



CER Comparative European Research 2015

Proceedings | Research Track

of the 3rd Biannual
CER Comparative European Research
Conference

International Scientific Conference for Ph.D. students of EU countries

March 23-27, 2015 | London



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Published in March, 2015 by Sciemcee Publishing, London.

Proceedings document published in collaboration with SCIEEMCEE - Scientific Conference Platform.
The proceedings with all papers are available at www.sciemcee.org.

ISBN 978-0-9928772-6-2



Introduction

The conference Proceedings you are holding is a collection of selected peer-reviewed texts presented at the international scientific conference Comparative European Research - CER 2015 (March 23-27).

The biannual international scientific conference is organised under the auspices of the SCIEEMCEE scientific platform every March and October and follows up on activities aimed at providing greater support for the scientific activities of Ph.D. students and beginning researchers. The various biannual CER conferences represent a space for the international assessment of the qualitative standard of scientists and the results achieved by the various academic institutes. The CER conference is an ideal place for comparing the standard of scientific work, particularly on a European scale.

The Proceedings from the 2015 CER conference contains several dozen academic texts whose main purpose is the presentation and sharing of knowledge always in one of ten conference sections. The conference Proceedings prioritise only those articles which are good enough to offer readers new insights into the issues analysed, or which extend the known boundaries of science. The guarantor of the CER 2015 conference is a signatory of the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, and therefore all papers are made available to professionals and the general public via OpenAccess.

The conference committee, comprising experts from several university departments, believes that the CER international scientific conference will attract an ever wider base of participants to join in the discussions and will stimulate further scientific work and interdisciplinary development.

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Rosenlacher, Pavel
Tichý, Jaromír
Žiaran, Pavel

THE RISKS OF THE INTERNET AND THE SOCIAL MEDIA USAGE

Martina Drahošová

Comenius University, Faculty of management

Odbojárov 10, P. O. Box 95
 Bratislava, 82005, Slovakia
 +421250117474
 martina.drahosova@fm.uniba.sk

Abstract: *In today's turbulent, changing era, full of information and communication technologies is essential to think about the risks that come with these technologies. The article discusses the risks of using the Internet and the social media. We are talking about the disclosure of personal information on the UGC sites and the risks that disclosure of such information brings.*

Keywords: *risks, internet, social media*

1. Introduction

Today's life is full of information and communication technologies that surround us. It is therefore important to be educated on this issue. Since most people use information communication technologies, whether in the form of the Internet and visit various websites through which they purchase goods and services, search for information, conduct banking transactions or in the form of social media, where communicate with friends and socialize in the society. All information communication technologies bring its user a myriad of advantages, but on the other hand, there are a lot of disadvantages of using such technologies.

There are advantages such as rapid communication, whether we are talking about communicating with friends, work colleagues or with companies and interest groups that are in users' interest. Another advantage is the financial modesty use of these technologies, as broadband Internet access is nowadays commonly and not expensive. Disadvantages or risks of using the Internet and the social media are the disclosure of personal data and the possible misuse of such information by other users, malicious site or use the data for advertising purposes. It follows that it may easily be lost privacy in the use of the Internet and social media.

Thus, it is important to be informed about the benefits and possible risks of using the Internet and the social media. It is therefore essential that users are educated in the art and know how to secure their personal information before it leaked.

2. Types of disclosed information by users

In this part of article we will discuss about the types of disclosing information by users. At first, we explain the important terms about information communication technologies.

The Internet is a network of networks linked through the TCP/IP protocol. The Internet is not owned, controlled, or supervised by a single or central authority. It evolved from the government- and university-funded ARPANET of the late 1960s and early 1970s to become the most expansive network on the planet. The Internet connects literally hundreds of thousands of independent networks into a

seemingly seamless vast global network, providing links to any computer connected via a standardized IP address.

UGC, user generated content: material published using the Internet that is produced by ordinary people rather than by professional writers, artists, photographers, etc.

According to Merriam-Webster dictionary, "social media are forms of electronic communication (as Web sites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (as videos)".

On the Figure 1 are shown the information which respondents have already disclosed on UGS sites.

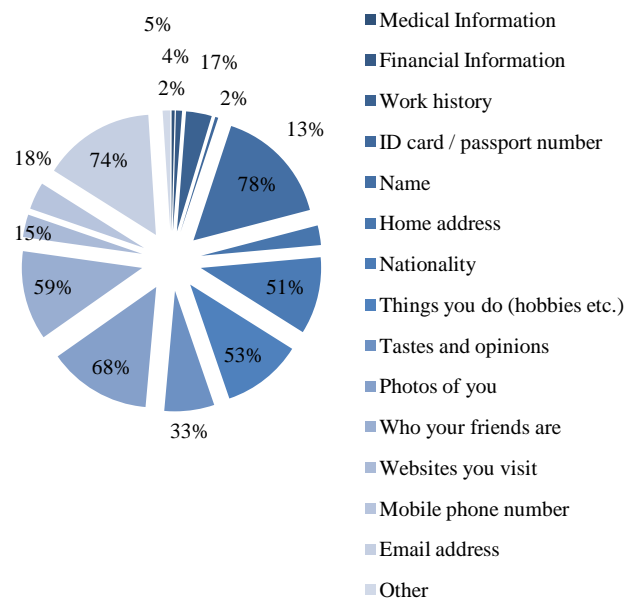


Figure 1: Types of disclosed information by users

How is possible to see from Figure 1, 78% of requested respondents of CONSENT research from Slovak republic already disclosed on UGC sites their names, 74% of respondents disclosed E-mail address, 68% of respondents disclosed their personal photos, 59% disclosed the list of their friends on UGC site, 53% disclosed the things they

like to do (their hobbies etc.) and 51% disclosed their nationality.

According to this huge amount of information that are disclosed by respondents from Slovak republic, is possible to say that users of social media are likely to disclose the information about them. It is possible to state that the users are not sufficiently aware of the potential risks of disclosure of such personal data. That is why we would like to inform them about these risks.

3. Perception of general risks

Perception is the process by which we give meaning to the information that our senses provide to the brain.

Risk is defined as a — combination of uncertainty plus seriousness of outcome involved and according to Featherman and Pavlou, risk is defined as a common thought of uncertain feeling regarding the possible negative consequences of using a product or service. With regard to social media, risk can be defined as the possible threat or damage or insecurity of using the social media services. For example, Webber, Li and Szymanski define social media risk as — the likelihood that a negative social media event will happen (multiplied by) the impact that negative event will have if it does happen.

In the Figure 2, is shown the perception of general risks related to the disclosure of personal information by users. It was rated on a 7-point scale, where 1 = disagree, 7 = agree with a statement. There were four statements about the general risks related to the disclosure of personal information. The first one was, in general, it would be risky to give personal information to websites. This statement was rated by respondents on a level of 5, 65 point, which means that they more agree than disagree with this statement.

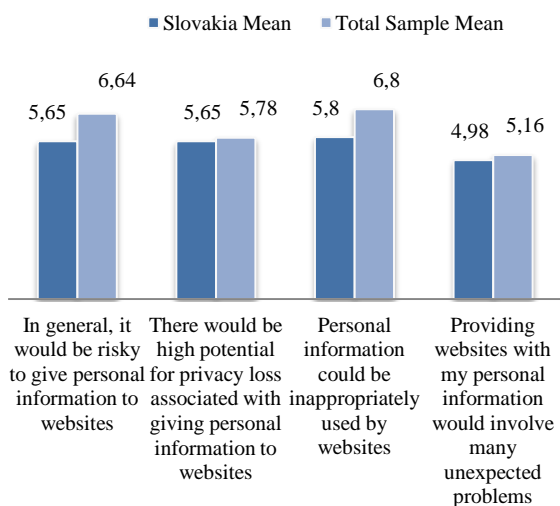


Figure 2: Perception of general risks related to the disclosure of personal information

The second statement was there would be high potential for privacy loss associated with giving personal information to websites. The respondents rated this statement on the same level as the first one of 5, 65 points.

The highest rate (5, 80 points) from all four statements according to the respondents had stated: personal information could be inappropriately used by websites. The lowest rate (4, 98 points) had stated: providing websites with my personal information would involve many unexpected problems.

The set of results in the table above relates to general risk perceptions: Slovak respondents, whilst mostly agreeing that giving personal information online is risky, perceive less of a risk than the overall CONSENT average about this.

Slovak CONSENT respondents, whilst being similar to the total sample average in their perception of general risks and the risk of privacy loss, perceive the risk of information misuse and being faced with unexpected problems at a level which is slightly below the overall CONSENT average.

The next Figure describes the percentage of Slovakian respondents who are expecting to happen following situations as a result of disclosing their information.

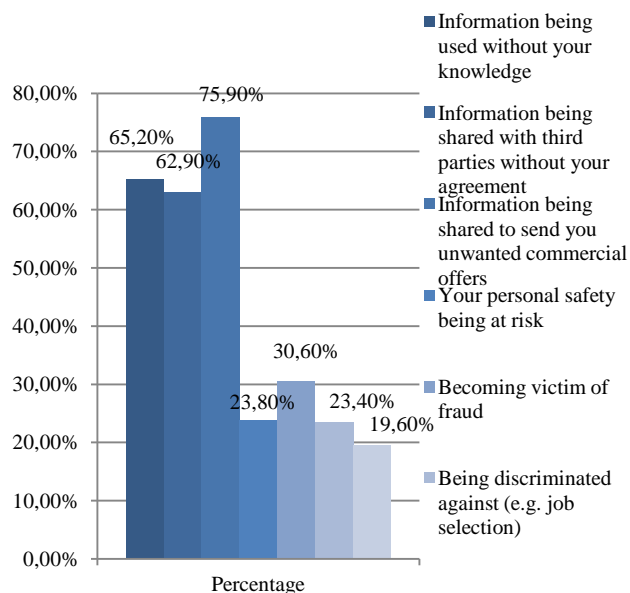


Figure 3: Expectations that the following is likely to happen as a result of disclosing information on UGC sites

The highest expectation is that the information being shared to send them unwanted commercial offers with percentage 75, 90% of respondents. The lowest expectations are that the reputation of respondents being damaged (19, 60%).

Then 65, 20% of respondents expect that information being used without their knowledge, 62, 90% expect that information being shared with third parties without their agreement, 23, 80% expect that their personal safety is being at risk, 30, 60% expect that they are becoming a victim of fraud and 23, 40% expect that they are being discriminated against (e. g. job selection).

4. Usage of information by website owners

There are two kinds of information that can be gathered about a user from a social network: information that is shared and information gathered through electronic tracking.

Information a user shares may include: photos and other media, age and gender, biographical information (education, employment history, hometown, etc.), status updates (also known as posts), contacts, interests, geographical location.

This information becomes public in a variety of ways: 1. A user may choose to post information as “public” (without restricting access via available privacy settings). 2. Certain information may be publicly visible by default. In some situations, a user may be able to change the privacy settings to make the information “private” - so that only approved users can view it. Other information must remain public; the user does not have an option to restrict access to it. 3. A social network can change its privacy policy at any time without a user’s permission. Content that was posted with restrictive privacy settings may become visible when a privacy policy is altered. 4. Approved contacts may copy and repost information – including photos – without a user’s permission, potentially bypassing privacy settings. 5. Third-party applications that have been granted access may be able to view information that a user or a user’s contacts post privately.

Information may also be gathered from a user’s actions online using “cookies” (short strings of text stored on one’s hard drive). Some of the purposes of cookies may include: tracking which websites a user has viewed, storing information associated with specific websites (such as items in a shopping cart), tracking movement from one website to another, building a profile around a user.

The Figure 4 describes the awareness of people about the usage of information by website owners in Slovakia, Poland, Czech Republic and Austria.

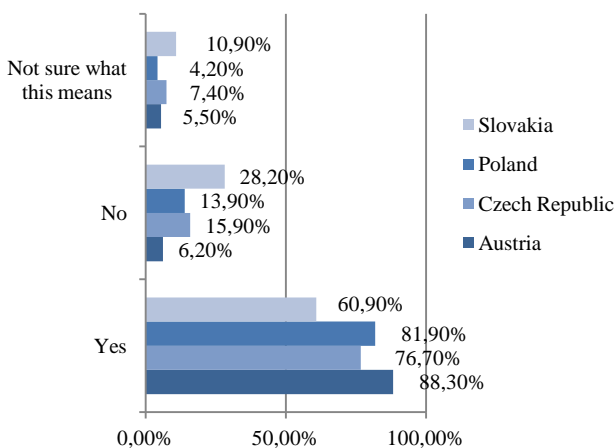


Figure 4: Awareness that users’ information are used by website owners for a number of purposes

In all named countries more that 50% of respondents are aware about the possibility that website owners can use their disclosed information for a number of purposes. In

Slovakia is about this aware 60, 90% of respondents, in Poland 81, 90%, in Czech Republic 76, 70% and in Austria 88, 30%. These numbers show us that Slovakian respondents have the lowest awareness (with 60, 90%) about this fact than in other named countries. So it is necessary to inform the users of the Internet and the social media about this to prevent misuse of their information.

When posting information to a social network, a user probably expects authorized contacts to be able to view it. But who else can see it, and what exactly is visible?

Entities that collect personal information for legal purposes include:

- Advertisers interested in personal information so they can better target their ads to those most likely to be interested in the product.
- Third-party software developers who incorporate information to personalize applications, such as online games that interact with the social network.
- Entities that collect personal information for illegal purposes include:
- Identity thieves who obtain personal information either based on information a user posts or that others post about the user.
- Other online criminals, such as people planning to scam or harass individuals, or infect computers with malware (malicious software placed on a computer without the knowledge of the owner).
- Information often targeted by identity thieves includes:
 - Passwords
 - Bank account information
 - Credit card numbers
 - Information stored on a user’s computer such as contacts
 - Access to the user’s computer without his or her consent (for example, through malware)
 - Social Security numbers. Remember that the key to identity theft is the Social Security number. Never provide a Social Security number through a social networking service.

So from above indicated is possible to see that it is necessary to be cautious about the data that are users disclosing on websites.

5. Changes of Privacy Settings

The privacy policy is the statement that declares a firm's or website's policy on collecting and releasing information about a visitor. It usually declares what specific information is collected and whether it is kept confidential or shared with or sold to other firms, researchers or sellers. Privacy settings are the part of a social networking website, internet browser, a piece of software, etc. that allows you to control who sees information about you.

On the last Figure are shown the results about the Slovakian situation with changes in privacy settings in comparison with a total sample of the research.

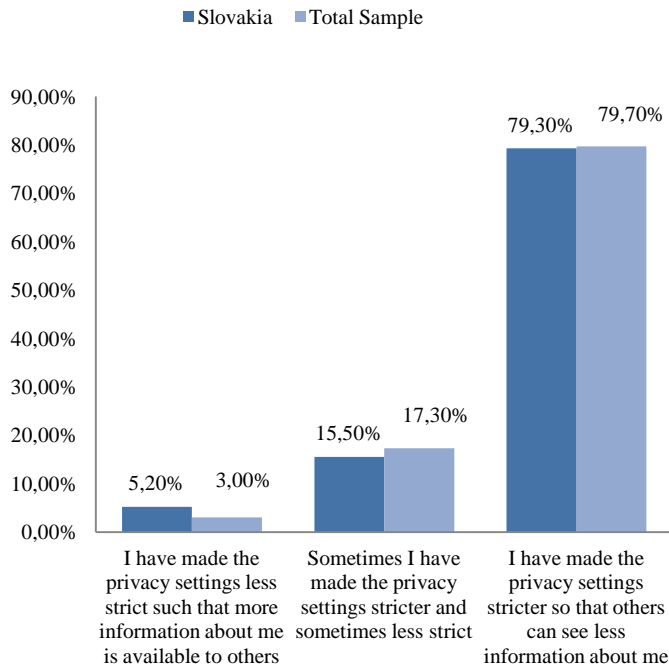


Figure 5: Slovakia. Changes in Privacy Settings

As in the Slovakian sample (79, 30%) so in total sample (79, 70%), main part of respondents indicated that they have made the privacy settings stricter so that others can see less information about them. This fact says that almost 80% of respondents are aware about the privacy settings and their importance, so they set them prudently to protect their personal information.

6. Conclusions

Of the mentioned findings of the survey, we can say that Internet and social media users share a vast amount of their personal information on the Internet. This will expose many of the aforesaid risks, such as the use of their information without their knowledge, share their information with third parties without their authorization, sharing their information to send unwanted commercial offers, that users personal safety can be at risk, they can become a victim of fraud, they can be discriminated against (e. g. job selection) and their reputation can be damaged. Although many users are aware that the owners of the websites use their information for more kinds of purposes, there is still a percentage of people who are not aware of this fact.

Therefore, it is necessary to educate people on this issue and inform the general public about the potential risks of negligent use of the Internet and social media.

Acknowledgements

This article is based on CONSENT research and describes the actual situation about the perception of risks of information disclosure on the Internet and social media.

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THE IMPORTANCE OF MANAGEMENT AND MARKETING IN TIMES OF CRISIS ON THE EXAMPLE OF THE TOURISM SECTOR

Marcin Popiel

Jagiellonian University
Gronostajowa Street 7
Krakow, 30-387, Poland
+48/12-664-5295
marcin.popiel@uj.edu.pl

Abstract: *Currently the pace of changes in the economy is very fast, which results in increased uncertainty in many industries, including tourism. Many entrepreneurs who operate in the market have noted that the markets are collapsing with a higher speed than their growth. The time of crisis is the best time to re-examine their own strategy. However, in the present conditions of the crisis that also affected the tourism sector the only way out could be the use of management and marketing tools. Management of tourism should be based on the strategic approach of providing the innovative - and simultaneously - well-coordinated products and tourist services. In order to further remain competitive in the market many entrepreneurs have to run a new forms of management that are amended. Balancing the strategic objectives of service providers and recipients of the tourist market with simultaneous increasing the mutual economic benefits should become the most important point of reference of strategic management and marketing of the tourist industry. The main objective of this article is to present the stages of the strategic marketing planning for the tourism industry that is shaped by various conditions related to the world market.*

Keywords: *management, marketing, tourism system, tourism industry*

1. Introduction

The economic crisis that started in 2008 and shook practically the whole world has affected all economic sectors and its consequences are still felt. Under the influence of the world financial crisis the significant changes in the economies of all countries take place. The impact of these changes is visible even in the banking sector in decreased demand for products and services. It also affects the tourism sector. When hundreds of people become unemployed there is a decrease in the demand for various forms of recreation or relaxation. This constitutes a problem for the tourism sector as business entities lose clients then. The financial and economic effects of the crisis influence the activities of all participants of the tourism sector and impose the need for the relevant strategic response in the marketing sphere as well as management in these specific unfavourable conditions of the global market. The issue whether the entities of the tourism demand are able to transform the risk of bankruptcy or loss of the strategic position into the chance for success always depends on the way of reacting for environmental determinants. Through the ongoing development and effective usage of resources and potential there is a chance for recognizing the threats and responding to challenges of the world market at present and in the future.

Contemporary conditions of conducting business activities and developing the marketing plan have changed enormously - as compared to the past - and they require new ways of reacting [1]. Gaining and maintaining a competitive advantage requires the answers for several key aspects: which marketing plan should be chosen, which marketing-mix elements of the marketing it should be based on, which segment of tourists should be referred to, which studies and analyses should be started to facilitate the development of the company image or tourist destination?

[2]. These are very important questions as rational responses to them have an impact on survival on the world market as well as distinguishing among competition.

We live in the world that is undergoing constant transformations, in the world aiming at the higher level of services, comfort or general prosperity. The same trend refers to the market of tourist services where a desire to attract tourists and satisfy their needs is reflected in the development of new technologies in the elements closely connected with the tourism sector: accommodation facilities, means of transport, travel agencies, etc.

However, in the present conditions of the crisis that also affected the tourism sector, management and marketing are becoming more and more difficult and demanding. As a result, management of tourism should be based on the strategic approach of providing the innovative - and simultaneously - well-coordinated products and tourist services. Balancing the strategic objectives of service providers and recipients of the tourist market with simultaneous increasing the mutual economic benefits should become the most important point of reference of strategic management and marketing of the tourist industry.

Global competitiveness and concentration of the tourist services and products pose numerous challenges and problems in establishing and maintaining the loyalty of the consumers and permanent competitive advantage on the market. The problems are visible both in the scope of management of demand as well as creating the unique image of a specific company functioning on the tourist market, a particular service, product or even an image of the particular holiday destination. Transformation in the world economy is related to the transition from 'economic of scale' to 'economic of variety' as well as a significant number of various entities taking part in creating and selling the tourist products make it more difficult to

combine their different interests and targets, consequently balancing the purposes of the clients is the most important assumption of the strategic marketing and management in tourism [3].

The objective of this article is a cognitive one, i.e. the presentation of the stages of the strategic marketing planning for the tourism sector that is shaped by various conditions related to the world market. The crisis, globalisation are only the examples of the factors influencing the development of tourism. In the light of the above-mentioned information the conditions of the tourism sector in the world as well as the challenges faced, mainly in the context of the economic crisis, will be discussed. The elements of the strategic marketing planning that are referred to in the article and that influence further existence of the companies on the market are, among others, the following: getting to know the needs of the clients, the necessity to conduct the surveys of the market, the consumers, various types of analyses, audits. Furthermore, creativity of the activity, strategic positioning and training are very important. All these strategies of the strategic planning ultimately aim at facilitating the development of the marketing plan that will contribute to finding the place on the market, focusing on a particular group of consumers, services and tourist products as well as will help to strengthen the position of the company even during very difficult times of the world economy.

2. The tourism system and tourism industry

As it was mentioned in the introduction, tourism includes various types of the economic activity and it constitutes the subject of studies of numerous areas of knowledge. This results in developing many theoretical models of tourism. Some of them reflect a specific point of view, however, there are some that present a more general approach. One of such examples is Leiper's model of tourism.

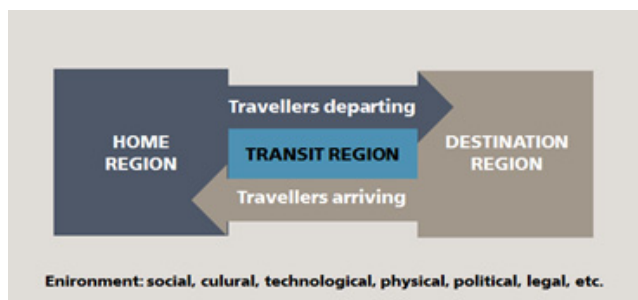


Figure 1: Leiper's model of tourism system

The basic elements of this model are tourists (the entity of the system), a geographical space (home, target and transit areas) and tourism industry (all companies and organizations dealing with providing the tourist equipment). All the relations between the above-mentioned elements are based on transactions and mutual interaction. There are numerous correlations between tourism and other areas of the social and economic life that bring many financial benefits. Through this tourism

constitutes an important factor of the social and economic development as well as cultural development. Valles and Becherel even think that tourism is "undoubtedly one of the phenomena with significant, if not the most significant impact on the social and economic development of our civilization" [4].

