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Visit to the Czech Republic Stress Research Center by CDR Daniel L. Dolgin, Ph.D., 27-28 May 2002

The following highlighted reports summarize activities of S&T Associate Directors of the Office of Naval Research International Field Office (ONR IFO) in Europe and Asia. The complete newsletters and reports are available under the authors' by-line on the ONR IFO homepage: http://www.ehis.navy.mil/ http://www.ehis.navy.mil/onrnews.htm or ONR IFO-Asia homepage: http://www.onr.navy.mil/onrasia/, or by email to respective authors.

T A B L E O F C O N T E N T S

Keywords

Czech Republic, sociomapping, medical technologies, human factors, stress research, training

1. Summary

In support of both a recently awarded Czech Republic (CR)-Poland-Croatia-United States Naval International Cooperative Opportunity (NICOP) and a Navy International Programs Office Defense Exchange Agreement (DEA) entitled Medical Technologies, I met with the staff of the Czech Army's Stress Research Center (SRC) in Prague. Additional meetings were held with the founder of the SRC and the Center of Advanced Social Studies (CSASS) of General Staff of the CR Army, COL (ret) Jaroslav Sykora, Ph.D. and his research team, also based in Prague. Since departing the SRC in 2000, Dr. Sykora has established BIOPSYS Ltd., a private scientific society. I was also provided with a tour of the primary CR Military Academy located about 2 hours drive from Prague in Vyskov. In this report I highlight key projects and points of contact at SRC, BIOPSYS Ltd., and Vyskov. For additional information about related resources in the CR, the reader is invited to visit http://www.army.cz the Czech Academy of Science website at http://www.cas.cz, and the Military University of Vyskov at http://www.vvs-pv.cz. The website of BIOPSYS Ltd., and sociomapping is: http://www.sociomap.com (to be launched in six weeks).

2. Introduction

This report summarizes a visit to the SRC and a meeting with Dr. Sykora of the BIOPSYS Ltd., Institution. Major Michal Kopecky, SRC Director, hosted the Vyskov and SRC tours that consisted of a facilities walk through and briefings. A current key issue of the CR MoD is the significant downsizing of it's military. For example, officers will be reduced from a current level of 23,000 to only 9,000 by 2004. Also in 2004, the CR MoD will shift from a conscript-based military to a volunteer force. The belief is that by becoming a NATO member in 1999 there will be greater multinational military support provided and resources to rely on for future taskforce operations. The Reform of the Armed Forces, as it is referred to, is now in it's final phase. The SRC is actively supporting studies for the MoD that will no doubt influence recruiting and retention policy.

The visit to SRC was conducted in order to: (1) enhance collaboration in relation to the recently awarded NICOP entitled "Cross-Cultural, Aeronautical Adaptability of the NEO Personality Inventory" and (2) facilitate activity as Associate Technical Project Officer for the Medical Technologies DEA N-01-CZ-5700. The central hypothesis for the NICOP is to ascertain if cross-cultural differences exist and if so how these differences are likely to impact aviator performance. This NICOP collaboration between the CR, Poland, Croatia, and the United States is for the purpose of evaluating the cross-cultural factor structure and cross-cultural correlates of aeronautical adaptability of the NEO-PI-R, the most widely employed personality test battery based on the Five-Factor model of personality. The NEO-PI-R has been translated into numerous languages and is available in the native languages of all participating countries. Unfortunately, because of human use approval and other obstacles the NICOP was cancelled on 25 June 2002. Future plans call for continuation of this project under the existing CR-US Medical Technologies DEA and perhaps revising the NICOP. The CR-US Medical Technologies DEA was signed on 28 September 2001. The project encompasses topics in human performance and medical research designed to spawn R&D cooperation. Although Major Kopecky's current responsibility is Director, SRC, he is a good point of contact for all CR MoD activities.

3. Stress Research Center

According to Major Kopecky, historically, the SRC began in 1971. Several academicians in the humanities established a human factors research group referred to as RESISTANCE. Their initial focus was on industrial, organizational, and sports research. Beginning in 1981, the group developed collaborations with the Czech Academy of Science, the Czech Space Agency, and the Czech Republic Army. In 1997, the SRC was formally established in Prague.

There are now eight scientists representing 16 unique projects that include the Dilemma of Change in the CR Air Force, Terror Stress, Macro-sociomapping (the Balkans and Near East), System Simulators, Veterans issues, Women in the military, and strategic development of the CR through 2015. An active duty aviator (MIG qualified) is on staff to serve as an expert consultant to aviation-related issues. The SRC staff supports the MoD, Chief of the General Staff and Military Command.

The SRC short and long term objectives support and address basic and applied research in human factors on the operational and strategic level.

The SRC also serves as a think tank to address military-political situations on the international level. Figure 1 provides an organizational diagram for the SRC.

4. BIOPSYS

PRIVATE SCIENTIFIC SOCIETY
BIOPSYS

In 2000, Dr. Sykora established BIOPSYS Ltd., with several of his former students and close collaboraters. BIOPSYS Ltd., is a private scientific society and consulting group especially to the military (MoD CR), politics, and industry specializing in sociomapping and several other applications. The name "BIOPSYS" describes a philosophical, interdisciplinary approach for the study of the human individual and groups under conditions of stress.

