilities, on separate premises, as sep- arate branches perform the mapping and communication tasks within the company. The mapping tasks, given their nature, cannot be accomplished market and profit based, therefore state funding is necessary. The support rate needed for the opera- tion changes from year to year and often during the year, which makes the planning of mapping task procedures rather difficult and as a result the fulfilment of tasks is less efficient.

The Ltd basically fulfils state tasks, however, in its spare capacity, business activities are also carried out. These business activities partly provide coverage for public tasks performed by the company, with which the amount of state funding can be lessened. The aim of my research was to examine the significant factors and effects determining the company's mapping activity and to elaborate the suggestions for the solution of the revealed problems through a Strengths, Weaknesses, Opportunities, Threats (SWOT) analyses.

Keywords*: MoD Zrínyi Mapping and Communication Servicing Non-profit Limit- ed Company; mapping, SWOT*

The basic function of the cartographic branch is to provide maps, geospatial databases, map- ping and printing products to the Ministry of Defence and to the Hungarian Defence Forces (HDF). Its further task is to produce and update the state topographic maps and cartographic databases, supply state and local government organizations, as well as the law enforcement and disaster recovery organizations, and to provide cartographic products to civil users.

The above mentioned tasks cannot be performed market and profit based, considering the fact that the tasks are, first of all, the mapping of areas belonging to the interest of Hungary, the HDF, and the obligations set up by international organisations. Secondly, tasks include the continuous maintenance of the cartographic data and databases of these areas. Financing of such tasks in general is a state responsibility in every country, therefore they are financed from the state budget.

1 MoD Zrínyi Mapping and Communication Servicing Non-profit Limited Company, Financial and Accounting Department

In Hungary the user demands for the amount of the above mentioned tasks continuously reach the available full capacity of the company.

Table 1. Media Gateway Control Protocol (MGCP) Cells Fulfilment. (Source: author)

MGCP	**The demand of the HDF Geoinformation Service (GEOS)**		**Fulfilment**	
	Planned: Finish Cells	**Planned: Cells to proceed**	**Finished**	**To proceed at Q3**
2013	4		4	
2014	3	2	5	
2015	4		2	1

At the same time, capacity expansion is not possible due to current financing. Indeed, there is an occasional temporary decrease in the capacity of certain professional fields, be- cause the extent of financing is different in each year and cannot be planned for a longer peri- od than a year. In the past six-eight years, the degree of pre-planned state financing decreased during the year, too. The temporary capacity reduction is by necessity in case of financing decrease, while in other cases it is due to the rather low wages of employees.

The reason for professionals leaving the company in most cases is the insecurity caused by the almost continuous reorganizations, the undervaluation of the cartographic field, the lack of moral and financial appreciation within the MoD and HDF.

Table 2. Average operational wages. (Source: [1] and author)

Average operational wages	**Hungarian Central Statistical Office (HCSO – KSH)**	**MoD Zrínyi**
White collar worker	384 506 HUF	288 919 HUF

Professional workforce replacement on the cartography field (surveyors, photogram me- ter, geospatial expert, etc.) and on the map printing field (typographer, printing machine operator) is only possible by the employment of young career starters due to the low wages. After acquiring four-five years of experience at MoD Zrínyi Mapping and Communication Non-profit Limited Company, a part of these professionals decide to work abroad or in the business sector. Training the replacement workforce again, demands significant resource and expenses.

In the past twenty years, almost all of the current managers from the state sector of civil cartography have been able to name army cartography as their first, starter workplace. In the business sector the number of professionals in manager roles who were set off by the Ltd is of course also significant. In the past few years, despite the company's intentions, it has increased the number of well-trained surveyors and geographical information system (GIS) experts working abroad. The company cannot compete with the foreign wages, benefits and working environment in the above mentioned three fields.

As a result of the annually changing financing, capacity reservation and supply of basic functions, certain professional fields of the company change every year. Due to the large number of basic functional tasks (and lack of financing), the capacity of the digital cartog- raphy field, sustained by state funding, is continuous, completely utilized. At the surveyor field, due to the periodic workflow (surveying tasks can only be performed in fair weather conditions, about 120 days per year) some tasks can only be done by working overtime. However, the capacity of the duplicator (printing office) field – because of the specificities of cartography techniques, annual financing and plannability – is only completely utilised in the last quarter of the year. In these periods overwork is also common.

The Ltd also performs business activities in order to utilize its spare capacities allowed by the MoD, support its basic functional tasks and to satisfy the civil map users' demands.

In the surveyor field, business activities can basically only be carried out in overtime work. In case of more time-consuming tasks, missing capacity can be complemented by applying subcontractors. Staff increase is not advisable, since business activities can only be performed periodically and rhapsodically in time due to the economic environment. Work supply and financing of the increased staff for business activities cannot be solved.

Table 3. SWOT analyses of surveyor field. (Source: author)

Strengths	**Weaknesses**
• wide variety of technical equipment • professionals	• prestige of employees • labour migration
Opportunities	**Threats**
• state orders	• periodic workflow

Due to the continuous utilization of the full capacity of the digital cartographic field as well as to the labour safety rules, performing direct business activities is difficult in this spe- cial field. Staff increase for business activities on this field is advisable, but the Hungarian market is too small, however, there would be possibilities for international projects as well, as the company has the human and technical ability to accomplish international projects. The product of the field, different mutations of digital cartographic databases can be provided and sold according to the related laws and regulations. [2] The new law [3] could provide the state organisations (e.g. Healthcare, Police, Fire brigade, Disaster management) free access to the state databases.

Table 4. SWOT analyses of digital cartographic field. (Source: author)

Strengths	**Weaknesses**
• state of the art technologies • professionals	• labour migration • prestige of employees • interoperability with other companies • lack of business activities
Opportunities	**Threats**
• state orders	• lack of free access to the state databases

The utilization of the printing field capacity, regarding state orders, lags behind the fea- sible. Despite the Ltd's intension, requests, and the existing MoD instructions, a substantial part of MoD and HDF organizations still use civil printing houses instead of using the com- pany's spare capacities. By moving all the printing demand of MoD and HDF to the Ltd's printing house, the full capacity could be engaged by state orders. Plenty of MoD and HDF placards, publications, office products are printed in private printing houses, whereas the company's printing house has to seek for works from the civil market and perform business activities in order to survive. The Ltd has to pay the maintenance costs during spare capaci- ties as well, which generate higher printing costs.

Table 5. SWOT analyses of printing field. (Source: author)

Strengths	**Weaknesses**
• wide variety of technical equipment • professionals • free capacity	• high maintenance costs • interoperability with state companies • motivation of employees • business activities
Opportunities	**Threats**
• state orders	• difficult public procurement procedure

In case of MoD and HDF, having all the printing work done by the Ltd would result in significant savings, since on the one hand, it would engage the Ltd's spare capacities and on the other hand, with the reorganization of the necessary financial support, tax could be saved for MoD and HDF organizations (since the Ltd would not work in venture and profit oriented fields, it would not need to provide invoices). Currently, the return for profit margin of the printing orders from civil companies could be saved this way. The full printing capacity of the Ltd could be planned and as a result, the total activity from raw material procurement to the production and handover of finished product could be performed far more economically. Further significant savings could be achieved by printing the total number of copies for each printing product at the same time – for MoD and HDF – because the cost of each copy would be significantly reduced.

The Ltd is at a significant disadvantage on the business field compared to its competitors, which are private companies. The current economic environment is not favourable for state companies, which operate and employ staff by keeping every law and principle completely. A significant proportion of the competing private companies go to the border of legality by using the gaps in law, or, in a worst case scenario, they even overstep these borders in the market competition to gain economic advantage. The solution – efficient supervision and displacement of such companies – is yet to be seen, therefore in the case of the Ltd an almost immediate solution could be the engagement of full capacity by state orders.

The most significant disadvantage for carrying out business activities is the existing public procurement law, [4] which makes the acquisition of large-scale business almost impossible on the market. Obtaining small quantity orders is also difficult and slowly feasible because of overregulation and compliance with the related rules, however, it is not yet impossible.

State companies are affected the most adversely during their business activities by the following:

- Acquisition of materials needed for business activity can happen with public procure- ment process. Acquisition of large-scale material for business activities, usually due to the short deadlines, is basically impossible. The opportunity of the efficient operation of business activity is further decreased by the fact that because of the public procure- ment obligation, the Ltd is only allowed to purchase raw material at a reduced price from the winner of the public procurement procedure, which is not possible in practice.
    - Enabling open market procurement at a lower price than during the public procurement procedure would significantly facilitate the operation of successful business activity.
- The subcontractor can be involved in business activities according to the public pro- curement rules. However, in case of large-scale projects the client does not wait until the Ltd carries out the public procurement process and finds a subcontractor. Instead, the client finds a quickly available partner. Furthermore, the public procurement pro- cess does not enable the Ltd to apply an already known and tried subcontractor for the business activity, since it cannot influence the result of the process. At the same time, applying an unknown partner would mean significant financial and moral risk.

The solution would be to allow the free selection of the subcontractor in case of business activity, with the condition that the payable price for the applied subcontractor cannot be higher than the price of the undertaken work and then the related special through fare accept- ed by the professional chamber, besides the profitability of the work.

Taking economic risks during business activities is currently not in the interest of the managers of state companies, since if profit is made, it is obvious; if loss is made (which obviously happens in the business sector) because of reasons beyond their control, they are impeached. Impeachment also happens if the company otherwise operates profitably and the loss can be measured in pennies. One cannot – and for certain managers it is not worth it – start factually risky business activity with state money even if that money comes from previously successful business activity and it would produce significant result.

In case of public companies, the existing statutory regulation is working against the oper- ation of successful business activity, since according to the law, if the revenues from the busi- ness activity do not reach 10% of the company's total revenues, the company is exempt from the payment obligation of the corporate tax. However, 10% is a very low limit, it would be worth abolishing this rule in case of 100% state-own companies, or at least increase it to 50%.

Conclusion

In conclusion, it can be stated that in case of the Ltd, in order to ensure successful operation, increasing the business activity is impractical, instead, utilization of the company's total ca- pacity with state orders would be effective. All the more, since there is sufficient demand for the services from MoD and HDF organizations, from state and local government institu- tions. Moving the existing demands to the Ltd would certainly solve the problem of capacity utilization, and at the same time it could be solved easier than reorganizing the economic environment. It is not negligible either that it would result in significant savings on a state level, since financing the Ltd's non-profit activity is cheaper than purchasing other compa- nies profit-based services.

In order to increase the labour hoarding ability, it can be claimed that the above described facts cause serious damage to the MoD portfolio and to Hungary's budget. To conclude: a long term steady, secure, predictable working environment, predictable career, competitive salaries and last but not least bigger moral respect should be offered to the employees of this professional field in order to reduce their leaving and to reduce the expenses due to their leaving. During annual planning it would be advisable to structure the company's annual expenses not by tasks but rather by the types of expenses, in which wages would appear as permanent fix costs.