According to Leiper tourism industry is: "all companies, organizations and elements of the infrastructure serving to meet the specific needs and desires of the tourists" [5]. According to Henderson, tourism industry constitutes an extensive network of commercial and non-commercial organizations united by a common goal. i.e. meeting the needs of the tourists and travellers [8]. However, tourism includes many companies, organizations and other elements of the infrastructure, due to which it is a multi-sectoral and multi-faceted area of the economy and, simultaneously, a complex aspect that is difficult to formulate the universal conclusions and observations connected with management of the tourist business.

3. Determinants of transformations of tourism in the world

"The tourist market is subject to constant transformations under the influence of the various impulses coming from the international environment as well as the factors resulting from the national, regional and local conditions. The impact of these factors is visible both in terms of supply, i.e. functioning of the companies of this sector as well as in terms of demand, i.e. the client, tourist services" [3].

The on-going process of globalisation and integration in the world is closely connected with determinants of the transformations in the world tourism through, among others: creating new conditions for management for entities of the tourism industry, the impact on the changes of preferences, model and lifestyle of the society and this is reflected in the changes within the scope of forms of spending free time, type and way of relaxation or the choice of dream holiday destination [3].

Tourism in the global scale is a resistant and still developing area of the economy, however, its features include significant uncertainty as well. This results from considerable sensitivity to fluctuations, environmental turbulences that can temporarily and even permanently undermine tourism and change its distribution. There are many potential sources of these turbulences. According to T. Rachwał and M. Zdon-Korzeniowska the main factors influencing shaping the structure and dynamics of tourism that are related to globalisation of the world economy may include:

- processes of the concentration of capital and integration processes of the companies leading to the increased importance of the international corporations whose role on the world market of the tourist services is growing and growing currently;
- rapid technological development, mainly in the means of communication, i.e. telecommunications, transport that are particularly important elements from the point of view of the development of the world tourism;

- free flow of information through shaping the information society. This whole process takes place through development of the information technologies influencing reduction of time within the scope of contacts between people responsible for management of the economic entities as well as facilitating access to offers by a client of the tourist services. This gives the possibility to compare the prices, make reservations or purchase the product/service through the Internet;
- application of the information technologies in management of the business entities of the tourism sector, among others: reservation systems - CRS and distribution systems - GDS;
- the economy based on knowledge leading to increased importance of research and development works and introducing the innovations that stimulate gaining the competitive advantage on the market;
- liberalisation in the international trade that leads to reducing the barriers in the movement of goods;
- less stringent conditions for movement of people as a result of liberalisation of regulations regarding crossing the borders and through development of the world system of air, road, rail and sea transport;
- the free movement of capital that can be manifested in investments of the international corporations in different countries;
- integration processes of the countries and regions, including the development process of the European Union and introducing the principles of the single tourist market in Europe [3].

Furthermore, tourism can be influenced by other factors, such as:

- global climate changes;
- natural disasters;
- ecological disasters and disease risks;
- terrorism.

4. Marketing and management in tourism

According to J. Carman and K. Uhl "marketing constitutes a social and economic process aiming at getting to know the future structure of demand for products or services and meeting the demand through stimulating supply, transferring the information to buyers, providing produced goods at suitable place and time as well as their realization" [7]. However, according to J. Krippendorf marketing - strict in tourism - is understood as systematic and coordinated directions of the policy of the companies as well as public and private tourist organizations at the local, regional and national scale to satisfy the needs of consumers with a simultaneous moderate profit [8]. Ph. Kotler determines the essence of marketing in the following way: "the concept of marketing maintains that the key to reach the goals of the organizations is getting to know the needs and wishes of the target markets and providing the desired level of satisfaction in a more effective and successful way than competition" [9]. J. Makens defines marketing as a tool to design new products, combination of services that will consequently

ensure a real added value for target clients, motivate them and meet their real needs [10].

Marketing and management in tourism are based on surveys, analyses and focusing on achieving well-targeted and strategic goals. In short we can say that marketing in the tourism sector constitutes a set of all measures and activities in the matters of providing goods, products, services from producers or from a provider to a user. However, the most important thing is to possess well-thought marketing plan to display one's goods among competition during the world economic crisis and, consequently, attract potential clients.

During the crisis strong concentration in respect of the consumer that constitutes a key to effective economic management in tourism plays a significant role. It is also very important to direct the way of thinking of the management of particular business entities to understand the tourist products. The emphasis is also put on target marketing of a specific region, place as the basis of the strategic management and marketing on the tourism market. The entities of this industry are associated with the region, represent it and through a new approach to the strategic planning they highlight both quality, competence and efficiency in the economic process of their company as well as the whole region. It is very important for all key organizations that can have an impact on success to take part in achieving their tourist goals. Each entity of this sector may help to strengthen the basic positioning of the destination and influence its attractiveness as a place of relaxation and work to achieve the mutual higher goal.

5. Strategic marketing planning and marketing in the tourism industry

To prepare the marketing strategy it is very important to determine the long-term goals and activities of the company on the market. The strategic plan of conducting the activities on the market may include:

- market segmentation;
- positioning of the company in specific segments;
- methods of entering the market (acquisition, strategic allies, mergers, cooperation with other partners, autonomous internal development);
- complex and integrated method of solving the market problems through the application of the composition of the basic marketing-mix instruments;
- the proper sequencing and time of undertaking the marketing activities and determining the time interval of maintaining the product/service on the tourism market, with simultaneous analysis and summarising the life cycle of the product with the company's business activities [11].

In the light of the above-mentioned information it is very important to implement a variety of the instruments referred to marketing-mix. For tourism these are:

- tourism products and their elements that are decisive of meeting the needs of the purchasers and cause an increase in demand, with simultaneous benefits for the company;
- price and other conditions of concluding the transactions determining its attractiveness;

- channels of sales and distribution;
- promotion schemes (advertising, tourist propaganda, personal sales and others aiming at creating the consumer demand and sales promotion in various chains) [11].

6. Conclusions

Marketing in tourism is not only advertising. It is not an easy task as it requires coordinated, gradually planned and prepared objectives. Additionally, building the long-term competitive advantage and a good image requires the strategic positioning of the tourist products or services. In the conditions of the turbulent environment - during the time of crisis - the new approach to marketing activities based on marketing of relations is considered to be necessary. As a result, management in tourism during the crisis should be based on the strategic attitude of providing innovative and - simultaneously - well-coordinated products and tourist services. Balancing the strategic goals of service providers and recipients of the services of the tourism market with simultaneous increasing the mutual economic benefits should become the most important point of reference of the strategic management and marketing of the tourism industry during the time of the world economic crisis.

This article has mainly presented the selected stages of the strategic marketing planning in the tourism industry, however, it has also been supposed to stimulate thinking about marketing in tourism as this branch is very dynamic and it is vital for economic entities or destinations to be flexible and open to application of the marketing tools. Through the elements of planning, monitoring, evaluation included in the marketing plan of the strategic development it is possible to mitigate the consequences of the economic crisis or other conditions of the tourism market.

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THE VALUE OF HOLISTIC MARKETING

Silvia Klinčeková

University of Ss. Cyril and Methodius in Trnava, Faculty of Mass Media Communication

Nám. J. Herdu 2
Trnava, 917 01, Slovak republic
+421 902 186 867
silvia.klincekova@gmail.com

Abstract: *The paper deals with the philosophy of holistic marketing. The first chapter introduces holistic marketing and further describe its definition. The paper also presents four basic components which are: relationship marketing, integrated marketing, internal marketing and socially responsible marketing. It further brings the attention to the structure of holistic marketing. The conclusion is devoted to the value connected with holistic marketing. The aims of this article is to highlight the topic and its importance and actuality.*

Keywords: *holistic marketing, value*

1. Holistic marketing

Holism and holistic philosophy is promoted in a social sciences mainly through futurology and gradually it has been expanded to the economics, sociology, philosophy and others. It is also important to mention the following fact that in a society there is a transformation from traditional industrial and information society to the sustainable knowledge society.

The current post-modern society brings new challenges, situations, new opportunities and risks. Marketing management must deal with even more questions or challenges which could give the space for much more comprehensive modern approach. This approach is in a theory known as a holistic approach or the holistic marketing concept. Holistic marketing can be defined as an: „*integrated examination of values, creating value and providing value in order to build long-term mutually beneficial relationships and common shared resources of the people involved.*“ [1]. The essence of holistic marketing is an effort to cover all aspects of marketing. This is a dynamic process that allows interactivity. It is considered that recent digital revolution has helped to allow formatting the concept of holistic marketing. Philip Kotler and Kevin Lane Keller defined it as: „*a holistic marketing concept is based on the development, design and implementation of marketing programs, processes and activities that recognize the breadth and interdependencies. Holistic marketing recognizes that ‘everything matters’ with marketing and that a broad, integrated perspective is necessary to attain the best solution.*“ [2]. Holistic marketing has experienced success especially in the management of the value chain. This ensures the highest level of quality, service and speed. „*A marketing strategy that is developed by thinking about the business as a whole, its place in the broader economy and society, and in the lives of its customers. It attempts to develop and maintain multiple perspectives on the company’s commercial activities*“ [3].

„*Healthy long-term growth for a brand requires that the marketing organization be managed properly. Holistic*

marketers must embrace the complexity of marketing by engaging in a host of carefully planned, interconnected marketing activities.“ [4]. Holistic marketing is an integral and dynamic concept which use electronic connectivity and relies on electronic communication or interactivity between companies, customers and stakeholders. It is basically a combination of the best of what marketing has delivered with the new possibilities of the digital world which is used to establishing and consolidating relationships that can be so in the long term to obtain satisfactory, promising and prosperous level. It combines the activities necessary to explore, create and deliver value into the key groups where it will manage to create long-term relationships based on the principle winner - winner - winner. This means that each side receives the same amount of respect, equal benefit or profit.

It has been considered that the philosophy of holistic marketing can be used in a process of gaining the customer value. It presents an integrated approach to the exploration, creating and delivering value which should help to build and secure long-term relationships with a key segment. It should bring the answers to the following questions:

- How to identify a new value opportunities and its options?
- How to create and offer higher value efficiently?
- How to use skills and resources in an effective way, to be able to share higher value?

Holistic marketing flows through the entire organization and more creative approach is where the customer is in the center of interest. The concept of holistic marketing is a new approach in a modern marketing. It was established as a response to the significant social changes such as: demographic change, internalization, globalization, hypercompetition or corporate social responsibility.

Example of holistic marketing

Heineken is a dutch brand of beer. According to the marketing activities we can say that it has been limited. Therefore, holistic marketing approach was in place to repair the image, to gain better sale results and improve perception of brand name. As a result of it, Heineken and

Cisco have developed an interactive technology called „Heineken the City“. It means that new interactive, innovative and sophisticated way of communication, new changes and place to feel and connect with the brand were born. „Heineken the City“ is considered to be great success of holistic marketing. After 13 months, the first results were seen immediately, more than 300,000 visitors came, creation of new products such as: shirts, beverage and souvenirs. Holistic marketing can bring a new dimension of marketing.

1.1 Components of holistic marketing

„Successful holistic marketing requires effective relationship marketing, integrated marketing, internal marketing, and socially responsible marketing.“ [5]. Holistic marketing is based on four components which should be used effectively. These components are following:

- relationship marketing,
- integrated marketing,
- internal marketing,
- socially responsible marketing.

Relationship marketing

„Relationship marketing is a strategy designed to foster customer loyalty, interaction and long-term engagement. It is designed to develop strong connections with customers by providing them with information directly suited to their needs and interests and by promoting open communication.“ [6]. The main objective of relationship marketing is continually build and maintain long-term relationships with highly valued customers, suppliers, subcontractors, distributors, investors, diverse communities and many other stakeholders. The principle of relationship marketing is to perfectly understand the customer's needs, wishes and values which they prefer. It is crucial to understand the needs of our customers therefore we could offer them products which will be accepted and it will meet to satisfaction their requirements. A well placed relationship marketing brings the solutions with the smooth running of individual processes.

Integrated marketing

One of the main task of integrated marketing is to create an integrated program that merge together the activities which are required to deliver the same value to the customers. The important role has marketing managers who can according to their approach influence the satisfaction of the customers. It is essential to integrate the communication and distribution channels. Therefore, it is in closest contact with customers who determine the success of whole chain.

Internal marketing

It is carried out inside of the company itself. Internal marketing includes the employees at all levels. The objective of internal marketing is that every employee is familiar and aware of products and services which are provided. It is necessary recruitment of capable people

their motivation and training techniques of active listening and communication. It is crucial to get and keep the best employees. Tools which internal marketing operates with:

- communication between management and employees,
- education and training,
- improvement of customer service,
- remuneration for individual performance.

Socially responsible marketing

It is a corporate strategy that implements various social, economic, environmental and other values. Socially responsible marketing takes under the consideration the financial affairs, customer value, branding, society, law, ethics, safety and environmental impact. Companies based on socially responsible marketing behave with respect to the needs and values of the internal and external environment. It can be considered as trends and challenges at the same time which represents the change in orientation from short-term corporate goals to long-term. These kind of activities are often assigned to build a value. It is always base on the relation between success and social well-being. Example of socially responsible marketing is: Survey Monkey. It is an online survey provider which was found in 1999 by Ryan Finley. Survey Monkey donates 50 cents per survey to charity of any choices. In 2013, it was collected more than 1 million dollars to organize such an event.

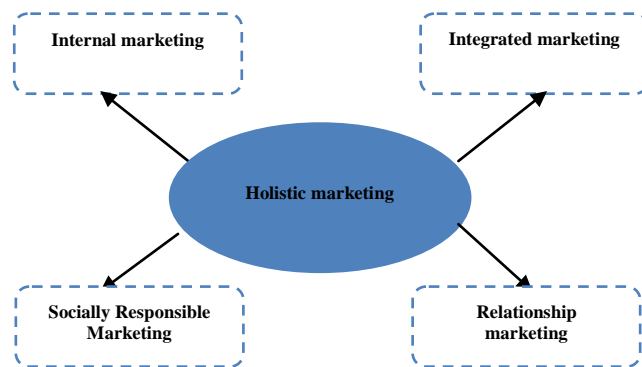


Figure no.1: Components of holistic marketing

1.2 Structure of holistic marketing

It represents meaningful network of relevant elements. It shows significant elements of the comprehensive system. In the structure of holistic marketing it is important the interaction mainly with stakeholders and activities which are based on the value. It helps to create, maintain and recover the customer value. The structure of holistic marketing consists of three main areas:

- research of values – it helps to identify new potential value opportunities,
- creating the value – it is based on efficiently generating of promised offers which obtain perspective and new customer value,

- provision of value – how company can use its skills and material resources in more effective way and offer values.

Firstly, it is necessary to define strategy of value. It includes understanding which is linked with interaction between these three areas:

- cognitive component of customer – identify the benefits that they can bring their customers,
- competence of enterprise – learn how to fully use the strengths and opportunities which they come out,
- resources and business partners – proper management and selection of business partners.

1.3 Value of holistic marketing

Holistic marketers have achieved better results in integrated managed processes and integrated value-chains. It shows higher quality of the products and services itself. On the other hand, it emphasises faster speed of thinking, acting and meeting needs or goals. It is considered to give greater profitable growth by increasing the number of customers, creating customer loyalty and lifetime value of customers. In this context it is important for companies to know how to establish values which are admired by target segment. It is required to provide value in customer relationship management and business partners as well as the management of internal resources for activities within the internal processes. „Successful are those companies which do not consider their activities only as a production or sales but as providers of value towards to the customers. Therefore, the aim of the companies should be to bring the value with a profit.“ [7].

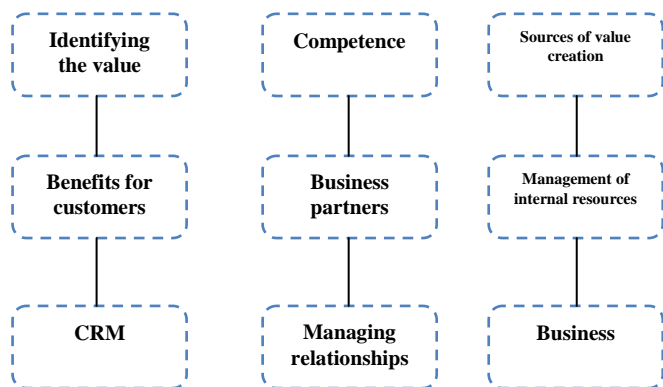


Figure no.2: Value of holistic marketing

The value reflects the perceived and intangible benefits for the customer. It is usually due to a combination of quality, service and price for the customers. The value has become the central trend and concept in modern marketing. For example, creating an effective communication system with target audience and effective informing, it has been considered as an essential for providing the value adequately. Nowadays companies need new approaches toward their customers. The 21st century is therefore significantly characteristic for holistic marketing concept

which is based on a broad and integrated marketing perspective. Trends and approaches that allow better and more effectively detect new market opportunities and succeed in rivalry in the business environment. Holistic marketing is considered as a crucial philosophy for receiving customer value. The mentioned components of holistic marketing help to explore, create and deliver value for consumers.

Results of holistic marketing:

- recognize vision, values, mission, targets in business,
- create strategy and plan,
- marketing research,
- understand the target audience and associate with them,
- design own products or services,
- create and deliver values,
- establish communication messages,
- manage the sales,
- lead the distribution of business partners,
- provide internal marketing,
- understand the marketing insights and develop branding.

Briefly introduction of **case study** provided by research and consulting company Spire. The case study examines holistic marketing orientation and environment. The key role is presented by a leading company in chemical manufacture. The aim of the research was to gain better understanding of the target segment for the current and future business opportunities and to look at these challenges through the holistic point of view.

The purpose of this study can be considered with the following five statements:

- recognize the saturation of potential market,
- formulate the path of customer segment individually,
- analyze the competitive environment,
- describe the major competitors in the market,
- business recommendations.

The relevant source of the information came mostly from secondary research and leading interviews. It should help to better understand macro-environmental conditions and specific and also latest trends in the field. The interviews were realized with importers, manufacturers, distributors and suppliers. The aim was to gain excellent overview of current marketing conditions, purchase and customers from holistic marketing perspective.

The conclusion is based on developing and expansion strategy which provide the competitive advantage and holistic marketing research. The outputs from the case study can be summarized as:

- analysis of understanding the relevant decision makers,
- plan and strategy to establish correct relationships,
- awareness of competitors,
- useful recommendations to eliminate threats. [8]

Conclusion

The concept of holistic marketing is designed to deliver more profits and continually achieved relationships based on loyalty approaches. It accomplishes positive word of mouth, necessary recommendations and value for customer has been increased gradually. Holistic marketing reflects to the latest challenges and changes such as: globalization, customer lifetime value, dramatically development of information technology and integrated marketing communication. According to individual concept of holistic marketing the value and needs of customers can be delivered and satisfy effectively. It is an essential strategy, philosophy or marketing tool which is able to create and aplicate marketing programs into the practise adequately and to consider the holistic way of thinking.

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THE BASIC MEASUREMENT METHODS OF MARKETING EFFICIENCY

Vladimír Ovsenák

University of Ss. Cyrilus and Methodius in Trnava
Faculty of Massmedia Communication, Nám. J. Herdu 2
Trnava, 917 01, Slovakia
vladimir.ovsenak@gmail.com

Abstract: Marketing communication and the ability of quantifying the value of its benefits for companies and organizations is subject of numerous modern studies, not just resolved by experts from the scientific community, but also by "laics" - businessmen and entrepreneurs. Therefore, the contribution aimed at clarifying the basic methods of measuring efficiency of marketing communication, and approximates their use in measuring success of different instruments of communication mix. Also elaborate methods surveys and impact on achieving of the desired objectives, particularly as the turnover, profit and cost-effectiveness of using methods of marketing communication.

Keywords: marketing communication, marketing effectiveness, promotion, measuring of promotion efficiency

1. Introduction

Increased use of the specific indicators of marketing management of advanced firms responds to the pressure exerted by the management and company owners, who started to show increased interest in improved explanation spending of funds for marketing, in particular with respect or attention to that part of the budget for marketing most affect sustainable growth of financial company performance.

As a result of the growing need after quantitative parameters characterizing the performance of marketing and the company itself, there was the creation of innumerable indicators designed to measure the level of nearly all customer satisfaction to measure the number of clicks on specific parts in website area. A key concept becomes a performance. We consider that the general key is the maximum possible performance, or ideal desired performance.

In parallel with this trend, which is not only because of the effects of the economic crisis, but the long-term direction of development of modern marketing as a cross-sectional results of the examination empirical results of numerous studies and the conclusions which the marketing costs attributed to the different role that determines their accountants, mainly as allocation current loads, the reporting period. This is the case of the current, implemented marketing activities, whereby it is necessary to identify their impact on the future company.

Changes in the preview of the marketing led to the acceptance of its impact on future financial business performance, whether in relation to the development of the turnover and profitability, but also to company (whether in determining the market value of the company or in determining the value of the acquisition). Marketing expenses are no longer seen as only the fixed costs but are perceived as a full-fledged investment company with impact on the future success of the company in a turbulent market environment.

2. Effectiveness of marketing communications

Effect of marketing communications may be monitored by economic, and also non-economic (communication)

indicators. From an economic point of view, the most important factor is the impact of rate marketing communication on revenues from sales of products / services [1].

Evaluation is usually carried out by the analytical methods, especially mathematical and statistical methods. The most common is quantified change in turnover over a period of action of marketing communication. The method of ascertaining the effectiveness of marketing communications include [2]:

- *Detection tests*, based on the finding of good and bad identification, the selected customer segment show different materials, and then asked to identify which you have seen, read or heard about them.
- *Test remembering*, when to ask people chosen to reconstructed, what they saw, heard or read in the context Promoted product / service.
- *Measurements feedback*, which is determined as a marketing communicates affected the level of awareness about the service as a percentage (on how many percent of respondents the goods / services have tried and what percentage is who the goods / services have been tested and been satisfied with the services).

Evaluation of the effectiveness of marketing communication is based on the comparison of the results achieved and the objectives set. The cost effectiveness of marketing communications should theoretically be possible to determine the aggregate income over the life of the product [3].

Therefore, indicator scales communication costs as share:

$$WCC = \frac{CP + BB}{R + SC}$$

Where:

WCC is the weight of the cost of communications,

CP is the cost of communication products,

BB is the cost of brand building,

R is the product revenues for the lifetime of the product,

SC is the summary costs [3].