Figure 2 provides an organizational diagram of BIOPSYS Ltd. After leaving the position of the director of CSASS General Staff CR Army in December 2000 and retiring from the SRC in June 2001, Dr. Sykora began working full time with BIOPSYS Ltd. According to Dr. Sykora and LTC (ret) Josef Dworak, M.D., International Astronautical Academy Member (IAAM), human relations can best be understood through the process of sociomapping. Essentially, sociomapping enables the continual monitoring of group interactions and dynamics. It was originally developed in the context of the Czech Air Force's program of long-term space missions, but it has proven to be useful in the analysis of complex systems with multidimensional and ambiguous relationships between subjects and/or objects. It is particularly valuable for small social groups experiencing high levels of stress, such as pilot crews and air traffic controllers.

Sociomapping is based on fuzzy theory, structure analysis (pattern recognition) and mathematical topology. Numerous methods of data collection may be used as sources of information-psychological tests, expert evaluations, behavioral variables, among others. Objective and subjective, quantitative and qualitative, and verbal and numerical data may be incorporated. The data are transformed into fuzzy models, which are then aggregated according to similarities in structure patterns. Discrepancies and selected critical patterns are then subjected to further analysis as probable sources of conflict and tension. It should be noted that both the SRC and BIOPSYS are using sociomapping techniques. The SRC uses the technique in military applications whereas BIOPSYS has a primarily commercial focus.

The results of the analyses are represented

graphically in a user-friendly map whose interpretation is analogous to that of a geographic or synoptic (meteorological) map. For example, under real battle conditions, command and control operations become increasingly more complex. At the same time the importance of psychosocial factors in battle management operations increases.

Their research is directed at augmenting the cognitive utility in command and control management processes, using new information technologies such as dynamic sociometry for the analysis of systems, based on uncertain, ambiguous, and poorly defined elements. Dr. Sykora and his colleagues Dr. Dworak, Radvan Bahbouh. Pavel Michalek and other collaborators believe that it is possible to demonstrate the expected future course of events resulting from command decision making under poorly defined and uncertain situations. Dr. Sykora presented a paper entitled "Command Decision-making aided by Dynamic Sociography" at the NATO Research and Technology (RTO) Human Factors and Medicine Symposium on "Usability of Information in Battle Management Operations", held in Oslo, Norway, 10-13 April 2000. The paper was subsequently published in RTO MP-57. Additional reports and presentations have been produced for the CR Army Chief of Staff, High Command of the CR Army, and for numerous international conferences. An important current project for BIOPSYS is their work for the European Space Agency (ESA) concerning studies in aerospace biology-psychology-sociology.

5. Assessment

Although the CR MoD is experiencing unprecedented reductions in staff through downsizing with the advent of NATO membership, there has been no compromise in the quality of military candidates. Major Kopecky confided that a direct order from the MoD was that the SRC will survive downsizing

From my short visit to Prague and the SRC, BIOPSYS Ltd., and Vyskov, it was apparent that numerous opportunities exist for further collaboration. The need exists for greater research funding in order to address issues beyond the policy level. Additional NICOP collaborations may help to address this need and lead to meaningful international human factors research.

All of the scientific and academic contacts that I met were eager to identify and enter into working partnerships with the United States in training, research, personnel exchange, and funding opportunities.

6. Contacts

Stress Research Center

Major Michal Kopecky
Director
Stress Research Center
Air Force Base
Mladoboleslavska Street
197 06 Praha 9 - Kbely
Tel. 420-2-20-207 440
Fax 420-2-20-207 444
Email: stress.centrum@centrum.cz

BIOPSYS, Ltd

Dr. Jaroslav Sykora, IAAM*, COL (ret)
Na Spejchare 3
Praha 7
107 00
Czech Republic
Tel. 420-607 26 38 70
Fax 420-2-333 201 73
Email: biopsys@sociomapa.cz
*(International Astronautical Academy Member – Paris, Fr)

Military Academy, Vyskov

COL Prof. Ignac Hoza
Tel. 507-39 20 1
Fax 507-39 20 0
Email: rector@vvs-pv.cz

For Medical Technologies Defense Exchange Agreement information:

CAPT Robert E. Hain, MC USN
Technical Project Officer
Tel. (850) 452-2157, ext. 1016
Email: rehain@nomi.med.navy.mil

For further general information or comments, please contact:

CDR Daniel L. Dolgin, MSC USN Ph.D.
Naval Operational Medical Institute
Head, Operational Psychology Department
220 Hovey Road
Pensacola, Florida 32508
Tel. (850) 452-2257, ext. 1092
Fax (850) 452-2144
Email: dldolgin@nomi.med.navy.mil

Figure 1. Stress Research Center Organizational Diagram

CHIEF OF SRC	
Deputy	**Secretary**
Section of biopsychosocial research	
Section of system's simulators	
Psychophysiological lab	

Figure 2. BIOPSYS Ltd., Organizational Diagram

DIRECTOR	
Deputy Coordinator for internal and foreign cooperation Scientific Board	**Secretary for technical, administrative and organizational support**
Group of scientific workers	
Group of research workers	
Psychophysiological & Psychotherapeutics, Labs WG for managerial advising	

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