The result of the business activity can be used for public utility tasks, however, at the company neither the managers nor the employees are motivated in any ways to perform busi- ness activities. Profitability could be improved by motivating the employees with financial tools in order to ensure more effective work and more economical material and energy usage. I suggest introducing an interest system on every field where production or service activities are carried out, independent of whether it is business or basic function task.

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Why Can Russia "Divide and Rule" Central and Eastern Europe in Energy Policy?

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The strategic challenge of the dependence of Central European countries in terms of hydrocarbon import, specifically natural gas, has not been resolved in the past 25 years. Despite repeated calls for joint action – developing common policies, designing joint frameworks, supporting the launch of major European energy in- frastructure projects together – 25 years after the change of regime period the region still stands vulnerable to Russian economic penetration and political influ- ence stemming from our large-scale dependence on Russian gas import. The paper investigates the roots and causes of this deficiency in order to answer the question: "Why and how can Russia still 'Divide and Rule' Central-Eastern Europe in energy policy?" Since we have witnessed the failure of the Nabucco and Southern Stream pipeline projects in recent years, facing the current challenges of the Ukraine crisis, making transit unpredictable, and perceiving a certain dissent among the Visegrád Four (V4)[2] in this regard, the paper is to identify the particular interests and negotiation techniques of the parties in order to explain the reasons of failure.
Keywords: *European Union, Visegrád Four, Russian Federation, Energy, Diver- sification, Russian Influence*

Introduction

The European Union is one of the biggest energy consumers in the world, but despite its growing consumption, the territory of most EU member states is generally poor in hydrocar- bon resources, making it also one of the biggest energy importers of the world. A significant ratio of the import comes from the Russian Federation. However, since the gas crises of 2006 and 2009 the Russian supply has become unpredictable and owing to the current Ukrainian crisis the trust amongst member countries of the European Union and Russia is a point of contention. In my paper, I focus on a particular grouping within the EU, the Visegrád coun- tries in Central Europe, namely the Czech Republic, Hungary, Poland and Slovakia as they are primary consumers of Russian energy resources (natural gas). The countries' industry and citizens heavily rely on Russian hydrocarbons, because lacking their own natural resources and relying on existing pipelines built during the Cold War, all four countries cover much of their consumption via the Russian import. From the Russian point of view, both the European Union and the Visegrád countries within are significant trading partners, but due to the gas

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2 Its a regional co-operation amongst Slovakia, Czech Republic, Poland and Hungary. The organization has been established after the collapse of the Soviet Union in order to facilitate their joining towards the European Union as well as NATO.

debates with and the distrust towards Ukraine, the EU has grown inclined to diversify its hydrocarbon import.

During the past decade some initiatives have been launched in order to reduce the de- pendence both on Russian resources and on Ukrainian transit. Owing to the unsuccessful initiatives, the Visegrád countries must resolve the problem, having to diversify their mar- ket in a common policy framework. These countries recognized that they have to answer a problem in a regional framework, and the most promising one among these has become the North-South Gas Corridor, which could provide a solution for easing Russian dependence. The initiative of the gas corridor was launched in 2010 during the Visegrád Energy Summit in Budapest. Not only the Visegrád countries, but also Romania and Croatia have joined the endeavour to develop the North-South Gas Corridor connecting both the Baltic Sea region and the Adriatic region via interconnectors running through Central Europe, creating alterna- tive gas supply routes for peoples and economies in the region, independent of Russian gas and Ukrainian transit.

But the diversification efforts will not easily succeed due to the multifaceted Russian ties that influence the European market in many ways. Due to crafting bilateral agreements and the presence of Russian ventures often occupying strategic positions in Central and Eastern European countries, Moscow is able to impose countermeasures against European initiatives, blocking coherent and effective regional cooperation. The paper investigates the roots and causes of this deficiency in order to answer the question: "Why and how can Russia still
'Divide and Rule' Central-Eastern Europe in energy policy?" Since we have witnessed the failure of the Nabucco and Southern Stream pipeline projects in recent years, facing the cur- rent challenges of the Ukraine crisis, making transit unpredictable, and perceiving a certain dissent among the V4 in this regard, the following subchapters will examine and identify the particular interests of the parties in order to explain the reasons of failure.

The Energy-Dependence of the European Union and Central European Countries

Regarding its geo-economic position, the European Union greatly suffers from the lack of energy resources, specifically hydrocarbons, such as crude oil and natural gas. Therefore, the primary aim of the European Union is to provide adequate access to such resources essential for its 28 member countries' economies as well as to European citizens. Due to its enhanced industrial capacity and developed economies the European Union has become one of the biggest energy consumers in the world, and its energy consumption also shows growing ten- dencies. Thus, having top consumption levels and inadequate resources to cover this, Europe is one of the biggest energy importers.

In case of hydrocarbons, the European Union is the third gas and second crude oil con- sumer in the world. The import of crude oil is tremendous, even higher than that of the United States: approximately 66.2 million tons of crude oil is imported annually. Moreover, the EU is the first gas importer in the world: in 2013, 397.1 billion cubic meters (bcm) of gas was imported via pipelines,[3] out of which 162.4 bcm, 40.89 per cent was imported from the Russian Federation. [4] Besides Russia, Norway is the second biggest gas exporter to the EU

3 Besides imports via pipelines, the European Union imported 50 billion bcm gas through LNG (liquified natural gas) ports. The biggest trade partners were Qatar (23.4 billion bcm) and Algeria (13.5 billion bcm).

with 102.4 bcm annual imports (25.79 per cent). Algeria is also a significant partner, import- ing 24.8 bcm of gas (6.25 per cent of all gas imports). We can also observe import trends in historical terms: in 1990, the (then) European Community consisted of 12 member countries and the rate of natural gas consumption was 293.3 bcm annually. By 2008, when consump- tion reached the highest level, the EU had 25 member countries, making up an overall con- sumption of 482.9 bcm. After 2008, European gas consumption began to decrease only as a consequence of the ensuing economic crisis. [4]

Central and Eastern European countries represent a particularly important case in Europe for their gas consumption patterns. After the collapse of the Soviet Union, Central Europe- an countries had a chance to advance on the path of Euro-Atlantic integration and join the European Union. This step also created new challenges both to the European Union and to the Central European countries. Energy policy was a particular issue in mind, because the hydrocarbon import dependence of the newly joining countries was even higher than that of the EU–15. [7] Around the time of the 2004 EU-enlargement, the EU–15 imported 41.7% of their natural gas, while Central European countries had 30% higher dependence on gas imports. Regarding crude oil imports, the gap between the EU–15 and Central European countries was 10%, with 76.8% of oil consumption covered through import in the EU–15 and 87.7% of consumption covered via imports in Central Europe. [5]

As the European Union was enlarged and 10 new members joined in 2004, including all Visegrád countries (the Czech Republic, Hungary, Poland and Slovakia), they were soon fol- lowed by Romania and Bulgaria in 2007 and finally Croatia in 2013, and their consumption patterns have also influenced EU energy policies. The new members' energy consumption developed along an increasing trend due to their growing economic output. [5] From 1994, the gas consumption of respective Visegrád countries had increased until 2006–2009, fol- lowed by gradual decline due to the economic crisis and the Russian–Ukrainian gas conflicts. According to 2013 data, the gas consumption of the Visegrád countries was 39.1 bcm, of which 28 bcm (71%) was imported from the Russian Federation. 9.6 bcm natural gas was imported by Poland, 8.4 bcm by the Czech Republic, Slovakia imported 5.3 bcm and 5.9 bcm gas was imported by Hungary. [4]

Table 1. The gas consumption of the Visegrád Countries compared to EU–15 until accession.
(Sources: BP, Eurogas, EIA, [4] [5] [13] [14])

Consumption (bcm)	EU-15	Czech-Republic	Hungary	Poland	Slovakia
1995	286.8	7.3	10.2	10.0	5.7
1996	340.8	8.4	11.4	10.5	6.2
1997	339.0	8.5	10.8	10.5	6.3
1998	352.6	8.5	10.9	10.6	6.4
1999	366.8	8.6	11	10.3	6.4
2000	376.4	8.3	10.7	11.1	6.5
2001	385.0	8.9	11.9	11.5	6.9
2002	385.0	8.7	11.8	11.2	6.5
2003	403.2	8.7	13.2	12.5	6.3
2004	415.1	9.1	13.1	13.5	6.1

The Russian "Energy Weapon"

The Russian Federation is rich in energy resources: notwithstanding, the country's coal and uranium production is remarkable as well as its natural gas and crude oil production. Howev- er, for the purposes of this paper the latter ones are of special concern as Russia has proven to be actively using these for pursuing her geopolitical and geo-economic interests within the European Union in her relation towards single Central European EU member countries. This is often referred to as Russia's "energy weapon". In this subchapter a brief assessment of Russian capabilities in terms of oil and gas is provided. [12]

In terms of crude oil, in 2012, the Russian Federation was the third most significant pro- ducer in the world after Saudi-Arabia and the United States. In the Eurasian region, Russia's territories have the most significant oil fields, even though only 6% of the world's proven oil reserves are controlled by Moscow. According to 2012 data, 10.5 million barrels of oil were produced daily, out of which 7 million barrels were exported. [5]

Russian (previously Soviet) oil industry became internationally meaningful in the 1960s, when the most significant Western Siberian reserves had been explored. From that time, 16 million tons of crude oil was exported to Western European countries. [46] During the Cold War, especially in the 1970s crude oil played a more significant role than today, be- cause heavy industry consumed excessive amounts. [21]

In 1964, the oil pipeline "Dhruzba" (*Friendship*) was constructed, bringing crude oil to the Soviet satellite countries. This pipe- line has provided oil from Russian resources to Hungary, Czechoslovakia, Poland and East Germany as well, and Dhruzba plays an important role even today. Soviet crude oil produc- tion and export peaked in 1987 at 624 million tons, from which Russia itself produced 570 million tons. After the collapse of the Soviet Union, the production continuously dwindled until 1996, when only 300 million tons crude oil was produced. But from 2000, when Vlad- imir Putin came to power, Russian oil production started to increase. By 2013, 531.4 million tons of oil was produced, putting Russia in second place after Saudi Arabia in the world. [4] In terms of natural gas, the Russian Federation is the second biggest producer, and pro- duction could further be increased if the reserves under the Arctic would open up. According to 2013 data, Russia has the largest proven natural gas reserves in the world, approximately 1.688 trillion cubic feet. [47]

The role of natural gas in economic production has also increased throughout the past decades, along with the Soviet Union's, then Russia's economic influence in this field. Pro- duction has expanded due to the exploration of new energy reserves in the 1970 and 1980s. The two largest fields, Urengoy[4] and Yamburg[5] had been discovered then. Export to Western Europe was booming during the 1970s. [20] The transit through Ukraine increased enor- mously, from 3.4 bcm to 26 bcm and in the following decade this trend further continued. The Soviet export peaked at 109 bcm from which 63 bcm was exported to Western Europe, making the region the most significant consumer of Soviet gas.