But the foregoing theoretical calculation is somewhat ambiguous, because it does not accept the cumulative

nature of commercial operation of communication. The economic results that the company achieves in a particular period cannot be unambiguously associated with the action of a single ad in this period, because the action of commercial communication has cumulative character only. Another reason is that the volume cost of communications or their relative weight not reveal the impact of these costs on sales, are therefore indicator of the effectiveness of these costs. Cost of marketing communications are important especially for internal management marketing departments. Assessment effectiveness of marketing communication is necessary to pay in proportion of objectively measurable impact. It is necessary to take into account the fact that marketing communication is only one element of the marketing mix and hence the volume of sales, but also have an influence for other elements. Marketing communication and purchase the product does not coincidence [4].

On the one hand, occurs synergy campaign with previous communication company, brand and product (cumulative effect), on the other, thanks to the action of the campaign continues inertia human thinking for a long time thereafter. On the sales volume an important function of both competition and the timing of communication but also fashion trends in saturated markets that operate erratically on demand of the individual products [5].

In evaluating the effectiveness of various marketing tools communication has been successfully applied marketing research which allows analyze the impact of communication on consumer behavior and therefore on economic results of the company.

The most commonly used are:

- comparison,
- experiment,
- mathematical or econometric modeling [6].

It should be combined appropriately quantitatively and qualitatively methods, because they overlap each other. Order research that describes and analyzes the target groups and their behavior, supports the creation of communication strategies and individual instruments verified the appropriateness of the elements in the final stage of verifying the scope and impact campaigns, such as measurement of future and past changes in layout views of the target group, as well as an understanding of the processes that these changes will lead or have led [7].

The research cycle should begin with qualitative methods, the findings of which will serve to the formation of communication, but also for the preparation of quantitative methods aimed at mapping and communication space by test campaigns in it. In the last stages of research using again qualitative methodology through which it is possible to know the causes of changes in attitudes and behavior of the target group.

In terms of time, the method divided the pretests, therefore preliminary tests that are performed before the advertising campaign. Their main task is a selection of the best variants of advertising proposals and suggestions for correction of overall communication strategy in relation to the objectives of the test campaign.

Subsequent tests are used to verify the achievement of the objectives set, communication effect and help to establish other procedures.

To check the effect of the use of communication procedures we consider [8]:

- measure the degree of knowledge (knowledge level brand, product or producer-consumer)
- test of re-cognition (respondent's task is, on the basis the original copy of the magazine again recognized that ad before read)
- test above (put greater demands on the respondent about memorization of the message, which itself must reproduce what read)
- advertising test DELTA (determined factors: prominence ad in the promotional field, appeal to the reader, the information content advertisement, brand memorability, text captions and image unit and details of information stored and qualitative effect analysis on the basis of rating scales)
- measure of the effectiveness of promotion in terms of sales (There are a number of methods used to determine the level of changes made in the image of promotion action. For example, included here are the methods as: mathematical models, ordering tests, controlled experiments in the field).

From the perspective of the recipient promotional notices the methods of measuring of the efficiency of marketing communication are divided into [2]:

- methods mainly focused on cognition, cognitive perception site (e.g. tests of mentioning)
- methods aimed at effective, emotional - motivational page (e.g. range of emotional quotient, image analysis)
- method focuses on consumer buying behavior (controlled field studies)
- complex methods that try to combine the essential elements of the above these procedures into a single unit.

In addition to the above methods, there is still a large number of specific procedures developed by individual agencies that use quantitative and qualitative analysis.

The comparative method of marketing research

Using the comparative method, the effectiveness of communication determined indirectly using the rule of simple proportion. Use the information from the economic the contribution of other campaigns (benchmark) and also the operation of the test campaign from the benchmark, on which basis can estimate the economic effect of the test campaign. It can be used either for quantitative or qualitative research.

The most difficult task is to determine comparative values on the basis of which to compare the effects of advertising, promotion or BTL channels. Exists several methods that can be used [3]:

AdEval method is based on the quantitative measurement of the response of ads in the minds of people from the target group. The data obtained allow divide consumers into three groups:

- motivated, which tested a communication tool delivered and at the same time are strongly encouraged to purchase behavior,
- interest which are interested in advertising but did not encourage,
- unreached who after exposure to commercial equipment but do not see it how close does it affect their consumer behavior.

Advant method is based on measuring the relationship stimulus - response, the stimulus is a test marketing communication response and reaction of the target group.

Next method works with the concept of persuasiveness, the measured impact of advertising on purchasing behavior and contribute to building the brand.

TV Link provides diagnostic information such as the total score ads estimate short-term effects of advertising on sales volume and medium-term return on investment to test communications.

The possibility or impossibility of some comparative measurement methods of effectiveness measuring in marketing activities is represented by Table 1 [3]:

Table 1 Selected properties of some comparative measurement methods

	<i>Advant</i>	<i>AdEval</i>	<i>Next</i>	<i>TVLink</i>
Testing communication in real situation	+	-	+	-
Testing more ads simultaneously	+	-	+	-
Test validated in the knowledge ads	+	+	+	+
Test validated in the sales volume	+	+	+	+
Detailed view of the effectiveness	-	+	-	+
Possibility of connection with tracking study	-	+	-	+
Diagnosis by evaluation scales	+	-	+	+
Diagnosis by verbal responses	-	+	-	+
Specification elements persuasiveness	-	+	-	-
Being tested in the phase of advertising	-	+	-	+
Possibility of finished ads verification	+	-	+	-

+ = possibility of measuring - = impossibility of measuring

Experimental method of marketing research

Works with artificially created situations involving must be conative component. Experimental method manipulates two groups. The test group was exposed to test marketing communications, whereas the second group is not exposed such action and thus constitutes a control group. The differences between these two groups represent the results of the operation of marketing communication to the target group. The experiment can be realized in the laboratory, which is called the laboratory, but also real, which uses test markets where the real conditions apply test marketing communication.

Econometric methods of marketing research

The main advantage of econometric research is accurate calculations expected sales volume and revenue, which raises tested communication. But on the correct identification are necessary the long-term time series data on market development in stable conditions.

3. Measuring the effectiveness of the various elements of marketing communications

Advertising

The effect of advertising relates the advertising goals and fulfilling. The effectiveness of advertising is called when we want to affect full effect. To characterize sub effects used term effect of advertising as the relationship of costs and outcomes advertising. The effective advertising is considered advertising which adequately informs the creative, timely, focused on the right target and the selection of the appropriate medium [9].

Advertising meet short-term and long-term challenges. When testing effectiveness of communication campaigns using pretests (for example, consumer Jury tests portfolio physiological methods information tests, traceability tests in cinemas, random tests visitors, artificial laboratory shops), tests carried out during campaign, post-test (getting to know tests, tests and tests remembering sales), which are deployed at the end of the campaign and tracking study.

In tracking studies group at random selected customers receives at regular intervals (e.g. every three months) standardized set of questions. Consequently, the findings of point to change the position of the brand but also competitive products during the observation period.

The effect of advertising can be seen from two points of view both in terms of communication effect, which is determined as advertising impact memory, perception and preferences for existing and potential customers. And in terms of sales effect, which examines how advertising works on increase in sales. In this effect, it is important to take into account the fact that the Sale also served by other factors such as the nature, price and availability products / services [10].

The effect of advertising expresses the relationship (ratio) advertising results and costs incurred to achieve them. The effect of advertising relates the limits laid advertising goals in the economic field and its fulfilling, can therefore be expressed as the ratio achieved target advertising and planned target advertising.

To measure the efficiency and profitability of the investment in ads using a number of criteria, which are classified [11]:

- the recipient is exposed to advertising,
- leave a trace in the memory of the recipient
- changing attitudes in the desired direction,
- create in the mind of the recipient positive emotional track,
- induces a change in the behavior of the target group for the requested direction, bring information that is important for rational decision making.

Sales promotion

For evaluating sales support are the most common method comparison of sales volume before, during and after the event. Prior testing is based on the deliberate exposure of customer action supporting the campaign and post-harvest their views. Where for the company has, for example, 6% of the market prior to and during the event is raised to 10%, then decreased to 5%, and later rises to 7%, we can conclude that action obtain new customers and more buying a present consumers [7]. As a result of the creation of consumer stocks, after the share sale decreases. Research applied for promotion provides information on the number customers who responded to the event by her remember what it had to view and that influenced their purchase.

Public relations

The effect of public relations is difficult to measure because it is related to instruments of sales support and operate indirectly. The easiest quantification of efficiency in public relations is based on determining the number of published reports media, running in the television or radio. Since quantification of published works not indicate the actual number of people who saw or heard of that report, they are not as conclusive indicators. Currently, there are some tools that can evaluate the effectiveness of public relations. One is Precision, which combines three views: measuring media impact, progress monitoring consumer attitudes and assessment of media policy in relation the target group [4]. Another tool is called even both tracker, which allows monitor and evaluate the shift in consumer behavior and attitudes before and after implementation of PR activities.

Personal selling

Personal expression is assessed on the basis of reports from the sale of sheets customer complaints, repeated purchases or interruption trade relations. It uses the comparison of activities of the sellers, sales comparison the current and prior year, qualitative assessment sellers.

4. Conclusions

To conclude, the effectiveness and efficiency of marketing communication are part of the most actual problems of the modern marketing. The cause of the adverse competitive pressures, reduce budgets and increasing sophistication of consumers. The issue of measuring effectiveness and effectiveness of marketing communication mix and especially to optimize the allocation of budgetary resources currently dominates both in research of various marketing communication tools and the research of individual media. The contribution follows the current issue of measuring effectiveness of different marketing communication tools. The issue directly affects all businesses that develop efforts actively communicate with the target segments in financial optimization, which means communication and the effect of marketing communication. For this reason it is essential to address the above issues own businesses in order to increase their

profitability funds spent in communication with a target segment.

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THE SYSTEM APPROACH TO MANAGEMENT PRINCIPLES IN CYBERSPACE DYNAMICS OF THE INFORMATION SOCIETY

Martina Janková

Brno University of Technology, Faculty of Business and Management

Kolejní 2906/4

Brno, 612 00, Czech Republic

+420 776 163 175

martina.jankova@email.cz, jankova@fbm.vutbr.cz

Abstract: *In this paper, partial conclusions of the specific research solution are described. The research solution is expressed in the new concept of the information society dynamics cybernetic space. The aim of this research is to create systemic concept of the social and technical environment of management. It also presents analysis of various possibilities of reactions to fast tendencies in the domain of new information and communication technologies. Connection to fast emerging intelligent robotic systems in the world is described. Core of the research is the new role of information managerial literacy related to the future knowledge society. New selected trends of global cybernetic concepts of managerial informatics are gradually described. Possibilities of artificial intelligence use are also focused on, based on new concepts of opto-electronic and bionic technologies. The below described approaches are part of efficient transformation in the field of economic cybernetics, the methodology of which has been gradually formed.*

Keywords: *managerial knowledge, information society, information and communication technologies (ICT), economic cybernetics, cybernetic space.*

1. Introduction

On the threshold of the century the economics is brought face to face with numerous challenges in an environment characterized by globalization processes and technological changes. In the globalized economic space (Kadeřábková, 2004), (Burešová, 2011) enterprises compete for resources – investments, human resources and technologies. New knowledge and new forms of their propagation, which characterize the transition to information and knowledge base economy and society, are key to the success beside the information and data. New knowledge and its successful use as the key source of economic progress characterize the period of modern society development. This characteristic manifests in the constant increase of immaterial investments into the work productivity increase. However, the generation and propagation of information and knowledge in the process of transition to the knowledge base economy increase – especially there is change in the form of related processes to series of implications exceeding the purely technical, social and economic scope.

New technologies (Burešová, 2011), (Kadeřábková, 2004), (Brožová 2011) and their successful propagation had always significant impact on the economy and society. The information and communication technologies (ICT) are considered fundamental for the process of transition to the knowledge base society. From the technical perspective there are key such technologies, which are foundations of new technologies and at the same time significantly influence existing technologies, thus they have impact on other departments. Scientific and technological development moves the civilization to greater understanding of philosophical opinions, physical principles and technologies, which the world uses for realization of progressive trends in new society.

The expansion (Burešová, 2011), (Kadeřábková, 2004), (Brožová, 2011), (Barták, 2008) of ICT usage significantly changes the perception of innovative process character. Innovative ability is greatly measured based on the ability to systematically use new knowledge. In the knowledge base economy the information and communication technologies are developed into a more complex structure, where the previous division into subjects generating and utilizing new knowledge is weakened and this leads to the creation of learning organizations.

Generation of knowledge base economy (Burešová, 2011), (Kadeřábková, 2004), (Brožová, 2011) is further characterized by a wide scope of innovative activity intensifying process. This process runs across economic sectors and departments in the form of technological change. Management of knowledge becomes a key component of the strategic management and changes the method of organization function. Transition to knowledge base economy (Burešová, 2011), (Kadeřábková, 2004), (Brožová, 2011) is equally connected to important impacts on the whole society. Therefore it is a very complex process – thus system defined.

2. Methodology and Data

System concept of the knowledge management is expressed mainly from the perspective of:

- System theory in the abstract concept of the general **S system** as an aggregate of p_1 to p_n components (see figure 1) and connections between these components with essential surroundings of the S system,
- Cybernetics (**cybernetic K systems**) as aggregate of controlling subsystems and controlled subsystems including connections between these subsystems,
- Artificial intelligence as an aggregate of images and sequences representing relevant model of system

concept of management (expressed by cybernetic model) for a specific area of information and knowledge society – Figure 1.

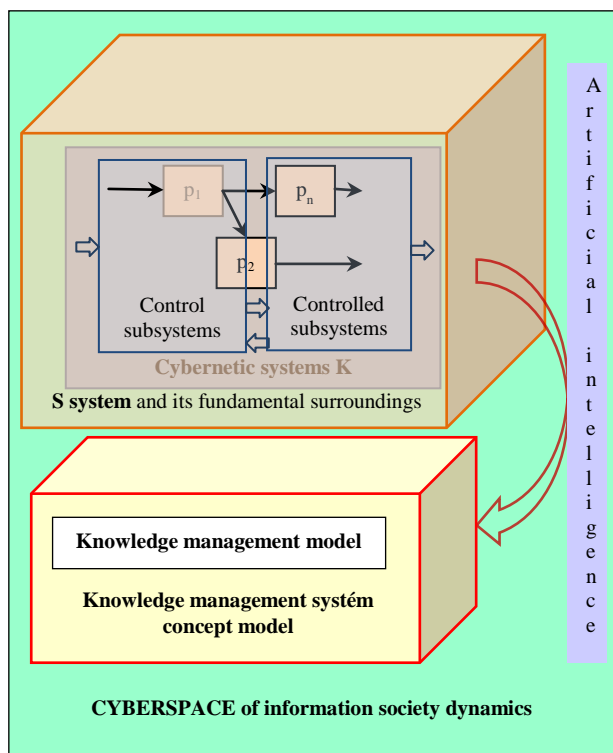


Figure 1: Knowledge management in cyberspace of information society dynamics. Source: the author

Detailed elaboration of the methodology led to a creation of detailed model of specific cybernetic system K to spatially perceived cybernetic systems KS (Figure 2) in a specific research up to the phase of purpose defined virtual reality of spatially and time perceived modelling tasks in the system defined environment.

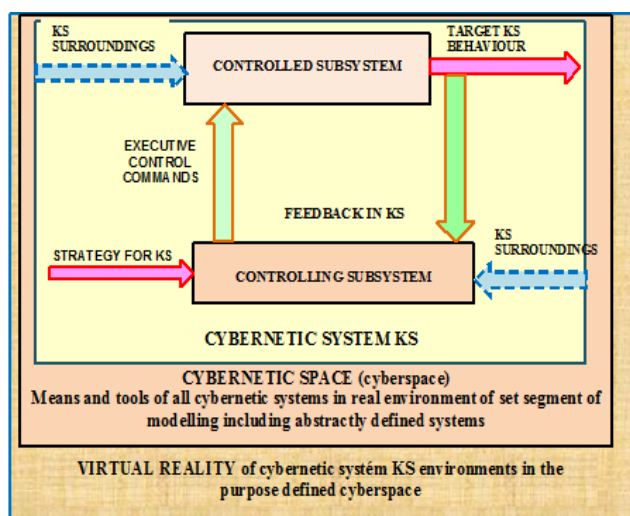


Figure 2: Possible modelling of partial tasks in cyberspace, Source: the author's based on (Janková, 2014)

The management environment must react to fast trends in the area of new means of information and communication technologies and express the connections to the quickly emerging intelligent robotic systems in the world. The core of the research is also the new role of **information management literacy** for future knowledge society. In the model there are also gradually presented selected new trends of global cybernetic understanding of management informatics. There is also focus on the possibility of utilizing the artificial intelligence means based on the new concept of opto-electronic and bionic technologies. Presented methods are parts of the gradually generated **methodology of effective management transformation in the area of economic cybernetics** Figure 3.

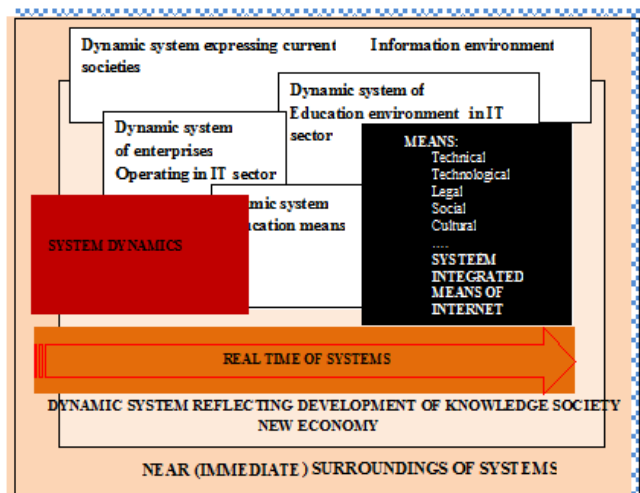


Figure 3: Systemic definition of the environment dynamics and resources for the management education in the dynamics of the future economic cybernetics of the new economy. Source: the author

Data gathering was very difficult throughout the whole of research. I managed to evaluate partial results of the questionnaire and gather a large set of graphs which are illustrated in (Figure 3, Figure 4).

Part of modelling is represented by determining crucial parameters of the gradually emerging model with the expression of e.g. the relation between the selected education parameters expressed as theme parts of the system model solution.

Complex analysis of the existing environment of the life-long learning in the IT sector has already been modernised and it is currently expressed in the working concept as follows:

- **Point assessment of KNOWLEDGE** to assess **quality of the selected information means used** in life-long learning assessed by points – from 0 (classification F – has no modern knowledge) to 5 (classification A – the maximum, i.e. great knowledge) – see Figure 5,
- **GROUPS within the age limit of the participants** of the overall concept process of the project focusing on

the system concept of the life-long learning – expressed by the age of the graduates of the training facility (scale group A: between 20 and 25 years of age, group B: between 26 and 30 years of age, group C: between 31 and 35 years of age, group D: between 36 and 40 years of age, group E: between 41 and 50 years of age, group F: above 51 years of age) – Figure 5,

- **and other parameters:** relation towards the new trends in the cybernetic concept of the information society Figure 4 – completing the system approached space in the context of the new environment of economic cybernetics for securing the *social and technical ENVIRONMENT* of enterprises (for all: 0 does not know, 2 is unable to assess, 4 below-average, 6 average, 8 above-average, 10 high) *IT security of the enterprise QUALITY* and also system approach to new forms of training and methods of electronic *learning of systems in the future CYBERSPACE* of intelligent constructs in the world of the future economic cybernetics – Figure 5.

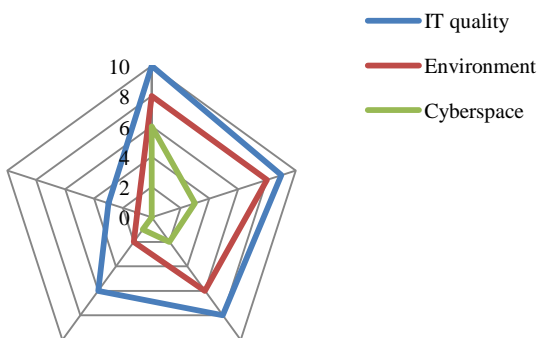


Figure 4: Relation to new trends of the information society cybernetic concept. Source: the author

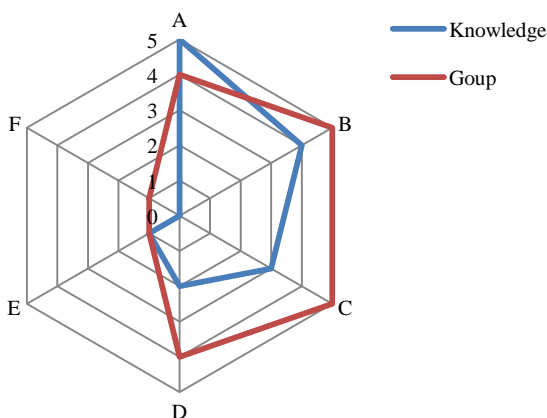


Figure 5: Knowledge within the age groups participating in the questionnaire. Source: the author

3. Results

The acquired data gathered from analyses (Janková, 2014), (Janková, 2013) and the results in the set of graphs have been used as **the basis for possible system identification** or utilizing other forms of data and information gathering regarding the specified global opinions and the research focus on the areas of cybernetic system modelling in the cyberspace of activities of IT company operating in the interesting sector of IT.

4. Discussion

Based on the aforementioned the **contribution of the research** can be as follows:

- **in the area of further scientific activities** (for example, the newly designed cybernetics of information and knowledge economy, possibilities of comparing competitiveness strategies of enterprises using a simulation PC program, possibilities of combining tested identification methods in the complex environment of competitiveness between enterprises, or contributing to the modern concept of intelligent enterprises projecting),
- **in the enterprises practice** (especially in the domain of using user ICT resources including new Internet environment – rationalization of practical life-long learning of knowledge managers trained for future “unmanned environment of enterprises”),
- **and for enterprises and companies focusing on the increase in social environment literacy** within the IT sector by the life-long learning complex concept (through the specified requirements development related to methodology based on the existing information, economic, etc. literacy),
- **for new virtual universities** of the European knowledge concept and new trends of electronic commerce and business with information and knowledge in the integrating environment of the civilization and its cultural contents.

5. Conclusions

Contribution of the research

- **system concept** of the task by defining utilizable **abstract system and cybernetic system** within the cyberspace of **hierarchic structure** modern **understanding** profile within the new **multi-dimensional environment** of the existence of the **dynamic model** for the future set of defined systems,
- **new cyberspace concept** for research objectives creation with respect to the **system integrating environment in the newly emerging economic cybernetics** utilizing proven modern theories,
- **defining proven means of modern system analysis and integration** to create **environment containing dynamically developing social and technical systems** and especially ICT and dynamic environment of **modern management and economics**,
- **understanding knowledge – especially from the given theoretical disciplines**,
- following thorough analysis of macro and micro knowledge of themes within the field, **adaptable**

dynamic technically developed cybernetic education resources will be necessarily included in the whole life-long learning with the aim to further develop intelligent **robotic and technical education system**.