In 2013 the Russian Federation produced 604.8 bcm of gas, of which 211.3 bcm gas was exported by Moscow – 162.4 bcm to the European Union. [4]

4 8.099 trillion cubic meter; 286 trillion cubic feet
5 4.81 trillion cubic meter; 170 trillion cubic feet

The Role of Ukraine as a Transit Country

Ukraine has not always been suffering from the lack of energy resources. During the 1960s the country was an important hydrocarbon exporter to Europe. Production peaked in 1972 when the country produced 14.4 million tons of crude oil, but afterwards production slowed down due to the exhaustion of the fields, further exacerbated by the collapse of the Soviet Union. [23] Nowadays Ukraine is a net crude oil importer, with 14.4 million tons of oil imported in 2011 for example. [33] Even though production seems to be significant, it does not cover the demand, thus Naftogaz has to import 57% of their demands from the Russian Federation. [23]

In terms of natural gas the situation is similar, because Ukraine in the 1970s used to be a determining exporter, supplying gas to Poland, Czechoslovakia and even to Austria. Produc- tion peaked at approximately 68.7 bcm in 1975, but due to the exhaustion of the gas fields this amount rapidly decreased soon afterwards. Nowadays Ukraine is able to produce 20 bcm of natural gas, but it is enough to cover only 33% of homeland demand because the country is one of the biggest gas consumers, thus also importers in the world. The relationship between Russia and Ukraine greatly affects the energy supply, as the Russian state-owned company, Gazprom is its biggest supplier. [40] Even though Ukraine is one of the largest gas importers in the world, recent years have witnessed a reduction in gas consumption for various reasons: due to rising prices, the 2008 economic recession and the notably decreased export of heavy industrial products. For comparison: in 2005 consumption was 76.4 bcm, but this amount decreased to 59.3 bcm by 2008. In 2012 (before the current crisis heavily afflicting the prime regions of economic production in Eastern Ukraine) this was only 54.9 bcm. [23]

From the Russian point of view Ukraine is not only a significant trading partner, but also a key transit country, moreover, it is a geopolitical pillar, which bonds Russia with the Euro- pean Union. [15] In 1991, after the collapse of the Soviet Union, Ukraine inherited 38,600 kilometres of the pipeline system connecting Russian production sites to European markets, making Ukraine the most important transit country in the region. Before the subsequent cri- ses 142.5 bcm of natural gas was imported via this pipeline system to the EU annually. There are two pre-eminent gas pipelines crossing the territory of Ukraine, and both the Bratstvo (Brotherhood) and the Soyuz (Union) [1] pipelines play an important role in the European supply.

On the one hand, the "Bratstvo" *(Brotherhood*) pipeline is the longest pipeline reaching the European market. The 4,451 kilometer long pipeline breaks in two arms after leaving Ukraine: one of them transports gas to Slovakia, Hungary, Austria, Italy and the Balkans Peninsula, while the other arm supplies the Czech Republic, Germany, Switzerland and France. [52] This channel covers 20% of European gas consumption, and 80% of the Rus- sian export. "Brotherhood" is able to transport 95–120 bcm of gas annually. [15] Soyuz, on the other hand, is 2,675 kilometers long, linking natural gas networks in Central Asia with Europe and supplies additional volumes to Central Europe, able to transport 26–32 bcm of gas annually. [28]

The significance of Ukraine is given by the fact that in the past, as much as 80% of Rus- sian natural gas exports to Europe transited Ukraine. This number has fallen to 50%–60% since the North Stream pipeline, a direct link between Russia and Germany under the Baltic

Sea, was built in 2011. Even in 2014 about 16% (3.0 trillion cubic feet) of the total natural gas consumed in Europe passed through Ukraine's pipeline network, as estimated by EIA.[6]
We can see a decreasing trend, further put under pressure by the Eastern Ukraine crisis, but the transit role of the country is likely to remain further on as well. However, the safety and predictability of supply have repeatedly been threatened, both in 2006 and in 2009 during the Russo–Ukrainian gas disputes, which heavily impacted Central European interest as well.

The 2006 and 2009 Gas Disputes between Russia and Ukraine

The relationship between Russia and Ukraine affects energy supply of both the European Union at large and the Visegrád countries in particular. There have been several notable occasions when due to the deteriorating bilateral relations between these countries sustain- able gas supplies to the Visegrád countries became endangered. [9] During such debates, the following issues are determining: (1) Ukraine cannot pay for the import; (2) loans are either not provided or are not paid back; (3) the European transits are illegally tapped; (4) Russia cuts the flow of gas, because Ukraine is not able to pay for it. Because of recurring problems, tensions have escalated into serious crises in 2006 and 2009. [37]

As the antecedent of the 2006 gas dispute, the relations between Russia and Ukraine deteriorated as a consequence of the 2004 Ukrainian "Orange Revolution", triggering dis- satisfaction in Moscow. In 2005 Russia raised repeated claims that Ukraine was not paying for gas and was diverting gas bound from Russia to the European Union, for domestic needs. The dispute peaked on 1 January, 2006 when Russia cut off supply. The cut off affected gas supplies to European countries that depended on Russian natural gas: Hungary received 40% less gas than normally, while Austria, Slovakia and Romania received one third less. The crisis also had an impact on Polish supplies, providing 14% less resources, and on France (25–30% decrease in supplies), while Bosnia and Herzegovina, Croatia and Serbia tempo- rarily lost all their gas imports. On 4 January, 2006 a preliminary agreement was reached, setting gas prices at 95 USD per 1,000 cubic metres and raising the transit tariff from 1.09

USD to 1.60 USD per 1,000 cubic meters per 100 km, and soon the supply was restored. [40] In 2009 another crisis developed when Ukrainian internal politics confronted Moscow's will. In 2007 Ukrainian president Viktor Janukovics and the Gazprom set an agreement on gas prices, raising it to 179.5 USD per 1000 bcm. In 2008, when Julia Timosenko came into power as prime minister, Russia wanted to seal a new contract with Kiev. The negotiation between Timosenko, Juscsenko and Gazprom stalled, therefore the Russian partner began to decrease the gas supply. [40] On January 6, 2009 Russian export to Ukraine was at a really low level, furthermore, export from Ukraine to Western European countries was totally halt- ed. [34] The next day Gazprom totally cut export via Ukraine. Eventually, negotiations met success and Gazprom determined the price of gas on the basis of the 2008 agreement. After 13 days, Russia re-opened gas taps and the gas supply was restored. [40]

Central European countries greatly suffered from the effects of the crisis. Poland, whose primary source of energy is coal, suffered less during these 13 days, because the 33% loss from Ukraine could be replaced via the Jamal gas pipeline, crossing Belarus. The Czech Re- public, whose gas production was 98% dependent on the Russian supply, could rely on the

6 16% of Natural Gas Consumed in Europe Flows Through Ukraine

country's gas storages, storing enough natural gas for cover 40 days' domestic consumption. On the other hand, Prague also increased its Norwegian import by 8% via the "Netra" pipe- line system. Slovakia was affected extremely during the 2009 crisis, because the country was
98% dependent on Russian import. During the conflict, Slovakia was able to substitute the
Russian gas thanks to additional inflow from the Czech Republic and gas storages. Still, about
1 billion euros were lost during these 13 days, because the country was not able to transit gas to Western Europe. Hungary was also sensitively affected, because 82% of the country's gas consumption came from the Russian Federation. Because of the well-developed underground gas storage facilities, the country was able to accumulate enough gas supply for 40 days. It is also worth noting that during the crisis, when countries of the Western Balkans suffered critical outage, Hungary was able to transport gas to Serbia as well. As a direct consequence of the two crises, both the European Union and the Visegrád countries have lost trust towards Ukraine as a transit country and grew more sceptical towards Russia as a reliable supplier, therefore they began to foster new initiatives of diversification. [42]

Diversification: a Dream or Reality?

As a result of the repeated crises, the Visegrád countries recognized that if they wanted to se- cure gas supplies, it could be done through the diversification of suppliers and supply routes, for which they had to collaborate effectively in order to better pursue their interest. Having to respond to these conflicts, Central European countries have found a solution to decrease their dependency on Russia. In February 2010, 11 countries[7] from Central and Southeast Europe organized a joint Energy Summit in Budapest in order to discuss the possibilities of diversification for their markets through strengthening cooperation and integrating their net- works with each other. The endeavour was supported by the European Committee, Romania, Bulgaria and Croatia as well. [8]

Beyond negotiating regional cooperation in 2010, these countries had already been seek- ing alternative solutions to lessen the Russian and Ukrainian influence. Such initiatives were developing alternative gas pipelines that would circumvent Ukraine and also possibly pro- vide the transport of non-Russian gas from Central Asia.

"Nabucco"

The first of such initiatives was the Nabucco gas pipeline, announced already in 2002. First of all, the Austrian companies OMV and the Turkish partner BOTAS were the initiators of the project, because that time the Visegrád countries, as well as Romania, Bulgaria, Slovenia and Croatia were not members of the European Union. [31] According to the plans, the 3.300 kilometer pipeline would have been able to transport 20 bcm of natural gas annually. The main partner would have been Azerbaijan, but as Baku would not have been able to cover the whole export, Turkmenistan, Iran and the Kurdish territories in Northern Iraq also would have provided resources. The European countries wanted to mitigate the Russian influence and this was the reason why they supported the initiative worth 12 billion Euros. The system would have consisted of three phases: [22]

7 The Visegrád 4 countries, Austria, Croatia, Slovenia, Bosnia and Hercegovina, Serbia, Romania and Bulgaria.

- The first phase would have been finished in 2014, and would have been able to supply 8 bcm of natural gas annually.
- The second phase would have been finished by 2018 and could have transported 15 bcm/year.
- Finally, the third phase of the construction would have been finished by 2022, making it possible to provide altogether 30 bcm of gas transport.