Contribution to practice

- expressed by **system concept methodology of creation** and utilization of ICT, especially the modern inclusion of Internet in the enterprises practice and the new concept of **social and technical interface** with the cybernetic tools can positively influence the dynamics and **adaptability of the area of management and economy of the enterprise and the competitiveness of the enterprise on the market**,
- expressed by the general methodology the enterprises will focus on the dynamic highly hierarchic segmented **cybernetic systems of manager and enterprise employee and IT product users education** with the goal of knowledge base creation and the propagation of automated management systems into practice,
- modern system of lifelong learning was interpreted from the perspective of cybernetics also as a basis for **social and technical interface** with the feedback activities for **future training environment and learning systems** in promising virtual universities and integrated training facilities of the enterprises,
- Gradual creation of simulation programs will allow in the future to contribute to the expected improvement of :
 - **Enterprise competitiveness on the market**,
 - **Feedback for new information acquisition to the knowledge base**,
 - **Management of the current enterprise** and the condition for the change in the “*learning organization*” and new quality of “*intelligent enterprise*” in the sector of IT knowledge economy.

Acknowledgements

This paper was supported by grant FP-S-13-2148 “*The Application of ICT and Mathematical Methods in Business Management*“. Thematic area of researchers Dvořák, Janková et al. “*The system integrated environment for the design of intelligent models, modelling and simulation of modern cyberspace of enterprise*” of the Internal Grant Agency at Brno University of Technology.

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THE PROPOSAL SYSTEM FOR THE SAFETY ASSESSMENT OF SOFT TARGETS WITH FOCUS ON SCHOOL FACILITIES

Lucia Prochazkova Duricova – Martin Hromada

The Department of Security Engineering, Faculty of Applied Informatics, Tomas Bata University in Zlin

Nad Stranemi 4511

Zlin, 76005, Czech Republic

+420 777 622 203

lprochazkova@fai.utb.cz – hromada@fai.utb.cz

Abstract: This article defines the proposal for solving problem with attacks for soft targets. This article describes function ties for assessment probability of the object vulnerability. First we must evaluate object with appropriate analytical method. We propose the first version of the analytical method in article. The definition of processes in the school is one of the managing method for minimizing risk of attacks. For minimizing risks we must divide the problem into a group of small problems. The solution is oriented for schools and students, it is the first step in our population, where we must make some measures and some decisions for minimalize casualties.

Keywords: safety assessment, risk assessment, RPE method, processes in school

$$RPN = R \times P \times N$$

1. Introduction

The society is in difficult security situation today. The challenge is making the world security resistant for attackers. The main objects we know as soft targets. Soft targets are objects with a higher concentration of people in the same time at the same object and physical structure of the object is not secure for these events. In the commercial object managers and directors manage it. In soft target is missing this kind of management.

1.1 The analytical part of the project

In the analytical part of the project we describe analytical function scheme for analytical process in objects. Analyses is the first step for the proposal resolution.

Table 1: The proposal RPE method

The calculation of RPE	Value	Explanation	Value	RPE
Risk	1-10	What kind of negatives event is threatened?	5	125
Probability	1-10	How much percent is probably that this event can happen?	5	
Effect	1-10	What happen after the event? How is damage? How is hard to repair it?	5	

The calculation of RPE is similar as calculation in systems of quality and it is called RPN. RPE is about Risk, Probability and Effect. These three indicators have values in interval from 1 to 10. Risk represents type of an event, or security threat. The Probability represents how many likelihood that the event can happen in the object. The Effect describes economic and casualties' impact for object and visitors, or for society can be. The RPE is non-dimensional quantity. The proposal of the calculation is in the next equation.

We can use this method for two processes. In the first one use analysis in first step for the assessments of objects. And in second one, it can be used after the process proposal security system process. For this article we mean proposal security system as one part of the project. It is one of the last processes. After the proposal we can define and analyse effectivity of proposal.

The resulting values can be determined for interval:

$$RPE < 125$$

$$RPE > 125$$

Special conditions – will be specified after observation

Special conditions mean that we must be careful in analytical process. We must prepare all conditions and we must rate them. After analytical conclusion we can specify it. After more application it can be changed and equation can be evaluated for long time.

1.2 The management system in schools

In Czech and Slovak school system is the same process for management as a system in corporation and commercial business. It is the first step for solving problem with security in those algorithm.

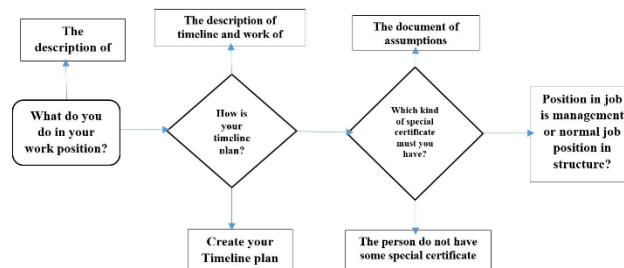


Figure 1: The description of the work position

The diagram describes the work position and timeline plan, which is connected with positions. This process characteristics must be planned and generally applied into object where we need it. It connects with the distribution of work another algorithm, presented in the next figure.

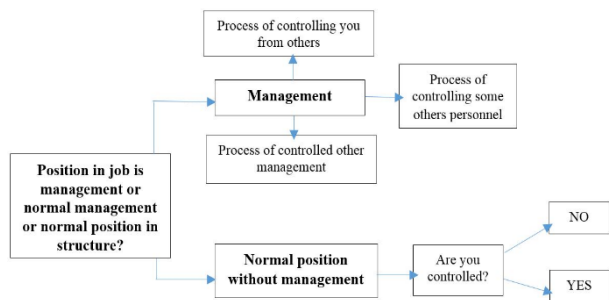


Figure 2: The distribution of work position in targets

The primary distribution is about normal or managers positions. This types must be controlled and we can determine the process of control in our objects. The process of control must take into account the aim of the object. For this article it is schools objects.

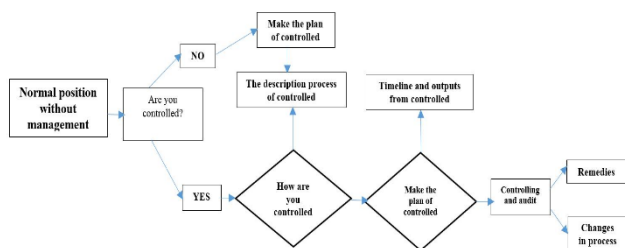


Figure 3: The description of normal position

Figures describe the process, which can be helpful for us in analytical parts of the project. Who is who, in organization and what his or her duties are? It is the first step for setting processes. This process we can call as an implementation system of managing in schools building and processes. We must know what and how long are they doing and what type of work is it.

The assessment is part of an article where we can analyse threats. We divide the assessment according to the type of arising threats. In the first it is from outside of the object. It is place, town or state, but the characteristic of the district. The second type is the object. It is focused on the purpose of the object. And third type of the assessment is type of analysis which is divided to object analyse processes in the object, and it is the same as processes in industries or commercial business. This is part of the article, an establish system changes. These are related to depth analysis threats.

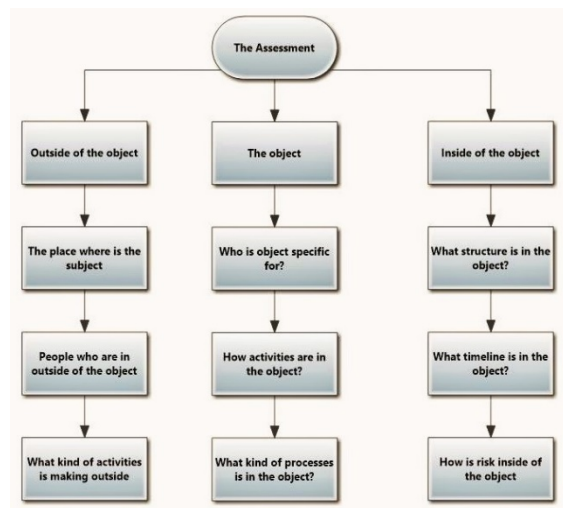


Figure 4: The assessment of the analytical part

These processes are generally valid. For this article we talk about school objects, but we can or we want to apply this type of assessment in all other objects, which can be known as soft targets. The last question in Figure 4 is "How is risk inside of the object?" and how it could continue with RPE method.

1.3 The type of visitors

The next diagram consist of three types of visitors in object. The diagram links the type of visitors and the timeline plan. This linking is realised by two types of plan and there are issues and conditions. The base for understanding terms in processes in the object is presented in following diagram.

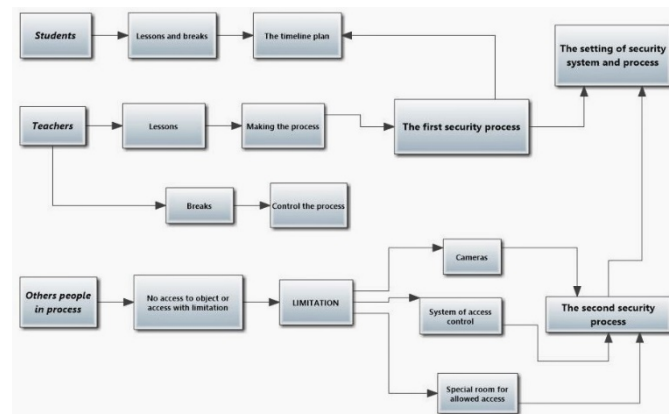


Figure 5: Relations between visitors and their functions

In the conclusion in Figure 5 we can see two security processes which inputs to the reconfiguration of the security system and the process. It is description of process we can link to many types solving problems.

1.4 Processes in the school object

Processes in the school object are specific, because the activities are related to teaching and educating children and teenagers. It is very specific kind of process and very

specific plan of activities, what are doing children. When we make plan in commercial business, we must define some specific working modes. It must be defined in scholar process too. We can see the process on the next figure.

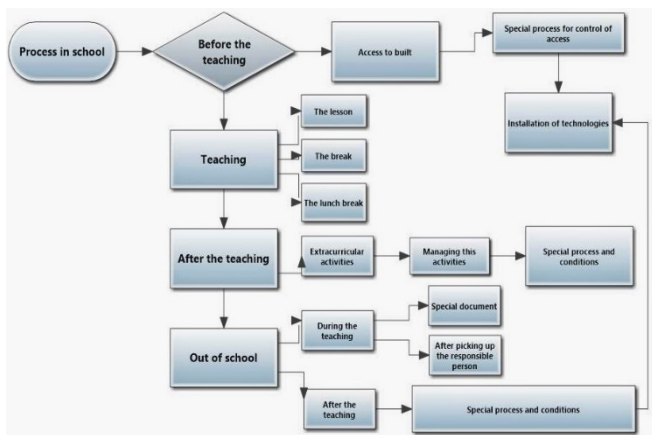


Figure 6: Working modes in school objects

We can determine this processes for four primary processes. The first is before the teaching, which we can define as process when there is a higher probability that potential attacker can enter the object. This time is specific with conditions from the leadership of the school. The access to the built is not controlled primary. This problem we can eliminate with setting the access control system with specific time modes. It can be solved by specific technical instruments assembled with processes tools. The timeline plan during the teaching is very specific, but we can tell, that it is not the same in every schools. The access is not properly enabled in this time. The process after finishing the teaching is specific as process before the teaching. And we can define the last process as the process with activities out of school time. For example the diagram presents circles or interest groups.

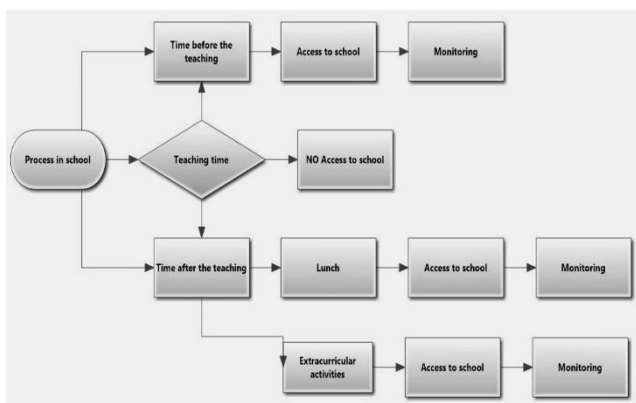


Figure 7: The primary propose for the access control

The monitoring we can be determined as a process and technical instrument which can be helpful for increasing security and this monitoring can control the operation in the school. The next part of article can be seem as the

definition of the evolution process in schools for the adequate risk assessment.

1.5 The definition of the assessment process

The risk assessment addresses the school and specification of every school building. Every object has some specific events, which were in the object in the past, or events which could be realized in the future.



Figure 8: The object security

Primarily we can determine two groups of objects. In the first is group of object where accident or security incident was not presented in the past. It does not mean that the security incident could not be in the future. This analyses process must be oriented with different type of solution. We must anticipate security incidences. The second group is the group of objects where incident was in the past. In the second type of group we must analyse the consequences and causes of attacks too. In the first step of the solution we must eliminate the threat, because we must stop the destruction process. After that we must analyse, the causes of attacks are. In the third step we must analyse first group of attacks. It is what could probably happen in object. In the conclusion we can get the plan and processes.

1.7 Conclusions

This document describes models for solving problems in soft targets and primary for schools. We can describe how interested is the system approach. This article explain the new proposal of RPI method for analyzing objects. It is not new method, but authors want to apply applicable principles from other disciplines or other to this problematic. The first question what authors had, was how the other principles can be functional in other object. And it was impulse for the proposal of the solution.

1.8 Acknowledgements

This project was realized by the research with doctoral student and it is the basic input for next research, which will develop the appropriate system in the next process. It was realized with support of the university. This work was supported by Internal Grant Agency of Tomas Bata University under the project No. IGA/FAI/2015/015.

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MODERN METHODS OF MANAGEMENT ACCOUNTING

Anna Jacková

University of Žilina, Faculty of Management Science and Informatics

Univerzitná 8215/1

Žilina, 010 26, Slovak Republic

++421 41 513 1422

e-mail: Anna.Jackova@pd.uniza.sk

Abstract: *The worldwide trend in building a world-class enterprise is focused on reduction of costs in the business and finding ways and means of optimizing cost types in terms of management accounting. The usage of modern methods creates space for optimization of three fundamental factors: optimizing the quality, expenses and time.*

Keywords: *Activity Based Costing, Target Costing, Kaizen Costing, Quality Costing, Environmental Management Accounting, Cost Controlling*

1. Introduction

For successful business management, the executive management must use comprehensive information on the activities of the enterprise in its management work, which is provided by the official accounting (financial). This information, although being relatively comprehensive, is mostly not sufficient enough. Therefore, in practice, enterprises have developed management accounting designation, as an indication of the complex information needed for successful work of the managers. The success of businesses is decided not only by the field which it operates in, but also by the tools and methods of management being used.

2. Cost Optimization

„Managerial accounting is an important tool for tactical decision-making and monitoring of sustainable development plan leading to the fulfillment of strategic objectives“ [2].

Cost is an important economic category of management accounting, which significantly affects the functionality of the company and therefore it is still necessary to analyze, evaluate and optimize this category. Cost optimization is the activity of providing an optimal cost. In this process, it is necessary to accept the influence of various factors on the level of costs and the negative effects need to be eliminated. The optimization process is recording the so-called complementary effects (positive effects linkage) and the so-called compensatory effects (sum of the positive and negative effects of degressive progression and cost, both of which are affecting oppositely).

Optimal costs are the best, the most favorable and the lowest business costs with the acceptance of the relevant conditions, such as the degree of production capacity utilization, work organization being applied, technical equipment of the enterprise, possibility of obtaining the production factors and so on. „Achieving the optimal level of costs is a challenging process and the managers often deal with the question of how to optimize the cost of business“ [1]. The growing trend in costs is forcing companies to pay more attention to this issue and therefore managers are looking for different methods and tools to reduce the cost of the enterprise, and by this to ensure the

competitiveness of enterprise. The area of management accounting gives managers the scope for the application of various modern methods since this form of accounting is not limited by legislation. The main drawback, however, is the problem of the applicability of modern approaches and methods, since their introduction in enterprises requires mainly substantial financial resources, behavioral change in the organization and a change of attitude and motivation of the staff in terms of continuous improvement. However, the underdevelopment of certain companies does not make a space for the implementation of these methods.

The worldwide trend in building a world-class enterprise is focused on increasing the quality of products, reducing company costs, increasing productivity, reducing the time between order and delivery, increasing flexibility to respond to market needs, etc. Concepts for building a world-class enterprise and the tools being used to gain a competitive advantage are specific to each area and can be applied at different stages of corporate governance in terms of quality, cost and time. The most important step in any enterprise is the willingness to change the thinking of the human factor and accept new options and new trends in the enterprise which can mean a path for achieving world-class business performance.

2.1 Modern Methods

In the pyramid of modern methods, there are different approaches or methods used at appropriate management levels, i.e. from the strategic level management to operational level management. Their importance is enterprise-wide and can be applied at all levels. These are the methods to which it may be approached from different perspectives and different business activities because their benefits are not only in the optimization of costs, but mostly they are also bound by the technical, technological, personnel, environmental, social and material part of the manufacturing process. Since each of these methods is interfering with the minimization of business costs, it can be applied in the field of management accounting. The best-known and in practice applied modern methods include: Activity Based Costing, Target Costing, Kaizen Costing, Quality Costing, Environmental Management Accounting and Cost Controlling.

Activity Based Costing (ABC) - Activity Based Costing (ABC) –costing under sub-activities. ABC method follows the needs of the costs for specific performance in relation to the activity of the company. „The purpose of this calculation method is to describe the activities in detail, their ordering to the sub-processes and processes, assign the appropriate resources to individual activities and allocating costs to these sources. The method addresses the allocation of overhead costs to individual performance. ABC method provides information of the costs for individual products, services, customers, regions, distribution channels and so on“ [3].

Target Costing (TC) - the method of target cost management is a modern market-oriented method that uses cost accounting as a tool for determining the target costs. The main purpose of this method is a marketing research focused on precise specification of customer requirements for the product. Target market price is determined on the basis of the real demand. The main application of this method is on emerging products, which are supposed to be sold in large series or mass production. Method TC is a vital management tool because it implies the harmonization of all activities at all stages of the business which are involved in development of a new product. Target costs are reflected in the target selling price reduced by the marginal profit. Target selling price is determined in order to ensure long-term profitability of the products.

Kaizen Costing (KC) - continuous improvement is a system for the systematic detection and elimination of waste in the production process. Continuous improvement in the company is realized by innovative steps in the form of the smallest details, while the essence is to determine the place for the activity or process to be improved. The overall impact of this approach is reflected in the minimizing of corporate production costs.

Quality Costing (QC) - quality economics is a controlling and inspection activity aimed at monitoring and evaluating the quality costs, which represents the quality assurance of products in terms of meeting the requirements and expectations. The main objective of this approach is the optimization of the quality costs, based on the needs of the maximum satisfaction of customer requirements, reducing spoilage, reducing complaints and eliminating disagreements.

Environmental Management Accounting (EMA) - this system is focused on collecting, recording, monitoring and assessing of the environmental costs of the environmental costs incurred by the business activity. The aim of EMA is to optimize environmental costs through reducing negative impacts on the environment of enterprises, reducing demands on energy consumption and raw materials, waste reduction, and so on. All of these activities minimize environmental costs.

Cost Controlling (CC) - cost controlling system is aimed at monitoring and evaluating the cost of the enterprise, identifying gaps in the calculation budgeting, analysis and evaluation. It is a tool that allows you to reduce the cost items and look for possible variations of cost savings at all corporate levels and in all business processes.

2.2 Benefits of the Modern Methods

The benefits of modern methods have a multifaceted significance since each of them has its specific usage in the company. Integration of modern trends in companies is reflected precisely in cost management and optimization, because the main contribution of each of the approach is to reduce the cost of various kinds.

ABC

- Measurement of the cost and expense,
- Accurate calculations,
- *Allocation of indirect costs,*
- Accurate product profitability measurement,
- Measurement of added value.

TC

- *Determination of the level of production costs,*
- Determination of target costs,
- Focus on customer requirements,
- Determination of product profitability.

KC

- Downtime reduction,
- Identification of waste,
- Optimization of production time,
- Increase in safety,
- *Reduction of indirect costs,*
- Increase in productivity.

QC

- Elimination of errors,
- Troubleshooting,
- Reduction of the number of complaints,
- Reduction of energy consumption,
- *Reduction of poor quality costs.*

EMA

- *Reduction of the environmental costs,*
- Reduction of negative impacts on the environment,
- Reduction of emissions charges,
- The introduction of eco-label.

CC

- Control improvement,
- Budget costs unification
- *Streamlining the flow of costs,*
- High quality outputs,
- The restructuring of plans,
- Acceleration of the circulation of information.

Those modern methods may be applied after considering their strengths and weaknesses in manufacturing enterprises. Comprehensively, it can be concluded that the usage of these trends will bring an improvement in all economic indicators because they are focused on the area of cost reduction. A negative factor which is affecting their implementation is the low awareness of managers of the existence of those trends, the reluctance of management to make changes, lack of knowledge about the application of trends in practice, methods for their introduction and the

financial demands of the application. Despite these barriers it can be said that the benefits of these methods have a greater effect while being considered in the long-term run and in terms of the basic objective of the company aimed at creating a profit and long-term prosperity, it can be concluded that the application of modern developments is in this respect a necessity for businesses.

3. Conclusions

An essential part of management accounting is the question of the usage of modern tools and methods to help managers make the right decision. There are various approaches which largely affect the decisions of managers. However, they are based on subjective evaluations and their own position. Objective tools for managers are exactly the modern trends based on specific outputs in the form of various indicators, functions and parameters. Economists and practitioners recommend the implementation of those trends, because they see real potential in them.

This article is one of the outputs of the VEGA 1/0421/13 Project.