Due to the 2006 Russo–Ukrainian gas crisis the Nabucco project enjoyed broad support on behalf of the European Union. Despite this fact, initially Hungary was against the con- struction, because former Hungarian prime minister, Gyurcsány Ferenc provided support to the Blue Stream [16] gas pipeline instead.[8] Eventually, from the beginnig of 2007 the Hungarian point of view changed[9] and Hungary became the most prominent supporter of the initiative. Besides Hungary, Austria, Slovakia, the Czech Republic, Poland, Germany, Roma- nia and Bulgaria favoured the Nabucco project. On 13 July, 2009, a multilateral agreement was adopted and signed by the shareholders and the Turkmen president Berdimuhamedow. In spite of this, due to changing geopolitical realities and altered regional plans the develop- ment of the Nabucco pipeline was finally rejected by OMV,[10] citing that the countries rather preferred the Trans-Adriatic Pipeline. We can also assume that the European Union did not support the project so much because of the relatively high development costs and the rela- tively low transport capacity. [6]

"Southern Stream"

The initiative to build Southern Stream as an alternative gas supply route circumventing Ukraine was framed in 2007, when Paolo Scaroni, the president of ENI[11] and Alexander Medvedev, the vice president of Gazprom signed an agreement for project development. [18] The project was built on two main pillars. First of all, the aim of the pipeline (similarly to the Nabucco gas pipeline) was to increase energy security in Europe, but compared to the Nabucco project, here the Russian Federation would have been a stakeholder via state-owned Gazprom, casting doubt on endeavours of easing Russian dependence. As a second pillar, it was a priority to bypass primarily Ukraine, and also Belorus, which was also a Russian inter- est having seen Ukraine's ambivalent stand as transit country. [10]

The project was an individual initiative with a length of 2,506 kilometers, out of which 930 kilometers would run under the Black Sea, binding Russia directly with the European Union through the newly joining member state, Bulgaria. Between 2008 and 2011, negoti- ations continued and other investors entered the project with the support of other regional countries, like Bulgaria, Hungary, Serbia, Slovenia, Slovakia and the Czech Republic, whose energy supply then mostly depended on Gazprom. Not only these countries but Austria could also find a lucrative opportunity, because the end of Southern Stream would have been in Baumgarten. (Poland was neutral in this question as the Jamal pipeline provided it natural gas via Belarus.) The development of the pipeline system would have cost approximately 21.5

8 The Blue Stream pipeline is 1213 kilometers long, with 396 kilometers passing under the Black Sea. The pipeline provides direct link between Russia and Turkey. In 2014, it was able to transport 16 billion cubic meters of natural gas, but Gazprom wants to increase this capacity.

9 Because Russia agreed to build gas storage facilities in Austria rather than in Hungary

10 Österreichische Mineralölverwaltung – Austrian Mineral Oil Administration

11 Ente Nazionale Idrocarburi – National Hydrocarbons Authority

billion USD, but half the price of the construction would have been paid by Moscow, who would have been a 50% stakeholder in the pipeline. [29]

In 2013, when Nabucco was finally rejected, Southern Stream got the green light. Despite the negotiations, the 2013 Ukrainian crisis affected negatively both EU–Russian relations and the Southern Stream project itself. Even in 2014 the parties seemed to be confident, except for some negative voices that remained skeptical about the implementation. As the Ukraine conflict evolved further and political and economic relations between the Europe- an Union and Russia significantly deteriorated, and economic sanctions were introduced, the Southern Stream project was abolished from the agenda by Vladimir Putin, and instead plans for building a new Turkish–Russian gas pipeline were announced to replace Southern Stream. Thus Southern Stream ended up unrealized similarly to Nabucco while the diversifi- cation attempts of Central European countries have remained unresolved. [36]

"Trans-Adriatic Pipeline" (TAP)

The Trans-Adriatic gas pipeline is an old initiative in a new setup, planned to be finished by
2019. Similarly to Nabucco, the pipeline will come from Azerbaijan across Turkey, Greece, and Albania, ending in Italy, because the Mediterranean country (especially its industrially developed Northern region) could become another European gas transit hub. The project is supported by Norwegian Statoil, Swiss Axpo, and German E.ON-Ruhrgas. [30] This project is an alternative energy route, which could replace – to a lesser extent – the Russian import as the pipeline would be able to transport 10 bcm of gas. But if further expanded, it could export up to 20 bcm of natural gas to the European market. Construction might start from 2016, and the 3500 kilometers long pipeline would join the Trans-Anatolian Natural Gas Pipeline (TANAP), leading towards Greece. This initiative is not determining from the Visegrád coun- tries' point of view, it would be more significant for Southern and Western European coun- tries. The construction of the TAP pipeline would cost 2 billion USD, which would require less investment than Nabucco or Southern Stream. [44]

For Central European countries, the outcome of the decade-long negotiation in this regard is unfavorable because the region will not gain a new direct access-route for gas, nor would these countries gain other resources than Russian in the near future. Despite the planned construction of TAP, the gas diversification aim of Central European countries will not be fulfilled.

Table 2. A comparison of the planned pipelines towards the European Union in recent years.
(Sources: Natural Gas Europe [29] [30], Gazprom [18])

	Nabucco	**South Stream**	**Trans-Adriatic Pipeline (TAP)**
Negotiation Started / Failed (year)	2002 /2013	2006 /2014	2006
Planned Length (km)	3300	2500	900
Planned Capacity (bcm)	20 -31	63	10 -20
Source of gas	Azerbaijan*	The Russian Federation	Azerbaijan
Vulnerability of the project	Lack of EU support, South- Stream	EU Third Energy Package, Russia rejected	In Process
Supporters / Investors	Turkey (Botas), Bulgaria (Bulgarian Energy Holding), Hungary (MOL), Austria (OMW), Germany (RWE), Romania (Transgaz), Poland (PGNiG)	Greece, Bulgaria, Serbia, Romania, Hungary, Slovakia	Azerbaijan (SOCAR), Greece (DEPA) Albania Italy (ENI) Switzerland (Fluxys Enagás and Axpo) Norway(Statoil) United Kingdom (BP)
Opponents	Russian Federation	Poland, Baltic States, Italy (ENI), France (EDF)	n/a
Estimated Price (Euros)	7.9 billion	10–16 billion	2 billion

*Opportunities: Iraq, Iran, Turkmenistan

Vulnerabilities and Opportunities for the Visegrád countries, Croatia and Romania

As we have seen, Central and Southeast European countries have not been able to resolve diversification, thus the Visegrád countries chose to advance their cooperation in a regional framework. Thus, the North-South Gas Corridor has become a priority among Central Euro- pean countries, because in this way the countries could diversify their supply independent of Russian resources as well as Ukrainian transit. [19] The plan of the gas corridor stretching from Poland to Croatia was first mentioned in February 2010 at the Budapest Energy Sum- mit. Drawing on the lessons learnt from the 2009 gas conflict, the countries signed a deal to

implement the project in 2011. Even when the Nabucco and the Southern Stream projects still seemed to be viable, the countries have always supported the idea of developing a North- South gas corridor, which would offer a new alternative for Central European gas supply. Despite that the corridor requires regional cooperation, the countries individually have to develop their gas transportation systems themselves, which I am going to briefly introduce in the following.

Poland

Polish gas consumption has increased in the previous years from 13.3 bcm to 18.1 bcm, but this amount would grow further in the forthcoming years. [50] After the 2009 gas dispute, Central European countries have taken some innovative steps to decrease their Russian de- pendence through implementing the North-South gas corridor initiative. From Poland's point of view the Swinoujsce LNG[12] terminal plays a crucial role. The terminal will be able to re- ceive 5 bcm of gas that might further be extended to 7.5 bcm when construction will be com- pleted. [42] According to the bilateral agreement signed, Poland's biggest LNG import [38] partner would be Qatar the Middle-Eastern country, which will be able to supply 1.5 bcm of natural gas annually from 2014 on for a 20-year period. [2] Another important step towards improving the country's secure supply is to extend its underground gas storage system. Gas storage facilities in Poland are able to store 1.8 bcm natural gas, but the Polish national gas company, PGNIG is planning to develop the capacity to 2.8 bcm. Nowadays the amount stored would be enough to supply the country for 39 days, but after further developments the storages will be able to store gas necessary for covering the domestic consumption for
55 days. [43]

The Czech Republic

The Czech Republic, as other Central European countries as well imports a significant amount of natural gas from Russia and Central Asia via pipelines running through Ukraine and Slovakia. [48] Due to the lack of hydrocarbon resources domestic gas production is real- ly low in the country that can cover only 2% of the consumption. The main source of import is Russia, which seemed to be a reliable source until the 2006 and 2009 gas crises. [53] When Russia or Ukraine occasionally cut the supply, Prague had to collaborate with other partners. Therefore, Norway increased its export to the Czech Republic via the OPAL and Gazella pipeline systems to 30 bcm per year, thus Norway providing for 22% of the Czech consump- tion, significantly diversifying the country's supply. [39] Moreover, the Czech underground storages also play an important role, because there are 8 storages able to stockpile 3.5 bcm of natural gas, enough for up to 50 days. [32] Thus, it seems that the country has been able to decrease Russian dependence and became one of the well-diversified countries in the region, setting a good example for Central European countries. [25]

12 Liquefied Natural Gas

Slovakia

Slovakia's domestic gas consumption is 5.3 bcm, 97% of which is imported from the Russian Federation, because the country is able to produce only 150 million cubic meters of gas annu- ally. [51] (Based on available studies, this amount will further rapidly shrink in the following years, making up only 90 million cubic meters.) [42] Slovakia is not only an end-consum- er, but also an important transit country in a somewhat similar position as Ukraine, piping towards Western Europe and the Baumgarten gas hub in Austria. Situated in the heart of Central Europe, Slovakia's import can be diversified through building interconnectors to the North and South. [53] Such interconnectors could provide 17 million cubic meters of gas daily, therefore a new pipeline between Velky-Krtiš (Nagykürtös) and the Hungarian city Vecsés would offer this alternative. The pipeline is planned to be able to transport 5 bcm of gas to Bratislava once the construction would be finished by 2015. The underground gas storage system of the country is also essential, because it could store 3.12 bcm of natural gas, an amount enough to provide for domestic consumption for 30 days. [43]

Hungary

Hungary is quite poor in energy resources; able to produce approximately 2 bcm of natural gas annually, but this amount is rapidly shrinking due to the exploitation of gas fields. [42] Ener- gy consumption patterns represent a declining tendency, primarily due to the recent economic recession: between 2005 and 2012 consumption decreased from 15 bcm to 10.2 bcm. [49] Still, 76% of the gas consumption is covered by import from Russia via Ukraine. [41] In order to improve sustainable supply, Hungary has also begun to build interconnectors, for example the Szeged–Arad gas pipeline that can transport 1.8 bcm of gas annually. [53] From the Hungarian point of view gas storages plays an outstanding role, constructed already be- fore the 2009 crisis and then continued. The capacity of the storages were 1.2 bcm before the crisis, but after the facilities had been enlarged, they made up altogether 5.43 bcm, keeping supplies necessary to cover the consumption of 40–45 days. [43]

Table 3. An overview of gas resources and dependency of the Visegrád Countries.
(Sources: [4] [5])

Gas (2013)				
	Poland	**Czech Republic**	**Hungary**	**Slovakia**
Reserves*	100	n/a	n/a	n/a
Consumption**	16.7	8.4	8.6	5.4
Production	6.1	0.2	2.2	0.1
Import dependency	65.8%	97.6%	78.2%	97.2%
Import from Russia	9.6	7.2	5.9	5.3

*: billion cubic metre (bcm); **:bcm annually

Croatia

Croatia became a main pillar of the North-South gas corridor after joining the European Union in 2013. It is noteworthy that the country is not suffering from the lack of energy re- sources and is not dependent on Russian import, because natural gas is not the main energy source in Croatia's energy mix. Natural gas makes up only 28% of the whole energy mix, moreover, out of the 3 bcm of annual gas consumption, 1.9–2.5 bcm (70%) is produced domestically. These reserves will only be sufficient for 10 more years, the remaining quan- tity is imported by the Italian ENI company. [35] The country is an important pillar of the North-South gas corridor because of its LNG terminal on the island of Krk, which would be the Southern end of the corridor, also serving as the second entry point for supplies. [43] The terminal will be able to receive 5 bcm liquefied natural gas annually from Qatar in the next 25 years from 2017, once construction will be finished. The terminal will be able to receive 10 bcm of natural gas and Zagreb could upgrade it to 15 bcm later on. Croatia's contribution to the regional diversification initiatives is the interconnector built between Városföld and Slobodnica together with Hungary, able to transport 6.5 bcm of natural gas annually. (Currently only 1.5 bcm of gas is flowing through the pipeline from South to North.)