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LEADERSHIP SKILLS DEVELOPMENT IN COMPANIES AND THE ROLE OF HUMAN RESOURCE DEPARTMENT IN THE PROCESS

Zuzana Bodorová

University of Žilina, The Faculty of Operation and Economics of Transport and Communications

Univerzitná 1
Žilina, 010 26, Slovak republic
00421 907 408 885
zbodorova@gmail.com

Abstract: *At the beginning, this paper deals with different approaches to leadership definitions, importance of leaders at all management levels and the requirements placed on leaders at various levels. Consequently, the paper focuses on research aimed at identify methods of recruiting, selecting managers, supporting the development of leadership skills and methods of managers' evaluation. At the end the paper focuses on the role of human resources department and proposed model of leadership skills development.*

Keywords: *leadership definition, leadership levels, 360 degree feedback, model of leadership skills development*

1. Introduction

It is difficult to define the concept of leadership, because everybody perceives the concept of leadership individually and it means something else. This fact shows also a high number of leadership definitions, which can be found in the literature. Consequently I will mention just some of them:

- "Leadership is influence - nothing more, nothing less"[1]
- "When we look ahead in the next century, the leaders will be those, who empower the others" [Bill Gates in [2]
- "Leadership is inspiring individuals to give of their best to achieve a desire result, gaining their commitment and motivating them to achieve defined goals" [3]
- "Leadership is a function of knowing yourself, having a vision that is well communicated, building trust among colleagues, and taking effective action to realize your own leadership potential."[4]

Due to the fact, that whether the individual will be considered as a leader, is determined by his followers, it is essential that managers can adapt leadership style to requirements of individual and team. This raises the requirements and demands placed on managers to extend their knowledge, skills and abilities. Therefore emphasis should be placed on training and development of managers, and in particular on soft skills development.

2. The importance of leaders at all levels

Authors of books about leadership focused mainly on the analysis of the top leaders, CEO, political leaders, prime ministers, etc. However, for the success of the company it is not enough to have a leader only in the top position. It is important to emphasize on the leadership skills development from the lowest levels and at the same time to start educate the potential candidates for a managing position.

Although top leaders are the key for the future success of the company, because they are visionaries, they give direction of the company, its future, tendency and whole

wellbeing. Despite the fact, that they are influencing the whole company, they do not affect directly a huge number of employees; neither they do not interfere directly into their working environment.

It is important to focus on middle and first level managers, because they affect the most directly the working environment of employees. By the fact, that they are in direct contact with them, leaders are able to make a difference, which directly affects employees and which improves employees' performance, improves working conditions, environment.

However, leaders at lower level are unlikely to be visionaries and strategy creators for the whole company, but they can also contribute to the processes and influence them, or they can be visionaries at their levels.

It is impossible for one leader to lead whole company while meeting all the requirements expected from effective leader, and at the same time his influence was transferred across entire company to the employees at the lowest levels. It is important that the leader is surrounded by people, who are also recognised as leaders (most likely they would be leaders at lower leadership levels), but they will share the same values and approaches to inspire and lead at the lower levels. It is not healthy for a company to have one leader and other leading positions were held by managers, who would defend the "flow" of the leader's vision and influence from the top to the lowest level. Therefore it is important for the leader to choose such collaborators, even they are at lower leadership level, but they believe in the mission and rules of leadership, they are learning and consistently developing their skills and knowledge, which are subsequently applied into practice, and then they become an extended hand of the top leader. Because if the vision, goals, mission, principles are not permeated through the entire company, the leader's influence becomes weaker.

Different requirements are applied to different levels of leadership, as shown in the following table:

Table 1 Leadership levels by Jim Collins [6]

Level 1	Highly Capable Individual	Makes productive contributions through talent, knowledge, skills, and good work habits
Level 2	Contributing Team Member	Contributes to the achievement of group objectives; works effectively with others in a group setting
Level 3	Competent Manager	Organizes people and resources toward the effective and efficient pursuit of predetermined objectives
Level 4	Effective Leader	Catalyses commitment to and vigorous pursuit of a clear and compelling vision; stimulates the group to high performance standards
Level 5	Executive	Builds enduring greatness through a paradoxical combination of personal humility plus professional will

Maxwell looked at the leadership levels from another angle as Adair. Maxwell splited levels of leadership as follows:

Table 2: The 5 levels of leadership by John C. Maxwell [5]

Level 1	Position- rights	People follow leader because they have to
Level 2	Permission- relationship	People follow leader because they want
Level 3	Production- results	People follow leader because of what he has done for company
Level 4	People development- reproduction	People follow leader based on what he has done for them
Level 5	Pinnacle- respect	People follow leader based on who he is and what has done

3. Main roles of human resources department

The main role of human resource department is “creation of an environment that enables people to make the best use of their capabilities and to realize their potential to the benefit of both the organization and themselves“ [3] Human resource department focuses on development and implementation of human resource strategies and the following activities: human resource planning, knowledge and talent management, new employees recruitment, employees’ learning and development, rewarding, employee relationships, welfare, health and safety, administration, fulfilment of statutory requirements, equal and diversity issue, etc. [3]

In the current, marked by crisis environment was identified 9 following points as the most important role of the human resource department:

1. Strategic work force planning
2. Productivity controlling
3. Work force flexibility
4. Work force reduction
5. Personnel cost management
6. Focused recruiting of key personnel
7. Restructuring the HR organization
8. Performance management
9. Employee engagement
10. Leadership capabilities
11. Change management
12. Internal and external communication [8]

In the most Slovak companies the main tasks of human resource department are selection and recruitment of new staff, activities connected with recruitment and layoffs and supervising of compliance with legal standards. In medium and large companies, and mostly in foreign companies, belongs to the tasks of human resource department managing strategies for staff development, education, evaluation and assessment, professional support and guidance for managers.

I conducted a survey, which particular objectives were to identify methods of recruiting (selecting) managers, supporting the development of leadership skills, methods of managers’ evaluation. The survey was conducted in bank sector (7 banks) and in one international IT company operating in Slovakia (I was not allowed to disclose the names).

From the survey came out following deficiencies:

- Managers are selected to managerial positions only on the basis of the evaluation process by their superiors, into the evaluation process are not involved colleagues or subordinates
- They are assessed according to their achieved results and not according to their leadership skills. Evaluation does not focus on their soft skills.
- The development of manager’s skills occurs only when the individual becomes a manager (exception of IT company, where are educated team leaders as well)
- 360 degree feedback is done in most of banks but there are some specifics (some basis are not respected and this influence the informative value) as for example: the anonymity is not kept, manager is not assessed by all subordinates, manager choose subordinates who will evaluate him, the evaluation results are linked to the financial reward, or instead of 360 degree feedback is carried out only 180 degree feedback (IT company).

Managers are choosing trainings according to their own persuasion and not according to recommendations, or results of the evaluation process. Since the evaluation focuses on achieved results, there is no emphasis put on the application of acquired knowledge into practise.

4. The human resource department role in the process of developing leadership skills

The main role of the human resources department is to create a conceptual framework, in which will be involved not only all managers at all levels, team leaders but also candidate for managerial positions (depending on the organizational structure of individual enterprises). Consequently the role of the human resources department is to create a system of professional trainings, which individuals will be able to choose according to their individual needs and recommendations. Meanwhile humane resource department should actively participate on all steps of process (optionally to be responsible for whole components of the process as for example candidates assessment, evaluation etc.) and provide support and training for example for managers, who are in the roles of coaches and mentors.

A model how human resources department could help managers with the development of their leadership skills:

- I consider as the most important the selection of the right candidates at the leading position. Selection from external sources, it is impossible to find out true and relevant information from subordinates and colleagues. Selection from internal sources, it is possible to obtain the evaluation from his colleagues, superiors and subordinates. These assessments should be considered even before the candidate will be involved into the training program and before beginning of investments of time and money into his development (trainings, coaching, mentoring). At the same time it is necessary to identify reasons why the candidates want to become a manager. At this point must be excluded the candidates, which main priorities are visibility, prestige, money and power. The main objective should be the reevaluation of their values, priorities and character.
- Managers should firstly undergo a comprehensive and objective evaluation. One of the most effective, currently used models is a 360-degree feedback. The assessment should attend not only superiors and colleagues, managers at the same level but mainly all the subordinates. The basic assumption is to ensure the objectivity of evaluation; it must be carried anonymously and must involve the highest possible number of evaluators, especially subordinates. Manager cannot step into the evaluation process, nor influence it.
- After the evaluation and assessment of the results, manager should be informed about results and then professionally coached or mentored (depends on the needs and requirements of the individual) identify the areas where the further training and development is needed.
- The control phase should also be carried out through 360 degree feedback with the participation of the subordinates. Subsequent evaluation should primarily determine whether the manager should stay at the position or should leave.
- The following progress should be carried out under the supervision of the mentor or coach (emphasis is on the expertise and experience of coaches and mentors, they should be professionals in the field, with long – term experience and not managers or human resources assistants without professional knowledge and experience)

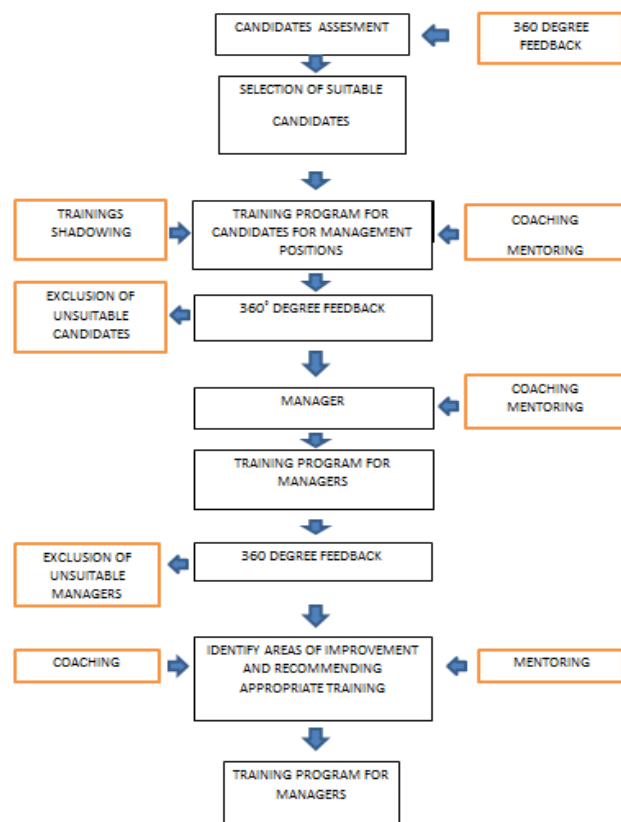


Figure 1: Proposed model of leadership skills development

5. Conclusion

Constant changes at the business environment create pressure and increase the requirements placed on managers. This raises the requirements for the development of leadership skills. As shown in the survey, the current methods of selection and assessment of managers do not meet the requirements for leadership skills development; in practice we meet with unwillingness of managers to change themselves or their attitude, what may be caused by the reasons, why individuals became managers. At the same time educational systems are non-complex with lack of coaching and mentoring, which would help managers to look objectively at their performance and to identify areas of change. Another major problem is that the system of evaluation focuses on performance and not on management and leadership skills and their application in practise. Humane resource department should be more involved into the process of development leadership skills, which should manage this process and at the same time create an overall comprehensive conceptual framework.

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EYE TRACKING AS A METHOD OF GETTING FEEDBACK IN NEUROMARKETING

Pavel Rosenlacher - Jaromír Tichý

**Faculty of Economic Studies
University of Finance and Administration**

Estonská 500

Prague 10, 101 00, Czech Republic

(+420) 210 088 800

pavel.rosenlacher@vsfs.cz - jaromir.tichy@vsfs.cz

Abstract: *This paper deals with the evaluation of the effectiveness of marketing communication tools by application of selected methods of neuromarketing. It is the use of biomedical technology to detect preferences of consumers in the context of marketing research. The study validates possibilities of application of neuromarketing method Eye Tracking in the area of print advertising, particularly in terms of the ability of advertising to attract the attention of recipients. The goal of this neuromarketing investigation is, using the Eye Tracking method, to determine differences in attracting the attention of print advertising between men and women. The text briefly defines feedback, its role and characteristics of neuromarketing.*

Keywords: *advertising, eye tracking, neuromarketing, communication*

1. Introduction

The main interest of this paper is the application of selected methods of neuromarketing, which are primarily used to evaluate the effectiveness of marketing communication tools. The reason for the focus of this paper, including the actual survey, is the fact that neuromarketing is in the Czech Republic still relatively new and rather marginally used marketing research method, which is significant, especially in contrast with the use of marketing in some European countries, such as Germany or Poland. This study therefore validates the possibility of application neuromarketing method “Eye Tracking” in print advertising, particularly in terms of the ability of advertising to attract the attention of recipients.

It is necessary to remark that neuromarketing as a general method provokes discussion of professional and also the general public in the field of ethics of such an approach. These are mainly the use of biomedical technology such as EEG (electroencephalography) of the brain, ECG (electrocardiography) of the heart when identifying consumer preferences in the context of marketing research. To monitor reactions on psychophysiological level, GSR method (galvanic skin response) is also used, when a percentage change in skin galvanic reflex within individual commercials was compared with the results of the recall tests, which measure the depth of the memory footprint of individual commercials [10].

As already mentioned, the primary area of interest of this study will be the application of Eye Tracking method for testing the effectiveness of print advertising. The main objective of the study is, using the Eye Tracking method, to determine differences in attracting the attention of print advertising between men and women. Its own investigation is also carried out, which examines the possibility of using eye camera when assessing the effectiveness of print advertising. However, firstly the feedback will be briefly defined in the text, its role and characteristics of neuromarketing. To achieve the stated objective of the study its own neuromarketing

investigation using the method Eye Tracking was carried out.

2. Eye Tracking as a form of feedback

Feedback in neuromarketing is a key term, but when defining, it is necessary to mention that initially is not a concept that was created for the needs of neuromarketing. The concept of feedback is used in many areas such as interpersonal communication, marketing, biomedicine and neurotechnology, which subsequently is also based on characteristics of feedback in neuromarketing.

From the perspective of psychology feedback can be defined as a process where the recipient of the communication is listening and also decoding communication as it was originally intended by originator of communication [5]. In marketing, the feedback is seen as a means through which the company has the ability to determine ideas, how the target group of customers responds to a certain communication [12]. At the same time feedback also points out certain effectiveness of communications and the possibility of changes in the future [6]. In the case of biomedicine or neuromarketing, feedback can be understood as a capture of current physical

activity of the body, such as heart rhythms, brain activity and other body processes [11]. One of the types of feedback can be considered also Eye Tracking, which is mainly used in neuromarketing.

Neuromarketing can be understood as an interdisciplinary field that combines several disciplines such as psychology, medicine and computer technology [3]. In summary neuromarketing can be understood as linking application of biomedical engineering and marketing research [8]. Neuromarketing is therefore primarily based on monitoring of immediate psychophysiological processes of respondents in response to stimuli presented, which is advertising or generally marketing communication tools [7]. Neuromarketing can significantly help marketers in identifying feedback [2], and thereby contribute to greater

efficiency. According to estimations it is more than \$ 400 billion spent on advertising yearly [4]. Eye Tracking method is also used in neuromarketing, which is based on monitoring of where the subject (respondent) looks [13]. From a technical perspective, there are two types of methods on how to monitor eye movements, "those that measure the position of the eye relative to the head, and those that measure the orientation of the eye in space" [1].

3. Methodology of its own investigation

Following the stated goal of this study its own research was carried out to find differences in attracting the attention of print advertising between men and women. For this purpose eye camera from a company Gazepoint was used.

Advertisement selection - For our own neuromarketing investigation using an eye camera an advertisement for L'Oreal cosmetic product was selected. Advertising was selected based on predetermined selection criteria. The first selection criterion was the colourfulness, when it had to be colorful, not black and white advertising. Second selection criterion was the size of the ad, which had to be oriented to the width and size of at least ¼ A4 pages. The final selection criterion was the content of advertising when the advertising had to display woman's face, brand name and images of the promoted product. All these criteria were met by the selected L'Oreal brand advertisement.

Selection of respondents - The survey was carried out among masters students of University of Finance and Administration in Prague, but respondents were selected on the basis of the established selection criteria. The first selection criterion was the proportion of men and women who, in the sample of respondents, had to make from 50 % to 55 % in favor of women, mainly on the grounds that in Czech population slightly dominate females. Another selection criterion was the age of the respondents who had to be aged from 20 to 25 years. On the basis of the selection criteria a total of 21 respondents for its own investigation were chosen, while 11 were female and 10 were male, which means 55% of women in the sample of respondents and thus the selection criteria was fulfilled. At the same time all respondents also met the age requirement.

Data Acquisition - Data gathering was held in the building of University of Finance and Administration. Quiet room free from environmental influences (noise in the hallway) was chosen, in which respondents were invited separately to avoid mutual interference of respondents. Each respondent was seated in front of 22-inch Full HD monitor Philips, to which a static eye camera was attached. After the establishment of the respondent, a pupil calibration by nine points was made, which respondent gradually watched on the monitor. This ensured accuracy. After the calibration of the pupils the mentioned advertising was presented to the respondent on monitor, the length of the display was set to 5 seconds. During this time, the task of the respondent was to watch the advertisement only.

Data Processing - The data were first split by gender. During the data processing and evaluation, so called Heat maps that based on the color spectrum show the location of the ad, which was mostly observed by respondents, were used. Furthermore, within the data processing were so-called AOI (Areas of Interest) used that were identified by a special analytical software directly in tested advertising. For these AOI areas are then separate statistics calculated and these statistics for each area of AOI contain several attributes, see Table 1.

Table 1 Parameters Areas of Interest

Sequence	Export	Unit
1	Media ID	Value
2	Media Name	Text
3	Media Duration	Seconds
4	AOI ID	Value
5	AOI Name	Text
6	AOI Duration	Seconds
7	Viewers	Value
8	Total Viewers	Value
9	Ave Time to 1st View	Seconds
10	Ave Time Viewed	Seconds
11	Ave Time Viewed	Percentages
12	Ave Fixations	Value
13	Revisitors	Value
14	Average Revisits	Value

4. Results

The collected data were processed by a heat map and at the same time in numerical form AOI data were statistically processed by the statistical processing software SPSS Statistics from IBM. Statistical results of AOI are displayed in Table 2.

Table 2 AOI of L'Oreal advertisement

	Watched in %		Length of watching in %		Sequence of the object	
	Wome n	Men	Wome n	Men	Wome n	Men
"Real"	36	20	5	1	3	4
"L"	0	0	0	0	0	0
"O"	9	10	3	3	2	3
Face	82	80	29	19	1	1
Decolletage	27	50	1	3	8	5
Watchword	64	70	3	7	6	6
Product	82	80	11	9	4	8
Brand	18	50	5	2	9	9
Properties	55	60	11	13	7	2
Information	45	90	14	5	5	7
Practice	9	20	1	4	10	10

Table 2 shows in the first column of the areas of interest AOI for which statistics was compiled. The second column gives the percentage of men and women that watched the AOI regardless of the length of focus. The third column shows the percentage of men and women that watched particular AOI area from a total of 5 seconds, when the ad was displayed to respondents. The last column lists the order of the AOI, depending on how the respondents observed it since the beginning of the ad. Positions of the

individual AOI for which the statistics in Table 2 was calculated, are shown in Figure 1.

The results of the survey show that the common object of interest of both men and women is the face of woman in advertising, on which both sexes have focused their attention the same way as the first and the longest - men 19 % of the time and women 29 % of the total 5 seconds during which the ad was displayed respondents. Another identical results in men and women can be seen in the order of tracking the letter "L" from the brand name and also in the focus on the text of the watchword, practice and of the brand name. In comparison with these values are sort of surprising values related to a poorly visible letter "O" from the brand name, which is in the head area of the figure in advertising. The survey found that this area was watched by more respondents a longer period of time than the far more visible the letter "L". However, it is necessary to emphasize the influence of semantics and brand recognition, which would cause that the majority of respondents would guess the less visible letter "O". From the marketing perspective, however, values related to the product itself and to brand should be embedded in the bottom right of the ad. It was found that 82 % of women and 80 % men paid their attention to the product, but in a different sequence, which can be explained by the fact that the brand and the promoted product is aimed at women. Other differences are evident in the sequence and length of tracking of decolletage of the women in advertising, to which 23 % more men than women paid attention plus men watched the decolletage as the fifth object of interest, whereas women as eighth, which could be attributed to the influence of sexuality.

Summary results of focus for men and women are summarized in Figure 2 and Figure 3, where using so-called Heat map are displayed areas of advertising, which were most watched by respondents. The level of tracking is expressed by the color spectrum, the red and yellow areas represent the highest intensity.



Figure 1: AOI legend



Figure 2: Heat map - Women

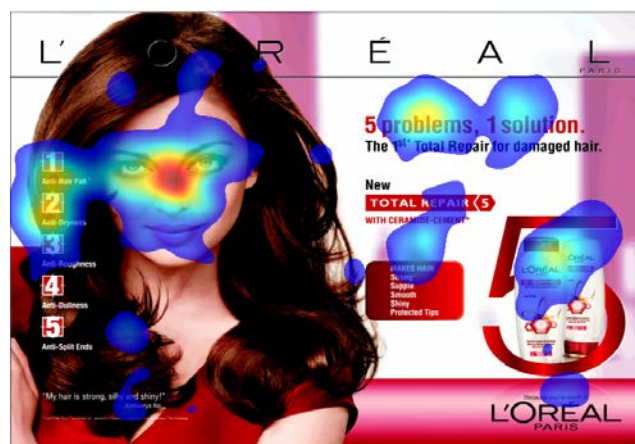


Figure 3: Heat map - Men

5. Conclusions

This study deals with an Eye Tracking method as a form of feedback in neuromarketing, which is generally based on getting immediate feedback from respondents. This feedback is in the form of monitoring of psychophysiological responses of respondents, such as brain activity, heart rate, and galvanic skin resistance. Eye Tracking method is therefore used in neuromarketing [13]. Just the Eye Tracking method was used in the research part of this study, which main objective was to determine the Eye Tracking differences in attracting the attention of men and women when watching print advertising. For this purpose the advertisement promoting cosmetics of the brand L'Oréal was used, and this particular ad was selected for the survey based on established selection criteria. The results of the survey found advertising features that address the attention of men and women equally. This is primarily the woman's face, which was displayed in the ad. A total of 16 respondents (82 % of women and 80 % men) looked at this face within five seconds when the face was displayed. At the same time, both sexes looked at this face as the first, as shown in Table 1. To some extent, this result can be attributed to the fact that it is culturally rooted in interpersonal communication to look into your eyes. However, it is questionable whether these results

were the same in case that the woman in the ad had folded down eyes and was not looking directly at the camera.

Another finding, which is the same for men and women is the letter "L" in the title tag, which was placed on the upper left. At this letter, none of the respondents focused their attention. It can be assumed that it was placed in the quadrant that contained no relevant information relating to the product or didn't contain any significant visual stimuli.

The difference can be found in focusing attention on woman's décolletage which was mainly watched by men, but this can be attributed to the influence of sexuality.

It is questionable whether other differences or identical objects of interest would be found in other product categories such as electronics or the automotive industry. It would certainly be possible to observe the varying degree of matching results between the sexes in these areas, which could be understood as a theme for expanded research in this area. Alternatively, it would be possible to perform a pilot study dealing with gender-neutral product that would appeal to men and women equally, and then identify the potential in attracting the attention of both sexes.

As a further proposal for an expanded research would be using the post-test, for example in the form of interviews or surveys with respondents as a form of verbal validation. This way, subjective preferences of respondent to the stimuli would be collected, but it should be emphasized that the perception is comprised of two stages, namely sensory and synthetic, and to some extent it is an unconscious process [9]. Verbal validation would rather be a subjective supplement of observed data using the method of Eye Tracking.

Acknowledgements

Paper in specific research was supported by the Internal Grant Agency of the University of Finance and Administration, Faculty of Economic Studies.

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PERSONALITY TRAITS AS BEHAVIORAL PREDICTORS IN THE ETHICALLY SENSITIVE SITUATIONS IN MANAGEMENT, ANALYSIS BY MEANS OF STRUCTURAL EQUATION MODELLING

¹Daniela Hrehová – ²Pavel Žiaran

¹ Technical University in Košice, Department of Social Sciences
Vysokoškolská 4, 042 00 Košice, Slovakia

² Mendel University in Brno, Faculty of Business and Economics, Department of Management
Zemědělská 1, 613 00 Brno, Czech republic
daniela.hrehova@tuke.sk - pziaran@gmail.com

Abstract: Article has for objective analysis of personality traits as behavioral predictors in the ethically sensitive situation. Personality traits are defined on the basis of the personality test Hexaco 60 including 6 personality dimensions: Honesty-Humility, Extraversion, Emotionality, Agreeableness, Conscientiousness and Openness to Experience. For the purpose of a more exact analysis, we split Honesty-Humility dimension into two sub-dimensions: “Ethical attitude”, consisting of Fairness and Sincerity traits and “Influence & welfare”, consisting of Greed avoidance and Modesty. We enacted the behavioral experiment (in-class simulation) on the group of undergraduate students of business (n = 157). In the experiments students had to decide on their preference to become a manager in the ethically sensitive situation. In the analysis we employed structural equation modeling (SmartPLS software). Based on the SEM calculation we found that the only personality trait predicting preference of the managerial position in the ethically sensitive (unethical) situation is the Ethical attitude (Fairness and Sincerity). The results have important implication for HR management and personnel selection.

Keywords: ethics, manager, predictors, Hexaco, SEM

1. Introduction

Nowadays organizations are dealing with a number of ethical scandal that resonate in the society and have negative impact on the whole economy at the national as well as global level. In 2001 the world saw the fell of Enron and one of the most reputed auditing and advisory companies, due to unethical behavior of managers [1], [2]. As a consequence, a wide spectrum of regulations and legislation was introduced, with the objective to eliminate unethical practices with its devastating consequences.

In November 2014, an information appeared in the media stating that the world economic crisis 2008 – 2009 was caused, once again, by unethical decisions and practices made by individuals, managers and employees of major investments banks in the United States [3], [4]. This brings a suggestion that the control of devastating ethical practices should be controlled already at the moment when the employee or manager is being hired to the company.

The objective of this paper is to bring an evidence how four simple personality traits (modesty, sincerity, fairness and greed avoidance) of the Hexaco personality test can predict managerial behavior in the ethically neutral and ethically problematic conditions [5], [6].

2. Theoretical framework

Personality test Hexaco-PI-R represents a new trend in the personality psychology. Original concept of the five factor model, based on five personality traits (emotionality/neuroticism, extraversion, agreeableness, conscientiousness, and openness to new experience) was enriched by the idea of adding a new personality traits Honesty – Humility. Honesty-Humility (or h-factor) is constructed from four “narrow traits” or “facets” as follows: modesty, sincerity, fairness and greed-avoidance [5], [6].

For the purpose of a more accurate analysis we grouped the four facets into the two super-facets: (a) “Ethical attitude” is created by the facets “sincerity” and “modesty”. (b) “Welfare & Influence” is created by the facets “fairness” and “greed avoidance”.

Sincerity represents a tendency to be genuine in interpersonal relations. Low scorers will flatter others or pretend to like them in order to obtain favors, whereas high scorers are unwilling to manipulate others. *Modesty* is a tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have, whereas high scorers view themselves as ordinary people without any claim to special treatment. *Fairness* is a tendency to avoid fraud and corruption. Low scorers are willing to gain by cheating or stealing, whereas high scorers are unwilling to take advantage of other individuals or of society at large. *Greed Avoidance* is a tendency to be uninterested in possessing lavish wealth, luxury goods, and signs of high social status. Low scorers want to enjoy and to display wealth and privilege, whereas high scorers are not especially motivated by monetary or social-status considerations [7]. More research works confirm that Hexaco test, and especially h-factor has strong predicting capacities as regards ethical or unethical behavioral tendencies, as follows: It predicts better delinquency at the work place than the previous generations of tests based on the five factor models [8]. It works as a good indicator of professional and ethical integrity [9]. H-factor is also a good predictors of the so-called Dark Triad which includes psychopathy, machiavellism, narcissism [10]. It is a strong predictor of the job performance in the field of healthcare [11].

2. Objectives and methodology

The objective of the article is to analyze if the personality traits, measured by the six-factorial test Hexaco [7] can predict decision-making in the ethically sensitive situation. Research questions sounds as follows: *which personality trait (if any) predicts decision-making in the ethically sensitive situation?*

In the experiment participated undergraduate students of management (N = 157; females 68.8 %, age 21 - 22). Participants filled the questionnaire of HEXACO-PI-R inventory, paper-based, 60-items version [7]. Then they engaged in a behavioral experiment, in the form of a *Leaderless Group Discussion*, which enables to reveal leadership/managerial preferences [12], [13], [14].

Participants marked their preference for the managerial position in the ethically sensitive (unethical) situation. Ethically sensitive situation was “dismissal of women who had high rate of work absences due to the need to stay home with the children having disease”. Preferences were marked on the standard 5-point Likert scale.

Consequently, we constructed a structural equation model (by means of *PSLSmart* software) in order to analyze explanatory significance of the individual personality traits.

3. Results

As a result we created the SEM (see Fig. 1). The model consists of 7 latent variables that correspond to the 6 personality dimensions of Hexaco. Each latent variable is connected to the respective narrow personality traits as defined by the Hexaco test [7].

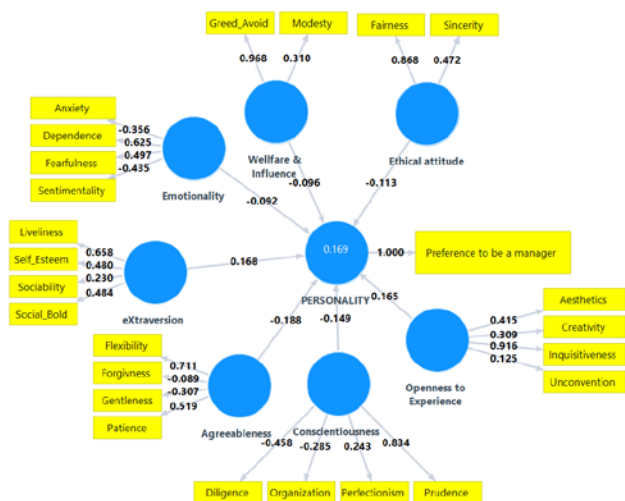


Figure 1: SEM, personality

Two latent variables are created by the split of the Honesty-Humility dimension into two sub-dimensions, as described above, *Ethical attitude* (*Sincerity*” and *Modesty* traits) and *Welfare & Influence* (*Greed avoidance* and *Modesty*). As a dependent variable we implemented “preference to be a manager in the ethically sensitive situation”.

Consequently, we enacted a calculation to analyze which variables are statistically significant, by means of bootstrapping analysis (using 500 iterations). We just note, that the bootstrapping method used in the frame of *PSLSmart* software, is suitable for the non-parametric variables. The table with the t-statistics and p-values for all latent variables, showing the statistical significance, is displayed below.

Table 1 Statistical significance of latent variables

Preference to be a manager in the ethically sensitive situation	T – statistics (min. 1.96)	p-values (max. 0.05)
Ethical attitude	3.087	0.002
Extraversion	1.056	0.291
Agreeableness	1.015	0.310
Openness to Experience	0.794	0.428
Conscientiousness	0.787	0.432
Emotionality	0.528	0.598
Welfare & Influence	0.292	0.771

Tab. 1 indicates that the only significant variable that explains the behavioral preference “to be a manager in the ethically sensitive situation” is a latent variable “*Ethical Attitude*” (consisting of *Sincerity* and *Fairness*). T-statistics is higher than 1,96 (for the level of statistical significance 0,05) and the p-value is lower than the 0,05 (level of statistical significance). No other variable reaches the required level of statistical significance. These results corresponds to strong empirical expectations.

We just note that AVE (Average Variance Extracted), a statistical indicator stating how much variance captured by the latent variable in a structural equation model is shared among other variables, is 0,49 what satisfies the generally accepted requirement of 0,5.

4. Discussion and conclusion

The results confirm the strong empirical expectations that the *Ethical attitude* works as a strong and practically unique predictor of the decision-making in the ethically sensitive situation. What confirms the findings of other authors, mentioned in the theoretical framework, stating that the *Honesty-Humility* factors works as an efficient, and often unique predictor of unethical behavior, delinquency or professional integrity [8], [9], [10], [11].

As mentioned above, the latent variable *Ethical attitude* (constructed from the narrow traits of *Sincerity* and *Fairness*) work as a strong predictor. On the other hand, the other latent variable *Welfare & Influence* (constructed from the traits *Greed avoidance* and *Modesty*), derived from the *Honesty-Humility* dimension has minimal statistical significance as a behavioral predictor. This fact nicely confirms the proposition declared in the discussion between Ashton [15] and Salgado [16], on the usefulness of the narrow traits as a more efficient predictors of behavior in the ethically sensitive conditions.

The above mentioned results have important implication for HR management and personnel selection and provide a strong support for further research.

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LEADERS' CHARACTERISTIC AND BEHAVIOUR RESEARCH

Zuzana Bodorová

University of Žilina, The Faculty of Operation and Economics of Transport and Communications

Univerzitná 1
 Žilina, 010 26, Slovak republic
 00421 907 408 885
 zbodorova@gmail.com

Abstract: *At the beginning, this paper deals with various approaches of authors to the definition of leadership. Consequently, the paper focuses on leaders' characteristics and behaviour displaced in current researches. At the end the paper presents partial results of my research which was conducted mainly in banking and IT sector, focused mainly on the employee satisfaction, motivation at work, perception of superiors, and identification of leadership qualities and behaviour from the point of view of employees.*

Keywords: *leadership, leader, GLOBE*

1. Introduction

Nowadays leadership is frequently used term. In the past the focus has been on managers but the current rapidly changing environment gives a priority to leaders. There are plenty of books on the topic of leadership. A large number of definitions try to define what leadership is and who can be considered as leader.

Some definitions define leadership very briefly:

- "Leadership is the ability to convert a vision into reality [1]
- "The only definition of a leader is someone who has followers." [2]
- "Leadership is influence - nothing more, nothing less" [3]

Some definitions perceive leadership as a process and the ability of a leader to influence employees:

- "The process of persuasion or an example by which the individual (or leadership team) affects the group to pursue objectives held by the leader and his followers." [4]
- "The process of influencing others to understand and agree on what needed to be done and how to do it, and as a process of facilitating the individuals' and collective effort towards the achievement of shared goals." [4]

The definition, which I consider as general, which objectively describes leadership is the definition from Peter Drucker [2], as a leader is considered individual who has followers. But I would like to extend this definition with the addition, that the followers follow the leader voluntarily. Due to the fact, that whether the individual is considered or is not considered as a leader depends on subjective assessment of his followers, therefore I consider it ineffective (inaccurate and misleading) to add other characteristics, abilities or skills to the definition.

2. Current approaches to the leaders' characteristics and behaviour

Books and researches dealing with leadership primarily focus on the following areas:

- Theories of leadership

- identifying characteristics, behaviour of leaders, mainly by examining the political, military leaders and CEO of the successful companies
- Models of leadership

Large area of research has been focused on identifying characteristics, that leaders should have, as for example project GLOBE or the research Kouzes and Posner. The characteristics which leaders should have, are: dynamic, is the driving force, builds confidence, motivates, inspirational, role model, encourages, positive, strong, consistent, reliable, committed, effective negotiator, solves problems at the level of mutual satisfaction, good administrative skills, communicative, informed, coordinator, straightforward, team builder, supportive, cooperative, caring, loyal, creative, prudent, self-confident, sociable, dominant, extrovert, conservative, tolerant, emotionally balanced, friendly, moral and ethical, delegates, accepts opinions and engages employees in decision-making process, etc. [5],[6].

Other area, to which is dedicated a lot of books and researches, is trying to identify the characteristics and behaviour of individuals to be recognized as a leader. The best-known authors dealing with this topic are Maxwell and Adair. Consequently I state some criteria, which I consider as the most important for leaders or which are frequently reported in the literature.

1. Leader has technical and professional knowledge, experience and skills, such as the ability to think practically, intuition, gains the respect through the authority from his characteristics and skills and not on the basis of the assigned position.
2. Leader is visionary, sets and maintains the right direction, brings new possible ideas and visions, makes good decisions, communicates effectively the vision and seeks the ways of its accomplishment.
3. Leader is role model according to enthusiasm and diligence, stands for his opinions, principles and values, and lives according to them as well. Statement which describes leaders is: „consistency between words and action.“

4. Leader sacrifices for the sake of the objectives, makes everything in order to ensure the victory for his subordinates.
5. Leader inspires, encourages, motivates to achieve the objectives, shares his ideas, emotions and feelings, and is empathetic.
6. Leader builds friendly relations with team members, and within the team. Motivates employees (to overcome the limits), builds strong relationships, optimistic and cohesive teams, takes into account the needs and interests of others (mutual respect). As the leader is giving direction, therefore it is required to provide the structure, clarify standards, create cohesion, and promote standards of excellence. By giving direction for a team, the leader ensures that members work together and effectively.
7. Leader perceives subordinates as equal partners, as a leader, he can develop values by the appreciating his colleagues, by paying a tribute, by helping them to develop and by enriching them. The leader is interested in individuals, in their needs, as well as in their privacy, based on what he can lead them. Focuses on meeting needs of his subordinates, leader does not use them for career development.
8. Leader involves subordinates into the decision-making process, supports their creativity and ideas, leader tries to achieve a maximum consensus.
9. Leader focuses on the development of the skills and knowledge of his subordinates. The leader genuinely cares about subordinates, cares about them and wants to help, communicates openly and honestly, trusts them.
10. „Windows and mirrors approach“ - achievements attributes to colleagues, but the responsibility for errors stays on his shoulders, recognises and evaluates the contribution of employees to the goal achievement and appreciates their performance.
11. Leader trusts to colleagues, does not worry about giving up some of his tasks, empowers the subordinates, helps them to realize their potential, helps them succeed, supports the development of their managerial and leading skills. [7], [8]

However, nor the studies focusing on the identification of characteristics, nor the studies attempting to identify the behaviour of leaders, did not come to a clear conclusion and failed to precisely identify the characteristics, or behaviour which should have the leader. It is caused by the fact, that studies have analysed a large number and variety of leaders, who are engaged in various fields and have become leaders in different circumstances, whether it were leaders in the times of wars (for example Alexander the Great) or successful leaders in famous enterprises (for example Steve Jobs). At the same time if individual is considered as a leader is determined by his followers based on their individual consideration and preferences. As an example may be mentioned two leaders Mahatma Gandhi and Nelson Mandela, which we can find in most of the books dedicated to the leadership. However, answer to the question, if you consider them as leaders, would not all of us respond positively, even if they are presented as leaders.

3. Conducted research

Whereas most of the books, dealing with leadership, identify leadership qualities and behaviour of leaders based on the analysis of leaders. However, in my research I focused on followers, who they consider as a leader, which characteristics they should have, what kind of behaviour, and what is important for them.

The research was conducted through the questionnaire published on internet. I chose questionnaire because I consider it as the easiest way of collecting information, and in order to obtain objective and accurate information it was necessary to ensure also the anonymity of respondents. Into the research were involved 396 respondents. The questionnaire was mainly filled by employees at non-leading positions, by team leaders and by first-line managers. Majority of questionnaires were distributed in banking and IT sector. In the research I focused mainly on the employee satisfaction, motivation at work, perception of superiors, and identification of leadership characteristics and behaviour from the point of view of subordinates.

For the purpose of this article, I focused on three questions from the questionnaire.

Question n. 1.: Do you consider your manager to be:

1. Manager
2. Leader

The results of the research showed that only 29 % of managers were considered as leaders according their subordinates. Part of the research was carried out in the international IT company operating in Slovakia (not allowed to publish name) , which has developed program for developing leadership skills, into which are involved all managers and team leaders as well, and in comparison to the general sample, only 17 % of managers were considered as leaders.

Question n. 2.: Which of the following characteristics do you consider most important for a leader?

Respondents were asked to select 5 characteristics, which they consider as most important from the list (characteristics are mentioned in the previous chapter, based on project GLOBE and authors Kouzes and Posner). Kouzes and Posner also focused on identifying the characteristics of leaders based on followers' opinion. The comparison is shown in the following table:

Order	Kouzes and Posner Research [6]	My research
1.	honest	intelligent
2.	focused on the future	fair
3.	competent	motivates
4.	inspirational	competent
5.	intelligent	inspirational
6.	open	role model
7.	fair	trustworthy
8.	reliable	communicative
9.	providing support	visionary
10.	straightforward	ambitious

Table 1: Comparison of studies

Question n. 3.: Which of the following criteria should possess the individual which you consider as a leader?

Respondents were selecting from 11 criteria presented in the previous chapter. Respondents could select any number of criteria. As the most important criteria were considered numbers: 6, 1 and 3, based on which we can say that respondents consider as the most important the friendly relationship, motivation, technical and professional skills and a role model. However surprising were criteria which were placed at the last three positions, numbers: 4, 7 and 10. Respondents does not expect that the leader sacrifices for the obtaining the objective, that the leader is using his subordinates for his career growth and „Windows and mirrors approach“ which is in contrary with the recommendations in researches.

6. Conclusions

Researches are unable to agree on the characteristics and behaviours, that would differentiate leaders from managers or to define the universal way of leadership. Leaders in enterprises are in complicated situation. Since there is no universal method of leading, which they could follow, but status of the leader is determined by his followers, therefore leaders must adapt the way of leading to the requirements of his followers. At the same time the leader must meet also requirements of his superior or owners (depending on which level of the organisational structure is the leader). Leaders must balance their needs and demands, but also to find a win-win solution, which will satisfy both groups, although their requirements are often contradictory.

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Vrbinčík, Marek

EQUAL OPPORTUNITIES IN THE LABOUR MARKET. THE CASE OF THE SLOVAK REPUBLIC

René Pawera – Zuzana Šmehýlová

Comenius University, Faculty of Management

Odbojárov 10

Bratislava, 829 05, Slovenská republika

rene.pawera@fm.uniba.sk – zuzana.smehylova@fm.uniba.sk

Abstract: The main objective of this article is to grasp the essence of the management of equal opportunities in the labor market of the European Union and analyze its current situation in the Slovak Republic. The current Slovak labour market showed signs of recovery in 2014, but unemployment remains high. Disincentives in the social-benefit system have been reduced and some positive results have been obtained in reducing youth unemployment, but long-term unemployment remains a major challenge. Employment among the most disadvantaged groups such as Roma, disabled, older people, the youth is still low. What is more, Slovakia has one of the highest gender pay gap in the EU-28.

Keywords: equal opportunity, gender, diversity, discrimination

1. Introduction

Slovakia's recovery from the economic crisis was one of the strongest and fastest in the EU, but the recovery of domestic demand lingered as both private consumption and investment stayed below their 2008 levels in real terms. In 2014, domestic demand recovered and growth gathered more pace. According to the Commission 2015 Winter forecast, real GDP grew by 2.4 % in 2014, as compared with 1.4 % in 2013. Both private consumption and investment rebounded after several years of decline. [19].

The unemployment rate decreased slightly in 2014 but remains above the EU average (12.5 % vs 9.9 % in the EU-28 in December 2014) and is mostly structural and long-term in nature. Weak labour demand and a low number of vacancies, in conjunction with one of the lowest labour turnovers in the EU, give rise to one of the highest long-term unemployment rates in the EU (10 % vs 5.1 % in the EU-28 in 2013). The principal reasons for the poor labour market outcome are the low employment of certain groups including Roma, the existence of work

disincentives coming from the tax and benefit systems, the weak capacity of the public employment services to assist the most disadvantaged jobseekers, and a relatively low internal geographical labor mobility [3].

Youth unemployment declined slightly to 28.9 % in December 2014 (to the lowest level since 2009) but Slovakia still has one of eight the highest rates in the EU.

Long-term unemployment is a persistent problem in Slovakia. Over two thirds of the unemployed have been jobless for more than a year, while around half have been jobless for more than two years. Despite some recent improvements, the youth unemployment rate is among the highest in the EU. Low labor mobility reinforces the geographical segmentation of the labor market as reflected by the high regional differences in employment [11].

The employment rate for women (20-64) remains well below the EU average (53.4 % vs 58.8 % in 2013). Estimates show that increasing women's labour force participation to the EU-15 average could increase Slovakia's GDP by 1.6 percentage points (26). The gender employment gap for young women (20-29) remains high and the impact of parenthood on female employment increased in 2013 and is among the highest in the EU. The employment rate for women (25-49) with children below six years of age is under 40 %, while it is 83 % for men of the same age and marriage status, reflecting the insufficient provision of good quality and affordable childcare services and relatively lengthy parental leaves.

2. Equal Opportunity Management

Discrimination is a negative social phenomenon undermining fundamental equality and freedom of individuals. It is firmly rooted in society and often fails to reach those at risk of discrimination, to one who discriminates, refrain from such conduct. Due to European Union membership, the Slovak Republic can not rely solely on the factual existence of legal rules prohibiting discrimination, but in practice must create measurable progress must assume more initiatives to remove obstacles to the free use of individual human potential.

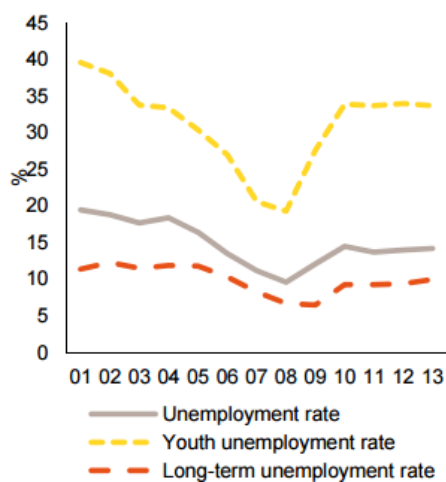


Figure 1: Unemployment, youth unemployment and long-term unemployment rates (%)

Management of equal opportunities is understood in this article as a set of tools and approaches applied to eliminate inequality of opportunity in the labor market [23].

Equal opportunity is a strategic objective. In doing so, we focus on the creation of such conditions or favorable changes that would lead to the strengthening of equal opportunity for all, with an equal access to employment, respectively [16].