Romania

Romania itself has significant natural gas resources, therefore the country is less dependent on import in general, or on Russian import via Ukrainian transit in particular. From a con- sumption of 13.48 bcm, 10.63 bcm of gas is produced domestically. [43] From the remaining
3 bcm that needs to be imported, Russia only covers 720 million cubic meters, or 24% of the Romanian consumption. Therefore, the Russian influence is not so strong on Romania than on the other Central European countries in terms of energy policies. Also in terms of storage facilities, the country has a well-developed system: 8 underground storages can keep 2.8 bcm of gas, but in the next years these might further expand by an additional 2.1 bcm.

Besides, the country framed multiple initiatives to diversify its market. The interconnec- tor pipeline between Arad and Szeged, completed in 2010, is able to transport 4.4 bcm be- tween Hungary and Romania, even though a significant weakness of the pipeline is that there is no reverse flow. [55] The Iasi-Ungheni pipeline was accomplished in 2014, connecting Romania with Moldova, able to supply 1.5 bcm of gas, which can cover 30% of the Molda- vian consumption. A new diversification initiative that might become a meaningful tool for the whole region was announced in 2010: the Azerbaijan–Georgia–Romania Interconnector (AGRI). It would provide natural gas from the Caspian Sea region primarily to Romania and to the European Union. The pipeline would come from Azerbaijan across Georgia, then liquefied gas would cross the Black Sea to Romania through LNG ports and through inter- connectors the pipeline might end in Hungary. The pipeline is to be constructed by 2024 and it should transport 8 bcm of gas. [54]

In sum, we have seen that for the Visegrád countries the relationship with the Russian Federation in terms of energy policies is significant, if not primarily determining, Russia being the most important gas (and oil) exporter for them. Building on recent diversification initiatives two other countries, Croatia and Romania need to play a role in developing the necessary interconnectors, thus making it possible to bring in LNG from North, South or

Southeast to Central Europe and enable countries to support each other in case of Russian and Ukrainian break in supplies through these.

At the same time the past decade has witnessed the failure of two major European pipe- line initiatives, Nabucco and South Stream, showing that the consensus over shared interests is vulnerable. In the next section I will take a look at Russian ties in the region in the indus- trial, banking and military sectors, arguing that Moscow was able to continuously increase her economic influence in Central European countries through which occasionally was able to exert political influence as well, dividing European consensus that would have been neces- sary to develop long-lasting strategic solutions in the field of energy policy.

Russian Economic Ties in the Visegrád Countries

The countries in the European Union represent different stands towards the Russian Federa- tion; some of them are more reluctant and try to ease and lessen their relations with Moscow, especially to decrease dependences. A good example from the Visegrád countries is Poland. On the other hand, there are some who have developed more complex, relatively deep eco- nomic ties, often dependences on Russia. These represent different degrees in the particular cases of the other three Visegrád countries: the Czech Republic, Slovakia and Hungary. If we seek an answer to the question how can Russia indirectly influence economic and political decisions of strategic importance in these countries, we need to take a look at economic rela- tions not only in terms of the energy sector, but other sectors as well. [24]

Poland

The relationship between Poland and Russia has not changed drastically during the past 25 years: despite the provisional rapprochement in 2010,[13] relations have remained rather cool. Because of this, the rate of the Russian investments in the country is relatively low, reaching only 1% of total foreign direct investment (FDI) in Poland. (Notwithstanding that Cyprus – the biggest Russian offshore partner – invested funds in Poland, providing 3.55% of total FDI.)

Russian investments are rather significant in the energy sector: Russian companies have expanded their role in the oil sector since 1996; currently the Russian oil venture Lukoil op- erates 116 filling stations. Owing to the negative Polish attitude and the effects of the 2008 economic crisis, the company abandoned its expansion efforts. Russian influence is also no- ticeable in the gas sector as assessed earlier, because of the Russian gas import via the Jamal gas pipeline. [24] The joint venture responsible for the Russian natural gas supply, EuRoPol Gaz is also partly under Russian control as 48–48% of the company's shares are owned by Polish state oil and gas company, PGNiG and Russian state-owned company Gazprom. (The remaining 4% are being held by other investors.) As in April 2013 EuRoPol Gaz and Gaz- prom signed the Memorandum of Understanding about the construction of the Yamal–Euro- pa II gas pipeline, the company is to retain a significant role in the coming years as well. [17]

13 It was the consequence of the crash of the Polish Air Force Tu–154 near Smolensk on 10 April 2010, killing 96 people on board, including senior members of the Polish political, military and clerical elite. Russian political and societal reactions and cooperation during the investigation of the crash offered the chance of rapprochement, later thwarted by the ensuing crisis in Ukraine.

The Czech Republic

Even though the relationship between the Czech Republic and Russia was assessed as "prag- matic and cold" before the current crisis, one could observe extensive Russian economic expansion as Moscow was striving to strengthen her influence step by step. A good exam- ple of extending Russian influence both directly and indirectly is the Russian–Czech Mixed Chamber of Commerce which provides support for Russian investors in the country. The organization is headed by Vladimir Ermakov, the general director of the biggest Czech gas venture, VEMEX, whose majority shares (51%) are owned by Gazprom. [24]

We could also observe a Russian expansion in the banking sector: the First Czech–Rus- sian Bank (FCRB) was established in 1996. [3] The bank opened a new branch in Slovakia in 2008 and in Prague in 2009. Not only FCRB, but also Russian-owned Sberbank plays an important role in Central Europe, purchasing Volksbank in 2012.

In the industrial sector, the ChTPZ Group is remarkable, because this is the biggest com-
pany dealing with pipes. The company integrated the MSA[14] venture, whose director was the
25-year-old son of the Russian energy and industry minister, Viktr Khristenko. In 2006, the personal safety equipment producer Vostok Service purchased the Cerva Export Import a.s. company, which had had meaningful connections to international organizations and indus- trial ventures since 1991. In 2008 and 2009, the purchased company extended continuously and gained influence in several countries: the Czech Republic, Slovakia, Poland, Hungary, Italy and India. Vostok Service is held by Vladimir Golovnev, who was a member of the Russian Duma from 2007 until 2011. Moreover, in 2008 the Ural Mining and Metallurgical Company (UGMK) gained 51% of the shares from Aircraft Industries, the biggest Czech company in the aircraft industry. The goal of UGMK is to reach a significant position in re- gional air transport, signaled by the development of the L–140 aircraft. The value of Russian investments was 14 million dollars in 2009, increased to 76 million dollars by 2013. In 2014 the remaining 49% of the company's shares were also purchased by UGMK. From 2004 on the number of the Russian industrial stakeholders in the Czech Republic has increased. The Russian company OMZ (United Heavy Machinery) purchased Skoda Js, Skoda Hute and Skoda Kovárny. In 2010, name of the company was changed to Pilsen Steel and it was sold to the United Group. [45]

Furthermore, Russian involvement became apparent in the energy sector as well. Besides Vemex Company, TVEL Fuel Company is under the control of Rosatom – 49% of the shares are in the Russian companies' hands. Moreover, Lukoil purchased JET filing stations in 2007 (later sold to Hungarian MOL[15] in 2014).

In the field of informatics and telecommunications the Russian influence is also notice- able. The Russian company JSC NIIME and Micron established Sitronics Company with a Czech partner STROM Telecom in 2002. In 2005 Sitronics purchased both Kvazar-Micro Ukrainian and Greek Intracom Telecom. In 2012, the Russian-owned AFK Sistema Group purchased the whole Sitronic. Thus, as we have seen, both the scale and complexity of Rus- sian investments have increased in the Czech Republic in the past decade.

14 Manufacturer of industrial valves
15 Magyar Olaj- és Gázipari Részvénytársaság – Hungarian Oil & Gas Company Plc.

Slovakia

Slovakia depends directly on Russian investments primarily in the energy sector. Due to the lack of energy sources, Russian partners play significant roles in the natural gas and crude oil supply. Owing to this hegemony, Moscow is dominant in the field of the natural gas transit. The bilateral strategy of Gazprom of signing long-term agreements with partners has worked in Slovakia as well. [26] The treaty between Gazprom and the Slovak state-owned gas com- pany, SPP (Slovenský Plynárenský Priemysel A.s. – Slovak Gas Industry) was signed in
2009 for twenty years, until 2029. Slovakia remains one of the most important transit coun- tries of the European Union, channeling gas from Ukraine and Belarus towards the Czech Republic, Germany and Austria.

Lukoil plays an important role in Slovakia, purchasing the filling stations of Conoco Phillips. In the banking sector, the Russian Sberbank purchased Volksbank's local branches in 2012. Furthermore, Atomstroyexport plays an important role in the construction of the Mochovce Nuclear Power Plant, strengthening Russian dominance in the nuclear energy sec- tor. Rusatom Overseas, the subsidiary of Rosatom supervises the constructions. Moreover, there are some other Russian investments in Slovakia via offshore partners from Cyprus, the Netherlands and Switzerland. [24]

Hungary

Hungary has witnessed repeated attempts at extending Russian economic influence in the country in various economic sectors. 2000 was the first time when Gazprom began to expand its interest via offshore ventures. An Irish company, Milford tried to gain the ma- jority of the shares of chemical companies Borsodchem and TVK.[16] (Despite the efforts, Milford was unable to buy the shares and the companies were purchased by an Austrian stakeholder. Some years later the Hungarian state-owned gas company MOL repurchased the companies.) [11]

Russian influence is also remarkable in the banking sector as in 1996 a Russian investor, Megdet Rakhimkulov entered into Hungarian banking spheres by purchasing AEB[17] via Gaz- prombank. 70% of the AEB shares are used by Gazprombank and Gazprom. Furthermore, Sberbank has become a relatively new competitor by buying local Volksbank branches in
2012. By 2018 Sberbank aims to increase its market presence above 5%, but had to abandon these ideas as a consequence of current EU sanctions. Still, 9% of OTP[18] shares are controlled by Rakhimkulov.

During 2009 and 2011 there was an attempt to increase Russian shares in the energy sec- tor when Austrian OMW sold the 21.2% of the shares of MOL to Surgutneftegaz. [27] The ambitious Russian investor was stopped in 2011, when the Hungarian Government purchased the shares for 1.88 billion Euros. Due to the failure of Surgutneftegaz, there are no Russian companies with shareholdings in the Visegrád countries' refinery industry.

The greatest debate and controversy was triggered by the agreement on the reconstruction
and modernization of the Paks Nuclear Power Plant, signed in 2014. Russian Rosatom had

16 Tiszai Vegyi Kombinát Nyrt. – Tisza Chemical Group Plc.
17 Általános Értékforgalmi Bank – General Banking and Trust Co.
18 Országos Takarékpénztár és Kereskedelmi Bank Nyrt. – National Savings and Commercial Bank Ltd.

been designated as the major constructor, developing 5th and 6th power plant blocks. In order to finance the project, the Hungarian Government also signed a credit and loan agreement worth 10 billion Euros from Russia, provoking heavy criticism and creating direct economic dependence from Russia. [24]

Conclusions

The aim of the paper was to offer an assessment in the field of energy policy in Central Europe, focusing especially on the natural gas dependency of the Visegrád countries from Russia in order to identify vulnerabilities and highlight opportunities for these countries. As I have listed above, all countries in Central Europe depend on Russian energy import to varying degrees, moreover, many countries also depend on Ukrainian transit. The gas dis- putes of 2006 and 2009 have shown that such multiple dependences undermine the reliable supply of gas, therefore countries in the region have attempted to streamline their efforts for easing these dependences through diversification in four ways: first, through constructing new pipelines, diversifying the supply of gas from other suppliers than Russia, particularly in Central Asia and the Caspian region; second, through diversifying transit routes to cir- cumvent Ukraine or other countries of concern for instability of unreliability; third, through enhancing their respective gas storage capacities by building additional storage facilities; fourth, through constructing interconnectors along the North – South Gas Corridor in order to facilitate the supply of gas through all countries in Central Europe by importing LNG gas to Poland, Croatia or Romania.

The past years have also shown that the consensus necessary for realizing such regional initiatives is often vulnerable to particular interests or external influence. The failure of the Nabucco and South Stream projects, despite their European support and major stakeholders' participation has shown that opposing or changing Russian interests might prove be hard. Regional cooperation for constructing the still missing interconnectors seems to be a viable option that might at last make Central European gas import largely independent of Russian natural gas – at least in times of need.

A particular vulnerability has also been identified in the paper: direct or indirect Russian economic influence in Central European countries that may influence the Visegrád countries' ability to negotiate freely. The Russian Federation and major Russian companies, such as Gazprom in the energy sector are aware of this fact and try to negotiate with the countries on an individual basis. Russian investors offer different opportunities to partners at different prices – both literally and metaphorically – to strengthen their influence. Above all, Moscow is able to reach his aims via the energy sector, because Russian influence is strongest in this sphere. The state-owned company, Gazprom influences its partners via long-term agree- ments, reduced energy prices or different transport "discounts".

Furthermore, Russia is often able to exploit economic opportunities and strives to widen her influence in other sectors as well. As we have seen in the last part of the paper, Rus- sian companies show a lively presence on the European market, often trying to occupy key positions in strategic sectors, involving the industrial, trading, technological and banking sectors as well. In this way the Russian Federation is able to influence, sometimes even to di- vide (Central) European unity and consensus, which establishes an asymmetric relationship among the member states of the European Union. The Visegrád countries play an important

role in this context, because their interests are similar, as well as the Russian influence is significant in these Central European countries. They have to co-operate to counterbalance or even push back unwanted strategic partners. Whenever European unity is divided, Russia is able to expand her interests. If European countries and the European Union want to retain their freedom of movement, they need to cooperate and should speak with one voice.

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Budo versus Christianity
The Possibilities of Counseling and Psychological Aid in Disaster Management

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The educational level of a society brings about an improvement in the attitude to- wards health as the increase in wellbeing. Social environment plays an important role in defining mental health. The possibilities I have examined also define the states of mental health. Socialization, the effects of communities, models, strat- egies also have an influence on the evolution of self-image, managing conflicts, dealing with frustration, and the ability to integrate. In counseling also new tech- niques are being tried. The educational method of Budo focuses on improving per- sonality, separating the civilian and service life and helping handle emergencies. In Christian counseling the fact of redemption can create the harmonic operation of body-soul-spirit, the development of the appropriate control functions. The com- parison may give an insight into the values and deficiencies of different ways of education-learning. As a theologian, I think it is important to study the doctrines of various religions and how they are used in practice.

Both international sources and experience in Hungary prove that the way of pro- cessing a catastrophic event and its psychological effects can be very different from person to person, that is why it is good to choose from given methods in counseling. **Keywords:** *Budo, Christianity, God, counseling, psychological assistance, disas- ter recovery*

Budo, the Way of War

Even amongst animals we can observe the striving against each other, the everyday battle to stay alive, which is also crucial in the life of today's people. When it comes to different situ- ations and handling crisis, individuals differ in how they understand complex situations and how they accommodate the circumstances. There can be significant differences, because the intellectual performance of one individual can change according to the timing, the different fields and the circumstances. The battle for appreciation is not a game, because the winner gets serious social recognition and sometimes even material goods.

Budo has become a common way for gods and human beings. Today's budo has evolved from the martial training and exercises of the medieval Japanese soldiers, the Bushi. Both in China, Okinawa and Japan, religion has played an important role in people's lives. It has sev- eral sources: Buddhism, Shinto and Confucianism. In the Far East, various religious elements and beliefs could coexist in a natural, simple way.

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The common basis of the Japanese martial arts is Budo, "the way of war". Over time, these martial games developed into combat sports. The essence of these is to resolve or avoid conflicts.

Budo is the basis of Bushido, the unwritten moral law of the samurai. This expression is also used as a generic name for martial arts with a Japanese origin. It is a common feature in Japanese martial arts, that the aim is one final, mortal strike, the philosophical background is Zen Buddhism. Practicing Budo – as we can see in Chinese Kung Fu – requires a certain lifestyle, and competition is absolutely not characteristic of it, neither is doing this activity as a sport. [1: 11–18] [1: 48–123] Budo exercises are done in a specific way, in a specific place and in specific clothes.

All of Budo arts are martial arts, but not all martial arts are Budo. With aging, the aim of this martial art changes. For young people, the aim is the joy of competition, for elderly people self-development and self-knowledge becomes more important. Practicing Budo re- quires a sort of special lifestyle. Its spirituality follows its practitioner his whole life through. There are three main spheres, aims of practicing martial arts, these are the following: physical education, self-defense, competitive sports. In traditional Budo martial arts, willpower and moral development is greatly emphasized.

In Buddhism – like Japanese tradition and Shintoism – there are several minor gods help- ing the warriors. Doctrines of Shintoism and Buddhism completed each other very well in the life of Japanese society, their gods and their doctrines were a great help in the everyday life of simple people. (For example: people had good contact with these gods, they offered sacrifices to them, they went to temples, and they visited sanctuaries.)

Opportunities inherent in Budo have also been discovered by sociopsychology during the last decade. Wolters (1992) writes about success in personality development, work- and social development in numerous articles, in every case he emphasizes how we can conquer ourselves, how we should face our fears and worries.

Confucianism is the religion which determines the basics of Budo's spirituality with its moral and behavior regulation. The foundation of Confucius'– who lived in the 5th century B.C. – message comes from his moral orientation influenced by his charismatic personality.

His key thought: every person is originally good. He lifts the tradition of vernacular reli- giousness to the heights of moral philosophy and state-theory. He suggests temperance and the golden mean in practical life. According to him, everything is led by five virtues: human- ity, righteousness, discipline, intelligence and honesty.

The oriental man lived following his heart, as he himself considered it right, and he also led his family, raised his children and served God this way. He found himself in his own commitment.

The martial art practiced by the Bushi had 18 basic forms. From the 19th century A.D. – because of the changes of historical times – these have turned away more and more from actual martial use to the psychical-spiritual side of practicing martial arts. In the martial arts of Budo, cognitive learning and developing personality is very important, it is also an empha- sized expectation to only use the acquired techniques for self-defense. [2]

Comparison of Budo's and Christianity's Evolution

Opposite to the Western world's hectic lifestyle, Budo proposes an alternative of the more humble East. For Budo, it is stillness and modest lifestyle that gives opportunity to find ourselves. Amongst its basic ideas we can find straight character, the spirit of righteousness, courage and persistence, good will and compassion, courtesy, truthfulness, honesty, honor, faithfulness, self-control, openness, wisdom, sense of duty, and the constant readiness to die.

These great human characteristics can be excellences of an acquired, disciplined lifestyle, however, Christianity calls these the gifts of the Holy Spirit, and we do not have to crucify ourselves to gain these, because the love of God proclaims these gifts in the lives of those who fear Him. Courage, faithfulness, honor, dignity are elemental values also in Christian society.

Persons who do an activity with psychical pressure need to maintain their psychical bal- ance, as it is their main source of strength during hard times. This is by all means a common point with Christians, because if a believer has a personal relationship with God, he or she is filled with calmness and inner harmony.

This can be a source of strength during the daily routine, as it is a fundamental human characteristic to try and maintain our psychical balance.

Amongst the elemental ideas of Budo there is always the feeling and the thought of open-
ness to death. It teaches how to be constantly ready to die.

The principles of Christianity are a lot different from this, because believers always pre- pare for eternal life, never for death. The concept of Christianity was "created" by Ignatios in the first part of the 2nd century A.D., after the separation from Judaism and the Judeo-Chris- tian era.

The purpose was to reach the pagan crowds averse to Judaism, to show them Jesus's life, death, resurrection and what that has brought to everyone, and how all this was new and different from the Old Testament.

The expression Christianity is not to be found in the Bible. Jesus and his disciples always verified the happenings of the New Testament for the people with the revelations and prophe- cies written in the Old Testament. They paid great attention to point out that the gospel is not to be seen as a belief system opposite the revelations and statements of the Old Testament, on the contrary, it is about the life and work of a Jewish person, whose destiny, whose acts and crucifixion, resurrection are historical facts, totally and exactly corresponding to the messianic expectation based on the Jewish prophecies about the first arrival of the Messiah.

Christianity is a faith based on a revelation from God more than 6,000 years old. In this faith the combination of righteousness, peace and joy in the Holy Spirit are inseparable. A God-fearing person believes with his whole personality that he must help his fellow men. This is the foundation for a community with God. This is what Jesus from Nazareth says when a religious leader asks him about how to gain eternal life. The answer Jesus says: love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength and love your neighbor as yourself. This is the law, the sum of the Old and the New Testament.

The Word of the Lord says about the heart that above all else, guard your heart, for every-
thing you do flows from it. It also says that the mouth speaks what the heart is full of. God

does not estimate the spiritual condition of a person from doctrinarian rituals he does, but from the condition of his heart.