A key priority in the initial definition of the management of equal opportunities is the answer to the question, what are the main causes of unequal treatment in the labor market.

Adams came with the assumption that people pursue a balance between their ‘inputs’, e.g. time, attention, skills, effort in and the ‘outcomes’, e.g. status, appreciation, gratitude and pay gained from this relationship, compared to the input/ outcome ratio of similar others. Any disturbance of this balance is expected to have negative consequences; negative outcomes should occur not only when people receive less than what they are entitled to (judging from what others invest and receive), but also when they feel that they are well off in comparison to others. Thus, equity theory predicts that there will be a non-linear association between inequity and the criterion variables, such that the best possible outcomes will be obtained when one’s input/reward ratio is about equal to that of others. If workers have a feeling of inequality occurs in these changes; they are not motivated at work, and their dissatisfaction is increasing [20].

Inequality of opportunity in the labor market and discrimination in pay for women and other disadvantaged groups are not present only in some countries, such as developing economies, it is a global problem which is present even in the most developed countries of the world. The goal is to eliminate discrimination on the basis of these characters and avoid it. While promoting equal opportunities not only ensure equal access opportunities for disadvantaged people in the labor market, but above all to create conditions that take into account the specific needs and experiences these various disadvantaged groups [10].

3. Disadvantaged groups in the labor market

Since the individual disadvantaged groups in the labor market characterized by certain specificities will be in the following subsections individually analyzed.

3.1 Gender inequality

According to the Council of Europe, the equality between women and men means "equal visibility, equal power and equal participation of men and women in all spheres of public and private life [17].

Differences between men and women are manifested most clearly in the extent of their economic activities, especially in the labor market [22].

Discrimination against women is evident when we look at the statistics and analysis of gender differences. The most common indicator which measures the difference in wages between men and women in the EU is called "Gender pay gap" [5].

The gender pay gap is the difference between men’s and women’s pay, based on the average difference in gross hourly earnings of all employees. On average, women in the EU earn around 16% less per hour than men 1 . The gender pay gap varies across Europe. It is below 10% in Slovenia, Malta, Poland, Italy, Luxembourg and Romania, but wider than 20% in Hungary, Slovakia, Czech Republic, Germany, Austria and Estonia 2. Although the overall gender pay gap has narrowed in the last decade, in some countries the national gender pay gap has actually been widening (Hungary, Portugal). The gender pay gap exists even though women do better at school and university than men. On average, in 2012, 83% of young women reach at least upper secondary school education in the EU, compared to 77.6 % of men. Women also represent 60% of university graduates in the EU3 [5].

Table 1 Gender pay gap 2012 (GPG) EU-28. The countries with the biggest GPG in the EU

	<i>EU member state</i>	<i>The highest ratio of GPG</i>
1.	Estonia	30
2.	Austria	23,4
3.	Germany	22,4
4.	Slovakia	21,5
5.	Hungary	20,1

Source: Eurostat

The impact of the gender pay gap means that women earn less over their lifetimes; this result in lower pensions and a risk of poverty in old age. In 2012, 21.7 % of women aged 65 and over were at risk of poverty, compared to 16.3 % of men. The overall employment rate for women in Europe is around 63 %, compared to around 75 % for men aged 20-64. Women are the majority of part-time workers in the EU, with 34.9 % of women working part-time against only 8.6 % of men 5. This has a negative impact on career progression, training opportunities, pension rights and unemployment benefits, all of which affect the gender pay gap [5].

Table 2 Gender pay gap 2012 (GPG) EU-28. The countries with the lowest GPG in the EU

	<i>EU member state</i>	<i>The lowest ratio of GPG</i>
1.	Malta	6,1
2.	Poland	6,4
3.	Italy	6,7
4.	Luxemburg	8,6
5.	Romania	9,7

Source: Eurostat

The gender pay gap in Slovakia is above the EU average despite the higher educational attainment of women compared to men in Slovakia and is linked to gender inequalities in the labor market and longer career breaks.

3.1.1 The main causes

Discrimination in the workplace. In certain cases, women and men are not paid the same wages although they carry out the same work or work of equal value. Discrimination

is prohibited under EU law, but are unfortunately still present in some workplaces.

Different jobs, different sectors. Women and men carry out different jobs and often work in different sectors. Sectors where women are in the majority have lower wages than those dominated by men.

Workplace practices and pay systems. Women and men are affected by different workplace practices, such as access to career development and training. This so-called 'glass ceiling' prevents women from reaching the highest paid positions.

Few women in senior and leadership positions. Women are under-represented in politics and in the economy.

Gender roles and traditions. Gender roles and traditions shape women's and men's roles in society from a very early age.

Balancing work and family responsibilities. Women work shorter hours and often part-time in order to combine their family responsibilities with paid work [2].

Greater equality between men and women would bring benefits to the economy and to society in general. Closing the gender pay gap can help to reduce levels of poverty and increase women's earnings during their lifetimes. This not only avoids the risk of women falling into poverty during their working lives, but also reduces the danger of poverty in retirement.

3.2 The youth and the older people

Age is the most common cause of discrimination in the labor market. According to a Eurobarometer survey in Slovakia, age discrimination is one of the biggest one [1]. But age discrimination is latent and very difficult to demonstrate [18].

3.2.1 The youth

In terms of age structure, nearly one third of all unemployed in 2012 were young people up to the age of 24 (32.2 %).

Potential employers are not interested in this group. One of the main causes is the persistent mismatch between skills and labor market requirements [22].

One of the most serious categories facing the long-term unemployment is the Roma youth in Slovakia currently experiencing unemployed status without the minimum work experience.

3.2.1 The older people

The aim of the Europe 2020 Strategy is to achieve an overall average employment rate of working-age population to 75 %. The strategy emphasizes increasing the employment rate among disadvantaged groups, which include older workers as well [4].

But the average employment rate of older people (50 -64 years) in the EU, according to Eurostat is only 50%, the highest was in Sweden (73.6%) and lowest in Croatia (36.5%). Slovakia has 44% employment of older people [6].

One of the main disadvantages of older people in the Slovak labor market is the lack of adaptation to the new technologies because of the lack of lifelong learning. Older

workers have high labor costs, as they are on top of their careers, but at the same time they are declining productivity, innovation potential, and adaptability, or even health problems [14].

The necessary gradual increase in the retirement age has its limits. Although we are living longer, not always it means that we are able to work longer. For the application of older people labor market is therefore also necessary to fundamentally improve healthcare and also the possibility of greater recovery for older workers [24].

3.3 People with disability

In view of the continuing generally low level of integration of disabled persons in all areas of life, there is a presumption that most companies in Slovakia do not perceive this disadvantaged group as fully prepared to participate in all socio-economic processes.

The low rate of employment, social exclusion, lack of employment opportunities and ubiquitous persistent barriers to the mobility and negative prejudices - these are the main problems they face disabled [18].

According to the OECD, the lowest employment in Slovakia is employment of people with intellectual disabilities (less than 30 % compared with other types of disabilities) [12].

In Slovakia, however, we observe positive initiatives of employers, especially multinational corporations that use mandatory quota for disabled workers, e.g. IBM and its recruitment program "Enabling PWDs at work place" (a program that supports the employment of disabled people) [7].

3.4 Minorities – Roma in Slovakia

According to UNDP, the unemployment rate of Roma in Slovakia in 2011 was 70 %, in some areas reaching level 100 % [21].

Although the data and information on the situation of the Roma in the labor market is almost missing, perhaps one 'identifikovat' most problematic factors that explain the almost total exklúziu Roma not only from the labor market [15].

In isolated communities, there is about a quarter of the Roma, unemployed and dependent on social status. It seems that the unemployed Roma are heavily registered in labor offices with relatively high social security support [9].

If Roma is employed, it is very often in the secondary labor market. Although the Roma minority is not a homogeneous group, the main cause of their bad status is generally considered inadequate qualifications without vocational or general secondary education [8].

Culture of unemployment, poverty and social dependence reinforces the perception of the majority of Roma as people who caused this situation yourself and not trying to improve it.

This perception is transferred to the area of employment, where assessing an individual Roma using group characteristics.

Their discrimination is difficult to prove, even though according to the Eurobarometer 2012, discrimination

based on ethnic origin (56%) is the most widespread form of discrimination in Slovakia [1].

The costs of Roma exclusion are high. Slovakia is proving to Roma provides relatively high social security contributions, which is one of the main causes of Roma zero motivation to look for work.

6. Conclusions

We have been reviewed the most unprivileged groups in the labor market of the Slovak republic.

Women have rising expectations for their working lives and, if companies want to attract the best talent, equality at work is a must. It is essential to creating quality jobs and a highly-motivated workforce.

Quality jobs, in turn, are crucial to building a positive working environment where all workers are valued for their work. Employers can benefit from using women's talents and skills more effectively, for example by valuing women's skills and through introducing policies on work-life balance, training and career development.

Companies that build equality plans and strategies into their workplaces create the best workplaces for everyone, male or female, to work in diversity. Having a positive working environment helps a business to attract customers, improve performance and boost competitiveness.

Workers who feel more confident and valued for the tasks they carry out are also more likely to be innovative and productive at work.

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POSSIBILITIES OF TRANSPORTING CONTAINERS THROUGH INLAND WATERWAYS

Anežka Grobarčíková – Jarmila Sosedová

University of Žilina, Faculty of Operation and Economics of Transport and Communication, Dept. of Water Transport

Univerzitná 1

010 26 Žilina, Slovakia

+421/41 513 35 60

grobarcikova@fpedas.uniza.sk - sosedova@fpedas.uniza.sk

Abstract: *The increasing importance of intermodal transport in Europe, as a self-developing transport system opens up new opportunities for innovative solutions in the development of the transport process. Due to the high proportion of road transport on the transport market is combined transport only way to ensure sustainable development, sustainable mobility and especially optimal transport costs. The aim of this paper is to point out the position of waterway transport in international trade with regards to the requirement of permanent satisfaction of transport needs and demands of international trade.*

Keywords: *containers, combined transport, inland waterway transport, international trade, TEU*

1. Introduction

European transport system will face considerable challenges in the next decade. It will be important to put a great effort to find the necessary funding for the long-term investments into the transport infrastructure as well as to avert the collapse of the road freight transport system. It is predicted that in the European Union there will be an increase in the road freight transport by more than 60% to 2016 and a twofold increase in the new Member States to 2020 [1]. The results will be congestion, environmental damages, accidents and threats of losses of the European industry competitiveness which relies on profitable and reliable transport systems when managing its supply chains. The road freight transport is also fully dependent on the fossil fuels; as a result the transport system responds sensitively to the changes in the global supply patterns. Fossil fuels are the major source of CO₂ emissions. It is therefore the interest of the European Union to have more energy efficient transport system, both in the terms of better environmental performance and of stable transport economy. Therefore, it is necessary to get the growth of the road transport under control and to provide funds to other, more environmentally friendly, modes of transport in order to make some competitive alternatives.

This issue is addressed in the White Paper [1], which defines the clear intention of transferring 30% of road transport over long distances (over 300 km) by 2030 energy-efficient mode of transport, which may be a rail, inland or sea transport. By 2050, it should be more than 50%. Moreover, by 2030 should be in operation fully functional multimodal core network TEN-T with high quality and high capacity network across the EU. Later it should be complemented with information systems. By 2050, should also be linked all major seaports to the rail network and, where appropriate, with inland waterways.

2. International trade in goods

The EU-28 accounts for around one sixth of the world's trade in goods. EU-28 international trade in goods with the rest of the world (the sum of extra-EU exports and imports) was valued at EUR 3 419 billion in 2013. After experiencing a sharp fall in both exports and imports in

2009, the EU-28 saw its exports rise to a record level of EUR 1 737 billion in 2013, an increase of 3.2 % compared with the year before. Imports of goods into the EU-28 fell by 6.5 % in 2013 to be valued at EUR 1 682 billion.

Germany remained by far the largest player in relation to extra EU-28 trade in 2013, contributing 27.1 % of the EU-28's exports of goods to non-member countries and accounting for almost one fifth (18.8 %) of the EU-28's imports. The next three largest exporters, the United Kingdom (13.3 %), Italy (10.4 %) and France (10.2 %), remained the same as in 2012, and were the only other EU Member States to account for a double-digit share of EU-28 exports. The Netherlands (14.2 %), the United Kingdom (14.0 %), France (9.8 %) and Italy (9.5 %) followed Germany as the largest importers of goods from non-member countries in 2013; the relatively high share for the Netherlands can, at least in part, be explained by the considerable amount of goods that flow into the EU through Rotterdam — the EU's leading sea port.

Between 2012 and 2013, the development of the EU-28's exports of goods by major trading partner varied considerably. The highest growth rate was recorded for exports to Switzerland (up 27.0 %), while exports to South Korea, Turkey and China grew more slowly (up 5.8 %, 3.1 % and 3.0 % respectively). The biggest fall was registered in relation to exports to India (down 6.9 %), and there were smaller reductions for exports to Russia (down 2.9 %), Japan (down 2.8 %) and the United States (down 1.6 %).

Nevertheless, the United States remained, by far, the most common destination for goods exported from the EU-28 in 2013, although the share of EU-28 exports destined for the United States fell from 26.4 % of the total in 2003 to 16.6 % by 2013. China was the third most important destination market for EU-28 exports in 2013 (8.5 % of the EU-28 total), after Switzerland (9.8 %).

On the import side, between 2012 and 2013 the EU-28 saw a decrease in the level of its imports of goods from all of its main partners. The greatest falls were registered for imports from Japan (down 12.7 %), Brazil (down 11.8 %), Switzerland (down 11.0 %) and Norway (down 10.9 %). China remained the most important supplier of goods

imported into the EU-28 in 2013, even though imports from China fell by 4.0 % between 2012 and 2013[2,3].

3. Performance of intermodal transport

The container trade has been the fastest growing market segment of the transport market for decades. In 2013 it formed 22% of the total marine trade. According to the statistics of the Clarkson Research Centre [4], in 2013 the volume of the container transport worldwide was 160 mil. TEUs (+ 4.6% compared to 2012). The commodities carried in the marine containers are mainly manufactured goods, but more often there are also the products such as coffee or food that require to be transported under the controlled temperature.

The three routes on the major East–West trade lane, specifically the trans-Pacific, Asia–Europe and the transatlantic, bring together three main economic regions, namely Asia (in particular China) the manufacturing center of the world, and Europe and North America, traditionally the major consumption markets. Together, Asia, Europe and North America accounted for nearly 80.0 % of world GDP (at constant 2005 prices). In the first place is still imported from Asia to Europe, which amounted to 14.1 mil. TEUs.

Considering the number of manipulated containers, only 3 out of 20 biggest container terminals of 2013 were situated in Europe. Even more, in the top ten there are only terminals in Asia and the eleventh is located in Rotterdam, which was in 2002 known as the largest port in the world. The others are Shanghai (32.5 mil. TEUs), Singapore (29.9 mil. TEUs), Shenzhen (22.9 mil. TEUs), Hong Kong (23.1 mil. TEUs), Busan (17,0 mil. TEUs). Rotterdam is the largest port in Europe with 11,9 TEUs. Then it continues Hamburg (8,9 mil. TEUs) and Antwerp (8.6 mil. TEUs). The largest container transport operators include Mediterranean Shipping Company S.A. (Switzerland), Maersk Line (Denmark) and CMA CGM (France).

The report of the intermodal transport processed by the UIC [5] shows that in 2011, in the terms of intermodal transport rail - road in Europe, the total transportation was more than 19 mil. TEUs, of which the unaccompanied combined transport (CT) presented 18.12 mil. TEUs. Maritime CT dominated in the sector of domestic transportations and formed 64.6% of the total CT, the continental CT 35.4%. The ratio of international unaccompanied CT is exactly the opposite. Continental CT formed 65.1% of the total unaccompanied CT, compared to 34.9% of maritime CT. The proportion of maritime CT had continued leadership in this sector transporting 9.58 mil. TEUs during the reporting period which represents 53.9% share of the total volume of transportations. 8.5 mil. TEUs representing an increase of 27.1% compared to 2009 was transported using the continental CT in the given period. Within the accompanied CT of the Ro-La system was transported approximately 1 mil. TEUs.

European Network for International CT has been constantly growing. The survey showed that in 2011 the goods were transported by 126 international business routes. The portion of this transportation volume was concentrated only on a few corridors. 78% share of the

total amount of international transportations by CT was concentrated to 20 major trade routes, representing 5.6 mil. TEUs or 60 mil. tons. The busiest routes include Germany - Italy (through Austria), Belgium - Italy (through Switzerland), Germany - Italy (through Switzerland), Germany – the Czech Republic and Germany – Netherlands [4].

4. Container transport by inland waterways

Water transport infrastructure plays an important role inland, but especially in international traffic relations to unify the network of the European inland waterways and of the world oceans. In 27 out of the 56 countries that are the members of UNECE there are the navigable rivers of international importance which have or may have an important role in the international freight and passenger traffic. The place of the inland waterways transport in the total freight transport of the EU member states varies considerably both between the countries and also within the countries.

The focus of the European inland waterway is bound to the Rhine corridor. The Netherlands, Germany and Belgium and their transportation output of 119 mld. tonne-km creates almost the 80% share of the transportation output of the inland waterway transport of the EU-28 [5].

Total transportation output of the EU-28 of the inland waterways was 152,594 mil. tonne-km. In the western countries the inland navigation forms 39%, 12% or 24% of the total transportation output of the land transport. In the Netherlands and in some regions of Germany is this share even of higher percentage than rail. The prerequisite is the corresponding demand, especially the availability of powerful infrastructure in the form of waterways and ports. The development of the container transport by inland waterways was also affected by the global crisis in 2008, when there was an overall decrease in the world transport capacities (Figure 1).

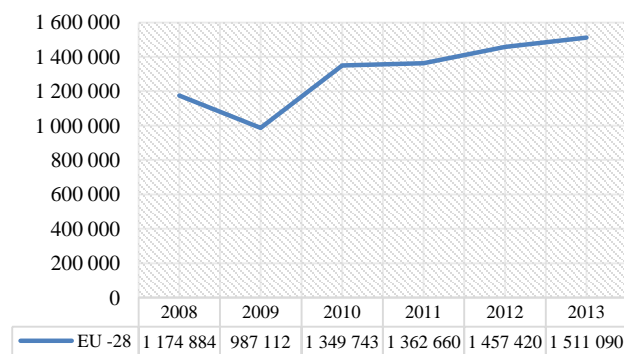


Figure 1: The annual turnover of the transported containers by inland waterway in the EU (Thousands of TEUs)

Similarly to the marine transport and also to the inland waterway, the increase of the transportation output was achieved year by year and in the third quarter of 2011 the transportation of containers was even higher than before

the crisis. Compared to 2012, the transportation output of the EU28 increased by 3.68% in 2013.

The biggest portion on the inland waterway container transportation had the Netherlands, more than 4 mil. of transported TEUs in 2013 (see Table 1). It is followed by Belgium, almost 2.48 mil. TEUs and Germany 2.20 mil. TEUs. In the context of the South-East European countries the transportation of empty containers dominated. In Slovakia, 1,120 TEUs were transported in 2013. There was the international transportation of empty containers mainly in Austria and Germany [5, 6].

5. Conclusions

Europe has over 30,000 km of canals and rivers, which link together hundreds of key industrial towns and areas. The core of the network, approximately 10,000 km, connects the Netherlands, Belgium, Luxembourg, France, Germany, Poland, the Czech Republic, Austria, Slovakia and Hungary, Switzerland, Croatia, Serbia, Montenegro, Romania, Bulgaria, Moldova and Ukraine. The main part of this network consists of the main rivers such as the Rhine and the Danube, many tributary rivers and canals connect a network of smaller towns and industrial zones. By including inland waterways into the European transport system, using the potential of the Rhine and the Danube, we may see a positive impact on the environment and the economy of the involved states. It is a way to unburden the transportation flows, especially from the road networks and also to reduce costs of this transport. However, this requires a coordinated effort, not only from states, but also shipping companies to seek the alternative for the transportation of containers. Inland waterway transport is

characterized by low transport costs and also a low external costs compared to other modes of transport. On the other hand, is limited by navigation and hydrological conditions and also by the lack of appropriate funding from government sources. In order to inland waterway transport to operate effectively, it is necessary to co-finance the infrastructure of waterways, as well as completing public intermodal transport terminals near watercourses.

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Table 1 The amount of transported containers by inland waterways (TEUs)

Country	2011			2012			2013		
	loaded containers	empty containers	total	loaded containers	empty containers	total	loaded containers	empty containers	total
NL	2748326	1779055	4527381	2892671	1852779	4745450	3034235	1879562	4913797
BE	1835313	668751	2504063	2806777	349725	3156502	1942151	537810	2479961
DE	1497964	690868	2188832	1488063	704434	2192498	1517432	689463	2206895
FR	327083	154611	481694	346917	158,156	505073	324806	140248	465054
RO	7229	8900	16129	2857	3882	6739	287	868	1155
BG	6800	8300	15100	2461	3494	5955	287	790	1077
HU	262	5451	5713	-	1930	1930	-	750	750
AT	-	2521	2521	-	3676	3676	-	5278	5278
HR	-	5031	5031	-	1750	1750	-	750	750
SR	120	594	714	0	0	0	-	1120	1120
Total EU-28	3831046	189716	5728206	4369650	175280	6122453	4012818	183734	5850158

- data not available (Source: Eurostat)

FORMATION OF BORDERS OF TRNAVA SELF – GOVERNING REGION IN THE CONTEXT OF PERIODIC AND CONTEMPORARY DEVELOPMENT

¹František Vojtech - ²Marek Vrbinčík – ³Andrea Studeničová

¹School of Economics and Management of Public Administration in Bratislava, Department of Small and Medium Enterprises

Furdekova 16
Bratislava 5, 851 04, Slovak Republic
Tel: +421 910 828 234
frantisek.vojtech@vsemvs.sk

²University of Ss. Cyril and Methodius in Trnava, Faculty of Social Sciences

Bučianska 4/A
Trnava, 917 01, Slovak Republic
Tel: 0910/466597
marek.vrbincik@gmail.com

³Comenius University in Bratislava, Faculty of Management - Department of Information Systems

Odbojárov 10
Bratislava, 818 06, Slovak Republic
Tel.:+421 907 826 395
andrea.studenicova@fm.uniba.sk

Abstract: *The development of the administrative division of the territory of Slovakia is closely related to the dominant social and political changes. Conversion of government departments, of which the Slovak Republic was part of, in principle always reflected also in the reform of its spatial arrangement and organization. The present paper deals with the analysis of the process of creating the current borders of the Trnava Self-Governing Region (TTSK), having regard to the historical and political context. In this context, it is aimed at one of the most debated points of the current administrative organization – division into districts of the Slovak Republic (SR). On the example of Trnava Self-Governing region we will review and assess the relevance of the arguments against the current situation, which rely mainly on its unnatural appearance.*

Keywords: *Trnava Self-Governing Region, natural region, Slovakia*

1. Introduction

The current state of territorial and administrative division of the Slovak Republic was accepted by political leaders in 1996. It happened by the law no. 221/1996 Col lection of Law, by which was revitalized regional arrangement and organization. However, self-government was fleshed out at the regional level by the Law no. 302/2001 Collection of Law about the autonomy government of higher territorial units (Act on Self-Governing Regions). Terminological ambiguity was also reflected in the statutory regulation, which uses both terms with the same meaning. We will also do the same in this paper.