Christianity could always be energized by its hope in the future and vision about the fu- ture. Although it is important for Christians to look back to the death and resurrection of Jesus Christ, because this is their propitiation and it is also a historical fact, actually this event will show its truth completely if we look ahead to the return of Jesus.

This way we can understand that He will come back because He died, he rose again and He lives forever – and He will realize all the promises about the re-creation when coming back.

Ceremonies of different religions mostly pointed out the foundations of existence: without faith there is no life, without vocation there is no faith, which could keep anyone alive. There are a number of situations in the Bible to demonstrate the right attitude to people in need.

Physical training played a great role in preparing for a battle. Those days, people had more contact with the world surrounding them. What we call sports today was a part of ev- eryday life back then.

Sports from the Beginning

As far back as in the Grecian world they had already realized the importance of sports. The propagation of the virtuous, noble life was the mission of the Olympic Games, during which even combatants had to stop fighting. [3]

According to Nagykáldi, one of the most important pedagogic benefits combat sports have is evolving and developing the ability to fight. This evolves through a sure-footed and systematic exercise which is constantly imbibed by a spirit of competition.

It is an interesting question, whether physical training could have a part in the life of God's people?

People lived on a whole different level of comfort. David won in the battle against Go- liath with the most common sport of the ancient times, the sling. Conscious developing of the body had great importance also in the times the New Testament was being written. One parallel between Budo and sports could be that somebody who exercises can keep himself away from a lot of unnecessary trouble. A good sportsman cannot afford to damage his body any way.

It is a goal you want to reach that you be able to submit your individual interests to the common objectives.

In tactics, only those that learn to move on can win. With a rebellious or opportunist atti- tude you cannot stay in a team for long. Martial arts teach you to be disciplined and self-con- trolled, and as a consequence, instead of satisfying your desires and needs, you become goal-oriented. With weight-category sports, it gets more important to defeat hunger in favor of self-realization than to satisfy it and the ability to overcome tranquility and the sensation of pain may develop with persistent practice. Due to the former, the ability for self-control and self-regulation can appear with respect to the deeds and inner processes, on which the ability to act optimally and efficiently can develop.

The question may rise if Budo and faith can be means of help in the time of disasters and emergencies.

In counseling you have to focus on the qualities humanity got in creation: their subcon- scious spiritual contents and ways, psychical needs, the dynamic laws of their psychical en-

ergies, behavioral motives, the type of their personality etc.– everything that God considers and takes in order for the person to be addressed and saved by his Word. [4]

According to the life care programme of Gyökössy Endre, a counselor can contribute in three ways and provide the person in care with a consoled (paracletic counseling = comfort- ing, encouraging counseling) life: through deepening, contenting and relationship-care.

The supernatural power, that determines the meditation and spiritual life of monks, has been integrated into the techniques.

This is why trends where spiritual-psychical values are emphasized can evolve and this is how Budo may have formed. It is a special phenomenon where the development and inter- action of body and soul are inseparable. There are numerous prejudices towards the different martial arts, which may derive from the fact that outsiders do not know the spiritual-psy- chical background, the moral requirements, and personality-improving effects of the above mentioned sports.

Public opinion presumes about ones pursuing combat sports that their aggressively level is higher than that of athletes of other sports. This is a misconception, though. Among both wrestlers and boxers a weaker aggressive pursuit could be perceived than that of the control group's, what is more their remorse tension can even be hindering their fighting efficiency. Combat sports can teach you to respect and appreciate others and ourselves. A persistent attitude to struggle and the ability to restart may continuously develop through them. And their positive effects on beating stress have been proven since 1987.

Films about heroes able to free the supernatural, divine forces of the universe are more and more popular. They covertly or openly reflect Eastern mysticism in a modern and attrac- tive wrapping. [5]

The main objective of these philosophies is to free people's souls from the circulation of reincarnation. During this process, with the help of different ascetic and meditative methods, the soul attempts to be delivered from the sensations of the physical body. Spiritual leaders having reached the greatest results acquire supernatural powers, about which they presume that they are made possible by the divine force from the universe.

From the point of view of the biblical ideology the Buddhist philosophy, originating from India is false, therefore the force which some yogis use is nothing but the deceiving super- natural force of occult demons.

Christians have to draw strength from the Spirit of God, so as to avoid spiritual barren- ness and to be able to recognize the occult forces and philosophies that can give a false pic- ture about reality. When you watch films or read publications, the ideology, which gets its inspiration from Eastern mysticism, will, despite modern wrapping, get in connection with the same spiritual beings, as if you dealt directly with Buddhist philosophy. A spiritual state cannot only be indicated by the sword, but also with the wisdom of the heart and mouth.

When we are at the beginning of a learning process, so when we just try to acquire the mere techniques, then, be it about either Budo or other sports, in fact our consciousness di- rects our bodies. Our physical being, our body is more and more controllable by our mind, finally by subconscious powers. The concept of a cognitive scheme has played a central role in the research of thought. These schemes are units of our thinking that actively direct per- ception and our mental operation. The first step of self-knowledge, more precisely finding ourselves, is the hardest, no matter which area of life it is taken in.

However, in difficult situations fear, insecurity, nervousness will occur through all means. It is like when a precisely worked-out muscle starts working in an inappropriate way.

The traditional physical Budo training, the switching on of the subconscious, autonomous nerve function, that is physical practice, aims to strengthen the performance of the soul, as no matter how many of the most efficient techniques you have acquired, if you do not apply them according to the right concept, you will not be effective. Discipline, self-control and persistence increases stamina, which improves mental and physical abilities, thus helping the secure and efficient carrying-out of the tasks.

Technical sports play an important role in teaching self-defense sports, when the use of coercive means can be necessary. The practice, learned motion units assist the acquisition of techniques that are vital when a measure is taken or a possible attack takes place. Cyarto has reported on the positive influence of group practice on the willingness to do individual exercise.

Brudzinski have proven that the fact itself that one can belong to a community, is a satis-
factory reason for people to start training and then to pursue it regularly.

Sports and faith can both offer a possibility for self-realization, that is for combining one's own abilities and the possibilities offered by the environment, which can be an advan- tage with authorities as well.

An athlete has got more vitality than the one without sports, is more active, aggressive, has got higher self-esteem, self-confidence, can adapt emotionally more easily and is more helpful. One gets more developed in self-control, more disciplined, honest, tolerant, and persistent and conscientious. [6]

A great advantage of Eastern martial arts against Western sports is the personality shap- ing effect, via the philosophy attached to it. Budo is a significant disciplining and organizing power. The perseverance, spiritual surplus, discipline, which you can acquire pursuing Budo, will mean lifelong emotional support, inner strength, and this, especially in these difficult times or a mission as well, is highly necessary.

According to the point of view of psychology, emotions, though have been considered as independent and having no direct connection with musculature, will suddenly make an impact on our physical performance and motion.

According to Mérő László, mathematician-psychologist, "there are emotions the biolog- ical determination of which is a learnt emotion, for example love. It is true for the love of Christ, that its role of making – in the scientific sense – a genetically encoded emotion, inde- scribable as a raw emotion, a basic concept of human existence, has become vital. As the six basic emotions originating from biology are present with primates, this very form of love, the love of Christ is purely human, that is a human specific emotion". [7]

There is no harmony any more between the operation of the soul and body, in modern sports this problem must be resolved. Beside the physical training of the body, the training of the soul is necessary as well.

More precisely, in modern sports so far the target was to develop muscular power, even if reckoned important to concentrate in emergencies, focusing or alertness, instinctive, subcon- scious emotions were not considered important.

The job of disaster management bodies is special from all aspects, as it is built on team- work and the improvement of emotional consciousness and effective communication is very significant about it. The unified disaster management body guarantees the security of life and

property of the inhabitants by taking extraordinary measures. The new, unified body ensures the effective operation of the organizations with new means and methods.

For the soldiers of the Hungarian army, due to the contribution to international issues, the fulfilling of missions requires capability. The newer and newer results in science broaden people's opportunities, and experience concerning various methods.

Summary

It is reasonable that in order to carry out tasks successfully, a high-standard of professional training is a must, but it is not demonstrable that the switching on of the subconscious func- tions independent of the mind is necessary for this. This duality is about the connection of body and mind which finally unite. In what faith and methods agree, it is necessary to provide the people in mission with counseling. Soldiers during their work may get into special situa- tions where they have to solve problems filled with emotions.

For organizations taking part in counseling it is also important to improve the area of emotional quotient. It is observable that a leader or commander cannot provide maximum performance in an emergency because he cannot really identify with the emotional condition of his subordinates.

If emotions do not matter, then demoralizing decisions are made, creativity becomes im- possible, indecision takes its place, motivation is missing, empty slogans are born, leadership is without zeal, and team spirit vanishes. Typical of these badly and inefficiently operating or- ganizations are work-overload, lack of autonomy, scarce rewarding, the loss of connections, and inequality in treating people [8].

For those who have to resolve emotional problems, it is important to prepare for their own professional area individually.

Learning the steps of direct touch, empathy, and efficient communication highly attribute to successful problem-solving.

During professional service the qualities shared by Budo and the Bible are naturally an advantage: reliability, the possibility of continuous improvement, greater load ability, open- ness to the new, psychic security, knowing what they believe in, they carry out the directions, hard work, and the importance of integration. One should know that whatever people believe in, persistent faith will always be honored and respected.

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Hungarian Defence Forces and Regime Change in 1989–1990: International and Domestic Background

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The role of the armed forces in the regime change could cover as wide scale of topics as learned in history. In Hungary we experienced a peaceful regime change in 1989–1990. However, many questions were raised about the military role in contemporary events.

It is a fact that the Hungarian Defence Forces were affected by many political changes and challenges in the given time period and it is still a controversial ques- tion why and how it was possible that it played a stabilizing role.

As a first part of a planned paper series, this article seeks to explain some international and domestic events and influencing factors in the period from 1989 to 1990 with the support of the Janos Bolyai Research Scholarship awarded by the Hungarian Academy of Sciences.

Keywords: *Hungary, armed forces, regime change, role, military, security policy*

Introduction

It is well known and history has proven it many times that the military could play (and usu- ally did) a significant role in regime changes. Its involvement in given political procedures can be described as committing a very brutal series of actions, through to intermediating behaviour, to a very neutral position. Nowadays there are many different transition events, among them the ongoing crisis in Ukraine – starting from the bloody events of the Maidan Square protests in 2014 to the current military operations in Donetsk and Luhansk regions – and these shed new light on the role of armed forces and/or groups. Beyond the daily human losses and collateral damage, the question is raised again: what are the real characteristics of military involvement in political – especially in regime – changes? Of course, due to missing reliable information and proximity of ongoing events we do not yet have healthy historical distance to give adequate answers, but we can describe some influencing factors based on related experience of regional transitions that took place at the end of the Cold War.

Some experts argue that in the cases of the Eastern Block regime changes in 1989–1990 transitions were experienced through:

- regime defeat (Czechoslovak Socialist Republic and German Democratic Republic [GDR]);
- transaction (Romania);
- extrication (Poland and Hungary). [1: 1]

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Map 1. Communist regimes in Europe – 1989. [8]

What is common in the above mentioned transition forms is handing power from old ruling elites to a (more or less) new political leadership. What is different is the role of the military, which had direct or indirect influence on the contemporary events.

From political and legal-administrative aspects the regime change in Hungary took al- most a year: the so-called "Opposition Roundtable Talks" (Ellenzéki Kerekasztal) started in March 1989, and the first democratic elections were held in spring 1990. However, we have to emphasize that the changes in politics, in society and in the military as well, started long before and some of them have not even finished yet.

As an initial framework for better understanding the forthcoming paragraphs – as the first part of a series – some important international and domestic events and procedures will be described.

International Framework in the '80s

The Hungarian historian Fischer Ferenc defines eight different Cold War periods from 1941–1991 in his book entitled "Divided world": [2]

1. Creation and break up of "first antagonist cooperation" (1941–1947);
2. Era of "classical" Cold War (1947–1962);
3. From the era of "classical" Cold War to peaceful coexistence: years of transition – "first cooperative cooperation" (1962–1969);
4. Era of detente – "second antagonist cooperation" (1969–1975);
5. Detente is halted – "second cooperative cooperation" (1975–1979);
6. Years of the "small Cold War" (1979–1985);

7. Towards final completion: years of transition – "third antagonist cooperation" (1985–1989);
8. Disintegration of the Soviet empire – collapse of the bipolar world (1989–1991). The common features of the above-mentioned periods can be considered in:

- cycles of the arms race, especially in terms of quantitative and qualitative changes in nuclear weapon systems and equipment;
- changes in military doctrines and practice of usage in local (or small) wars;
- changes in the political elite of the opposing parties, which had significant impact in some periods of the Cold War;
- cyclical changes of the world economy, which includes conjunction, stagnation and recession;
- opposition and competition of different international relation schools;
- changes in strategic thinking, especially realizing "ultima ratio" findings by both sides (particularly the possibility of ruthless mutual demolition by nuclear weapons);
- from time to time severe external and internal crises and their "treatment" (the vast majority by military means);
- absolute priority of military dimension precedes political, social, economic and environmental security dimensions and later its radical change.

After analysing the related literature we can identify that an essential and common posi- tion is considered by many experts one of the strongest starting points for the changes con- ducted by Gorbachev's[2] "new thinking". The well-known terms – perestroika and glasnost[3] – were expressed by him in 1985, when the Warsaw Pact Treaty was extended 10 more years; meanwhile celebrating its 30th anniversary. [3: 291] In the mid-80s the Eastern Bloc countries were still considered a security zone and possible war theatre, especially taking into account such unavoidable influencing factors as Soviet imperial thinking (see the war in Afghanistan) and balancing the new arms race (this was basically the so-called Strategic Defence Initia- tive – SDI) launched (or restarted) by the American president Ronald Reagan in 1983.

Gorbachev expressed the famous "common European house" thoughts in his book enti- tled "Socialism, Peace and Democracy", published in 1987, and later the so-called "Sinatra My Way Doctrine"[4] was added to his comprehensive security policy perception. This latter term was a clear message in 1989 for many Eastern European countries; these countries could go their own way, they could decide independently which road to choose. [4]

In general, we can determine that the Soviet imperial thinking significantly changed by the end of the '80s and gained the characteristics of:

- rejection of nuclear war;
- complex understanding of security;
- devaluation of military force,
- identifying and promoting the mutual nature of security,
- primacy of human values;
- streamlining international relations. [5: 16]

2 Mikhail Gorbachev (1931–), Soviet official, the general secretary of the Communist Party of the Soviet Union from 1985 to 1991 and president of the Soviet Union in 1990–91. [9]

3 Economic and social restructuring and political openness.

4 Kádár János (1912–1989), Premier of Hungary (1956–58, 1961–65) and First Secretary (1956–88) of Hungary's Communist Party. [10]

Internal Framework in the ‘80s

According to the Hungarian historian, Romsics Ignác the Hungarian internal changes can be best described by giving account of how the Kádár regime was losing legitimacy. It means that Hungarian society lost trust in kádárism; by the mid-‘80s the social acceptance of the on-going system was shaken, and by the end of that decade it shrunk to a minimum. [6]

These changes occurred decisively owing to economic reasons such as:

1. By the early 1980s, the source of a new labour force was depleted, which is a pre- requisite for rapid (and extensive) economic growth. Contributory factors were poor performance indicators as well. (Let us not forget that “competition” was missing or existed just in a very limited way in communist systems.)
2. External economic changes in the ‘70s (in particular, the rise of oil prices and the Hungarian economy energy dependence on the Soviet Union) led to significant price increases. For the maintenance of the “happiest barracks” atmosphere wages (salaries) were increased, which contributed largely to the high budget deficit. To fund this deficit the state took out a significant amount of loans. (Romsics states that between 1970 and 1980, amounts spent on consumption and investment were on a yearly average
   2.2% higher than what the economy produced.) [6]
3. In order to avoid bankruptcy Hungary joined the International Monetary Fund (IMF) and the World Bank in 1982. This step did not only present fiscal emergency relief, but also meant that Hungary became the second communist member state – after Ro- mania – of the Bretton Woods system. From the viewpoint of security policy this step included the acceptance of strict financial measures, which was a “semi-hard tool” of the Western countries. On the other hand, it gave the possibility for Hungarian foreign policy to set up new external relations.
4. The average incomes grew until 1987 and then began to decline, which – of course – affected the mood of society. The political leadership tried to counterbalance this sen- sitive situation by reduced workload and improved personal and political manoeuvre possibilities. (We also have to mention that through the ‘80s in Hungary there were no bloody demonstrations such as in Romania or in Poland. Hungarians organized sym- pathy demonstrations to express solidarity and support for those who were killed and beaten in the above mentioned countries.)
5. However, intellectuals, who realized the strategic inoperability of the existing sys- tem, started to be more organized and declared themselves “oppositionist”. Romsics claimed that – based on a century long division – this intellectual opposition parted into two main branches: the so-called “urbanists or human rights representatives” and the “national or folk” groups. [6] In addition to these groups, there were certain uni- versity student movements and different platforms, even meetings took place, of which the so-called “meeting in Monor”[5] stands out, organized in June 1985.
6. In the following years, the oppositionists drew up a variety of programs and initiated movements in different organizational forms (forum, alliance, union, etc.). They set up single and united actions in parallel (for example in the spring of 1988, they estab- lished the Network of Free Initiatives).

5 An illegal meeting held by 45 Hungarian intellectuals at a park in a Hungarian city called “Monor”.

7. The changes markedly altered the internal conditions of the state party (Hungarian Socialist Workers' Party – HSWP) and also intensified the struggle between different groups. This resulted not only in the "quasi-fall" of the old Kádár János by May 1988, but the emerging of the "reformists", who had to focus – for the time being – their power on their struggle with the "old ones" (or technocrats).
8. Through 1988 the Central Committee of HSWP accepted decisions, which, on the one hand, made the collapse of social ownership irreversible; on the other hand, they opened the possibility for private property and economic development based on the rules of market and competition. At the same time, the earlier demand became increasingly accepted and claimed that the National Assembly should be the real deci- sion-making branch rather than the state party. Thus the main question became how it would take place? Within the framework of a single or a multi-party system?
9. The question above was decided on 17 February, 1989, since the HSWP took the view that the multi-party system is the only correct answer and solution to the problems. From then on the events gathered pace and finally led to the spring elections in 1990.

General Effects and Raised Issues for Further Research

The above mentioned events and procedures significantly affected the Hungarian People's Army (HPA) and resulted in many changes.

Among the external events it is important to emphasize that Hungary as a Warsaw Pact member had to fulfil many operational and procurement expectations set up by the Soviet po- litical and military leaders. However, based on latest research findings, it is essential to point out that the changes in the Soviet Union, in particular the reforms introduced by Mikhail Gorbachev (see "perestroika" and "glasnost") provided much greater leeway for Hungarian political and military leadership to override or "freeze in" some measures. [7]

The participation in different international arms limitation or reduction talks, for example in the Treaty on Conventional Armed Forces in Europe (CFE) gave the opportunity for Bu- dapest to express the Hungarian position on different security and defence policy issues and military doctrines. However, the official speeches given by any Hungarian military leaders were pre-checked by the highest political leadership. It shows that HPA operated under direct party control, which was laid down in different law sources (for example in the Defence Act issued in 1976).

From the mid-'80s the military leadership started to look for adequate answers to the evolving economic and social crisis, and as a result there were new measures introduced in 1989–1990, such as:

- transformation of cadre and HR work;
- instead of the official communist address "comrade" ("elvtárs") they reactivated the old term "brother in arms" ("bajtárs");
- elimination of party work and organizations in the armed forces;
- introduction of military (civilian) service without arms;
- changing the name of the "Hungarian People's Army" to "Hungarian Defence Forces";
- establishment of the Hungarian Defence Forces Command. [11]

In addition to the above mentioned fields and events, we need to point out some additional issues.

Maybe the most important question for many people and oppositionists was how to avoid any possible violent intervention from any side (including police, workers' militia, armed forces, etc.), which could turn back the on-going progress. In other words: what kind of measures and balances were needed to finish peacefully the regime change that started in the mid-'80s? It is a historical fact that the regime change in Hungary happened in a very calm and peaceful manner. However, after a quarter century there is a need to analyse and evaluate the most important influencing factors.

Also we can assume that the relationship between the Hungarian military and political leadership had some special features, as well as it did towards the ruling Soviet elites.

There were fierce debates (and many rumours) about whether Soviet nuclear weapons were stationed in Hungary or not; nowadays we know that there were.

Another very important field in which further research and analysis is needed is the com- plex tasks related

- to the disarmament of the Workers' Militia;
- to removing the Hungarian iron curtain and opening the border for GDR citizens flee- ing through Austria to West Germany;
- to the assistance given to start the withdrawal of the Soviet troops, finished in 1991;
- assistance provided for Romania through the violent events in December 1989;
- to the efforts at restructuring and manpower reduction.

The main characteristics of the relationship between the new political elite elected in spring 1990 and military leadership is still an open issue.

Last, but not least, we need to mention the possible role of the HDF in the "taxi block- ade" that took place in October 1990, which basically resulted in a harsh political debate and judgement of the Constitutional Court.

Conclusions

The Hungarian regime change happened in a peaceful way in 1989–1990. However, there were many horizontal and vertical challenges. If we would like to understand the real role of the Hungarian Armed Forces – which was able to avoid any violent actions in contemporary events – we need take into consideration the international security policy environment and the domestic events as well.

Additionally, there were some unique events and procedures and for better understanding we can confirm that more research, analyses and evaluation are needed in order to create a comprehensive and authentic view about this crucial period in Hungarian and Eastern Euro- pean history.

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