Our ambition is to describe the process of creating the current borders of the Trnava Self-Governing Region, having regard to the socio-political changes. We will put TTSK under the criticism, as it is referred to as a classic example of not accepting the natural borders of the region. We will attempt to offer a comprehensive view on the process of the stabilization of the current territorial boundaries which we will stand into contrast to earlier forms of territorial and administrative division of Slovakia.

2. Characteristics of the Trnava Self-Governing Region

For the purposes of this paper, it is necessary to state the closer and more detailed specification of the area, which was chosen as a reference when assessing the "nature" of

the current territorial and administrative division. Current borders within which we can identify TTSK, define a space for state administration and local government, which is reflecting the application of symmetrical model of public administration.

Trnava Self-Governing Region is situated in southwestern Slovakia. With its area of 4148 km², is the second smallest region and with a population of 551,141 thousands is ranked in last place within the Slovak Republic [4]. Its administrative division consists of 7 districts (Dunajská Streda, Galanta, Hlohovec, Piešťany, Senica, Skalica a Trnava) and looks as following:



Map no. 1: The territory of the Trnava Self-Governing Region [5].

Its geographical location is rather atypical, but because of it is the TTSK designated to regional cooperation, since borders with three countries: the Czech Republic, Hungary and Austria, as well as three regions: Bratislava, Nitra and Trenčín [5]. At first glance convenient location on the other hand conceals much more latent aspects and the aim of this paper is to reveal some of them. Thus structured region we will subject with the historical excursion, which will focus mainly on the conversions and previous forms of defined administrative district. We are also interested by which ties and connections were the current parts intertwined and whether also in the past were an integral part of one administrative entity.

3. Analysis of changes TTSK area in the historical and contemporary context

As the range-money of grant contribution does not allow us to examine the selected issues from a complex point of view, therefore is on right place its specification. It is based on examining the geographical and administrative division through the prism, probably the most criticized aspect of the current layout, failure to comply with the natural regional differentiation of Slovakia. That argument is based mainly on the fact that the current regional governments undermine the integrity of the historical territorial units of which socio-economic structure has been built up over centuries.

As we already mentioned, the present form of the spatial arrangement of public organizations established the National Council of the Slovak Republic by the law no. 221/1996 of Collection of Law about the territorial and administrative organization of the Slovak Republic. By this legal standard were established 8 regional units for the needs of the administration of the state. According to that law is "the area of the Slovak Republic unified and indivisible and for the administrative execution are created territorial units (local authorities) and administrative units (statal administration - government)" [7]. For the needs of state and local government have thus been established the same territorial areas of the region. But it took a long five years as political turbulences allowed activation of local government also on regional levels. It happened by the Law no. 302/2001 of the Collection of Law the self-government of higher territorial units [8]. To better illustrate is added a graphical representation of the accepted form of territorial and administrative division:



Map no. 2: Territorial and administrative division - from. 2002 [6].

This concept of spatial organization of Slovakia however caused many negative reactions. Just in time of the implementation of the idea of formation of the second level of self-government was expected revision of criticized territorial and administrative division from the year 1996. This did not happen and debate of the appropriateness of an established model regained intensity. The most frequent point of criticism was not respecting the natural regions of Slovakia. [9].

Firstly, it is necessary to define the term "natural region", with which we will confront the current territory of TTSK. In the context of the historical development and with regard to the geographical division of the terrain began to form natural regions already in the 9th century. The basic structure of the regions of Slovakia was formed in the 13th to 14th century. Showed high stability of its boundary and internal division, as reflected the fact that from the 11th century until 1918, which means in nine centuries took place five major reforms, where the number of territorial units at the regional level ranged from 17 to 21 (counties). It should be emphasized that most of the period under consideration, these units were self-governing only. In contrast to that extend within the period of the 20th century we saw up to 8 essential administrative reforms. We are aware that this paradox is related to the socio-political developments in a given period of time and the existence of a centralist and undemocratic regimes [6]. Thus defined concept of natural region is still compounded by a complex definition which says that it is a "region characterized as a social cultural elements (the historical development of local communities) and geographic features (eg. soil fertility, altitude, climate). These regions are characterized by strong internal economic, social and cultural ties. Furthermore, for these is characteristic existence of one or more centers and hinterlands-catchment areas. These areas are defined primarily by a measure of commuting, but usually for a more complex definition of natural regions are being worked with the attendance rate for services "[3].

Based on the aforementioned factors is right at the beginning obvious that not only Trnava region, according to the current model of division can not be called as natural. Since the regions which together create Trnava Region (in northwest Záhorie, in the central part of the Trnava region and in the southern area of Žitný ostrov - Rye Island) stand out by the individuality of settlement, folk architecture, local cultural expressions and practices [5]. Calculation of the evaluation factors we have in our paper consolidated by the contribution to the cross section of historical character administration partition and analyzed in terms of the territorial scope of the current TTSK.

The original debate about the non-acceptance of natural regions particularly concerned the area of Spiš, Gemer, Turec, Zemplína or Orava, neither of which has not established a separate administrative unit. In the case of the Trnava Region were considered three mentioned subregions. Accordingly, we will do the same and we will try to focus on these specific "natural" regions.

In the current historical development division of Slovakia is apparent a correlation between changes in territorial and administrative arrangements with major changes in that state formation, with one exception in 1960, when was placed the effort to enforce the application of larger administrative units (regions and districts) according to the Soviet model [10]. In all previous stages has had essentially exchanged four systems controlling local organizations:

A. System of castle organization, counties (number 17-21).

It is the longest running (13th cent. - beg. 20th cent.), and thus the most stable system of spatial organization in Slovakia. Throughout the period followed each other continuously, with minimal changes [2].



Map no. 3: Counties since the second half of the 13th century up to the year 1922 [6].

The roots of the division of Slovakia can be sought in times of Great Moravia, which became the direct inspiration of the administrative organization of the Kingdom of Hungary. The model of spatial arrangement has been applied in our country until 1922. The three subregions of the current TTSK in this period were not in one administrative unit and were divided between the two units. Specifically Záhorie and central part of the Trnava region were largely part of Nitra county and partly in Bratislava (eg. The town of Trnava was on its territory). Field of Žitného ostrova - Rye Island was almost equally divided between Bratislava and Komárno county.

B. The system of large counties, regions (6-8).

This model of spatial arrangement of Slovakia was first applied after the adoption of the Law of the county in 1923. This system was designed to withstand six counties until the year 1928, when it was replaced by the provincial arrangement within the meaning of unification form of government administrations throughout the territory of the former Czechoslovakia.



Map no. 4: "Bigcounties" in the years 1923 to 1928 [6].

Prominent part of what is now TTSK was given space layout as a part of Bratislava county. What indeed means that Záhorie, the central part of the Trnava region and area of Žitný ostrov were located in one administrative unit, but did not form a separate entity. It occurred only by the introduction of the current model of territorial and administrative organization, which we also include into this type of division. For the first time in history was defined as thus Trnava region.

C. The districts, major regions (2-4).

The macro-regions were used for the administration of Slovakia in three basic stages of development. For the first time this occurred at a time of reforms of Joseph II. (1785 - 1790), where was the whole studied area as a part of the Nitra district. Because of its short duration, however, we went for the visualization of a subsequent application of the two macro-regions. It happened in the period of Bach's absolutism (1849-1867).



Map no. 5: districts and counties during Bach's absolutism (1849-1867) [6].

In this case, the area of the current TTSK was incorporated into Bratislava districts and the bulk of the in mezzo regions of Hornonitrianska county. Regarding the existence of large administrative units, this system is also significant for the look of administration of Slovakia in the era of Czechoslovakia. The specific model of 3 or respectively of 4 regions was applied in 1960 more specifically in 1969-1990 and within Western Slovakia was included the territory of all three sub-regions.



Map no. 6: Regions and districts (1960-1990) [6].

D. System of the provincial organization.

The aforementioned model of division, which was a response to the desire of unification of the state administration in interwar Czechoslovakia. Has been applied since 1928 and Slovakia was one of the four administrative units. A similar system of spatial arrangement was used in the first years after World War II, when it served as a suitable alternative to the then turbulent and dynamic situation.



Map no. 7: Provincial establishment and districts in Slovakia from 1928 to 1938 and from 1945 to 1948 [6].

Based on the above characteristics, it is clear that the three examined sub-regions could not form one administrative unit back then. However, Slovakia was divided into smaller administrative units - districts in which we can identify all of today's districts of Trnava Self-Governing Region.

3. Conclusions

We are aware that the present paper in the first is opening further partial more problematic areas. However, with the ambition to further and more detailed examination of selected topics was also created. Developments up to date have shown that in terms of administrative organization of the country was for the first time a separate TTSK accepted by the reform in 2001. We believe, however, that not all the attributes of territorial administration structure must necessarily be consistent with historical experience. In this case, however, according to us should be valid the concept that "the territory of higher territorial units help shape two or three natural regions, which are characterized by significant mutual relations and also given higher units correspond to other criteria. As well as in neighboring

countries, respectively comparable Western European countries. Within the current configuration of the Slovak Republic, the above criterion does not apply, respectively. applies to the minimum extent "[1]. We are also aware that the impending "stagnation or decline in economic and social development of the region" can also be "adverse effects resulting from exposure to the crisis phenomena on citizen security, property and territory of the country due to lack of sophisticated management of civilization and natural hazards "[11].

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ROLE OF SMALL AND MEDIUM-SIZED ENTERPRISES IN THE POLISH ECONOMY

Katarzyna Brożek

Kazimierz Pulaski University of Technology and Humanities in Radom, Poland

Street: Malczewskiego 29

Radom, 26-600, Poland

504174290

kania6669@wp.pl

Abstract: A variety of economic units or organisations operating in the contemporary market are closely linked to economies of each country. All enterprises, farms or even households are basic economic entities that build a kind of backbone of the economic system. Both scientific and practical interest in this area has been strong for years. Discussions focus around such issues as: creation of economic growth and jobs, effective operations or participation in exports. In other words, enterprises generate the bulk of national income, living standards and public satisfaction are largely dependent on their economic effectiveness. The role of the SME sector in economic development of a country is universally acknowledged. Small and medium-sized enterprises, chiefly the smallest businesses employing fewer than 9 people, enjoy a range of strengths. They primarily constitute a powerful driving force for market equilibrium, positive trends of demand and employment, growth of innovation and competitiveness of an economy. This paper addresses issues relating to the broadly-defined SME sector. Its overall objective, therefore, is to demonstrate the role and significance of small and medium-sized enterprises in adequate development of the Polish economy. The empirical section of the paper concentrates on analysing, inter alia, the share of the SME sector in generation of the GNP and the added value, in the total numbers of economic entities and of people in work.

Keywords: economic development, economy, Poland, SME sector

1. Introduction

Contemporary enterprises (except for some isolated national economies) of any ownership type operate in conditions of the capitalist economy, which implies functioning in the market. These enterprises, in spite of frequent competition, also cooperate with one another. Both competition and cooperation are well-known factors of progress [1]. Among the many characteristics of enterprises is their entrepreneurship, that is, the tendency to take initiative in all areas of an enterprise without excluding risk. As the market is increasingly demanding, enterprises must know and apply a number of principles to survive and prosper in the market. Innovative activities are one of these principles. Economic progress is accompanied by a broadly-defined innovative development of an enterprise. Innovation is a way of standing out from among your competitors. It is therefore important not only from the viewpoint of a business but also for an entire economy. Without innovation, an enterprise cannot develop, which is even more true for an economy.

The notion of an enterprise is hard to define due to the complexity and multiplicity of phenomena it reflects. Socio-economic transformations in Poland drive changes of legal regulations applicable to enterprises. Difficulties determining boundaries of businesses operating in conditions of the globalisation or social expectations of such businesses are among factors complicating definition of an enterprise [2]. Stanisław Sudoł finds the most appropriate the definition stating 'an enterprise is a unit (entity) engaging in economic activities, attempting to fulfil needs of other participants in public life (individuals and/or institutions) by manufacturing products and/or rendering services, where such activities are motivated by the desire for material profit and conducted at the individual risk of owner(s)' [3].

2. Classification of enterprises

Enterprises in a national economy can be grouped according to a variety of classification criteria, certainly including: scale and type of operations, form of ownership, market standing, geographical scope, etc. Each category is different and pursues diverse objectives. There are occasionally sectors of economy where small and medium-sized enterprises cannot be replaced with large companies, and vice versa, as there are fields bound to rely on large enterprises [4].

The Freedom of Economic Operations Act of 2 July 2004, which clearly defines and separates micro-entrepreneurs, small and medium-sized entrepreneurs, is the fundamental law used to classify and define small and medium-sized enterprises (Table 1) [5].

Table 1 Division criteria of small and medium-sized enterprises [6]

Enterprises	Number of workers	Net sales revenue	Total balance sheet assets
Micro	Below 10	Up to € 2m	Up to € 2m
Small	Below 50	Up to € 10m	Up to € 10m
Medium-sized	Below 250	Up to € 50m	Up to € 43m

3. Share of SMEs in generation of GNP

Systemic price of the economic boom and bust cycles is commonly illustrated by means of the macroeconomic index known as the gross national product, the value of goods and services created in a given period of time for the purpose of final consumption and investments, adjusted for the balance of exports and imports [7].

Figures published by the National Office for Statistics suggest enterprises in Poland generate about three quarters of the Polish gross national product – Fig. 1. The 2011

value of 71.8% (after a minor drop of their share in 2010), signalled a return to the growth trend experienced between 2006 and 2009 (inclusive). The result of 73.0% in 2012 also confirms the continuing growth trend. It can be concluded that small and medium-sized enterprises generate every second zloty (48.5%), including micro-businesses accounting for every third (29.7%). The share of medium-sized entities is three times smaller (11.0%) than of the smallest enterprises, and that of small businesses nearly four times lower (7.8%). The share of largest companies in GNP creation rose, of micro and medium-sized enterprises fell and of small businesses remained steady in 2011 compared to 2010. When 2012 is set side by side with 2011, on the other hand, the shares of micro and medium-sized enterprises grew, with those of the small and largest companies remaining unchanged.

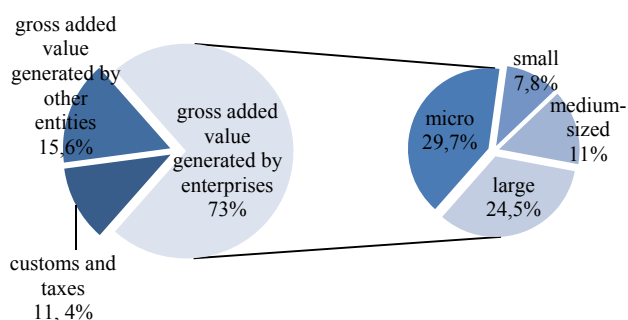


Figure 1: Share of enterprise groups in Poland by numbers of workers in GNP creation in 2012 [8]

3.1 Numbers of enterprises in Poland

Numbers of small and medium-sized enterprises in Poland have risen steadily since the early 1990s. Rate of this growth began to fall distinctly, however, particularly in the private sector, since the start of the current decade. Successively more businesses struck off records and fewer newly registered entities have both been contributing factors [9].

GUS informs 1.79m active enterprises operated in Poland in 2012, including as many as 99.8% of small and medium-sized enterprises: (micro 1.72m – 95.7%, small 57,000 – 3.2%, medium-sized enterprises 15,500 – 0.9%), with 3,200 of large entities – 0.2%.

As far as the size of active enterprises in 2003-2012 is concerned (Table 2), what is striking at first glance is that micro-enterprises proved to be absolute leaders, with 1 719 187 in 2012, that is, 30 times as many as small businesses (57 071), which came second. Medium-sized enterprises ranked third, 15 484 active in 2012, while the largest entities were obviously the least numerous, with merely 3201 active in the period under analysis.

Table 2 Active enterprises in total and by sizes in 2003-2012 [8]

	0-9	10-49	50-249	>249	Total
2003	1666696	42770	14368	2702	1726536

2004	1653856	44369	14003	2754	1714982
2005	1615167	44519	14254	2835	1676775
2006	1652998	44228	14708	2981	1714915
2007	1713194	45184	15452	3246	1777076
2008	1787909	54974	16327	3252	1862462
2009	1604417	50189	15808	3113	1673527
2010	1655064	52591	15841	3167	1726663
2011	1710598	54999	15817	3189	1784603
2012	1719187	57071	15484	3201	1794943

3.2 Numbers of workers in Polish enterprises

Another stage of statistical research focused on total numbers of workers in enterprises (Table 3). The growing share of enterprise staff in overall employment is a fact [2]. In Poland, numbers of people working for enterprises climbed steadily between 2003 and 2009, when the number fell from 9494002 to 8829934 in 2009, which corresponded to a drop of 7%, or 664068 workers. It rose again after 2010, however (by 29119 over 2009 and by 169483 compared with 2010). The numbers of those working in enterprises declined once again in 2012, by 91183. In respect of enterprise size in 2003-2012, most employees find jobs in micro-enterprises (3 459 475 in 2012), followed by large (2 671 471), medium-sized (1 602 448) and small businesses, with 1 203 959 working in the latter.

Table 3 Numbers of workers in total and by business size in 2003-2012 [8]

	0-9	10-49	50-249	>249	Total
2003	3396685	953636	1478707	2310207	8139235
2004	3383470	967301	1461519	2348398	8160688
2005	3403095	972030	1494052	2418325	8287502
2006	3474574	976451	1542386	2562721	8556132
2007	3592817	1007453	1619286	2749746	8969302
2008	3727242	1194972	1698165	2873623	9494002
2009	3464201	1123287	1643384	2599062	8829934
2010	3399096	1143458	1649103	2667396	8859053
2011	3508557	1181565	1646415	2691999	9028536
2012	3459475	1203959	1602448	2671471	8937353

4. Financial standing of enterprises

4.1 Revenue generated by Polish enterprises

The following Table 4 summarises statistics concerning revenue of enterprises by size during ten years (2003-2012). The revenue rose steadily from the first year under analysis (i.e. 2009) to reach PLN 3763bn in 2012. Revenue of micro-enterprises increased since 2003 on a regular basis, to decline in 2009 and again continue growing after 2010. The maximum revenue of PLN 762bn was earned in 2012. As far as small enterprises are concerned, the growth trend was restored in the last three years under discussion, that is, 2010, 2011 and 2012, and the highest result (approx. PLN 554bn) was attained as a consequence in 2012. Revenue of medium-sized enterprises appeared to evolve in a way similar to that of micro-enterprises (a regular growth until and including 2008), the sole difference being that medium-sized businesses generated their maximum revenue in 2011 – PLN 769bn (with microfirms peaking in 2012). Revenue of these enterprises fell by PLN 2 376bn in the final year examined. The

revenue position of the largest companies looks clear: revenue kept growing every year between 2003 and 2012. Comparing 2012 to 2003, revenue earned by the largest enterprises rose by as much as more than PLN 948bn. In general, the largest entities generated maximum revenue, followed by medium-sized and micro-businesses (performing only a little worse than medium-sized companies), with small enterprises reporting minimum revenue in 2012.

Table 4 Revenue of enterprises by size in 2003-2012, PLN m [8]

	0-9	10-49	50-249	>249	Total
2003	496603	300845	422572	731135	1951155
2004	541390	324257	487148	840330	2193125
2005	553120	322524	501361	887415	2264420
2006	636690	340232	561269	1020520	2558711
2007	671063	382164	652516	1181987	2887730
2008	746497	464296	700829	1302213	3213835
2009	699097	417476	656760	1306270	3079603
2010	719908	448943	689085	1439402	3297338
2011	760896	519870	769494	1616124	3666385
2012	762443	554616	767118	1679706	3763883

4.2 Costs incurred by Polish enterprises

The analysis of revenue earned by enterprises compels one to look at the other side of the coin, namely, costs incurred by enterprises operating in the Polish economy. Statistics describing these issues are collected in Table 5.

The SME sector plays a major role in development of the Polish economy. It is reasonable to state that costs borne by the enterprises increased year over year. Their value rose by approximately PLN 670bn between 2012 and 2009.

Table 5 Costs of enterprises in total and by size in 2003-2012, PLN m [8]

	0-9	10-49	50-249	>249	Total
2003	452728	285850	408117	708788	1855483
2004	485062	306554	463898	785317	2040831
2005	289510	304234	480551	839565	2113860
2006	566336	322058	531525	961233	2381152
2007	585342	353483	613776	1108374	2660975
2008	645883	433498	670213	1252444	3002038
2009	614780	393143	625161	1239171	2872255
2010	618234	420092	649552	1358409	3046287
2011	664613	501081	738419	1521361	3425473
2012	674543	523267	736467	1607886	3542163

With regard to enterprise sizes, costs evolve in parallel to revenue. In 2012, maximum costs were experienced by the largest (more than PLN 1607bn), followed by medium-sized (PLN 736bn), micro (PLN 674bn) and finally small entrepreneurs (PLN 523bn). It can be noted that all the four enterprise groupings incurred maximum costs in 2011 and 2012.

5. Investment spending of the enterprise sector

Investment expenditure in Poland is another indicator that well characterises the entities under examination (Table 6), growing steadily from 2003 (when it exceeded PLN 77bn) to reach approx. PLN 160bn 2008 (thus achieving an increase by as much as 110% over that period). The spending fell dramatically (by more than PLN 16bn, or 10%) in the following year (2009). 2010 saw another drop of this expenditure, this time by around PLN 1.8bn (2%). It was only in 2011 that the investment spending rose substantially to regain the 2008 levels, namely, more than PLN 161bn. The declining trend resumed in the final period under discussion, since the expenditure totalled ca. PLN 154 in 2012. 2011 witnessed the maximum and 2003 the minimum levels of investment spending over the ten years under analysis.

Table 6 Investment spending in 2003-2012, PLN m [8]

	0-9	10-49	50-249	>249	Total
2003	10088	10680	16259	40370	77397
2004	11364	11689	21944	45395	90392
2005	11842	10613	21703	55815	99973
2006	14179	12845	28041	59275	114340
2007	18321	15827	34759	75373	144280
2008	20356	19011	34942	86230	160539
2009	21853	16416	30806	74676	143751
2010	24848	16877	29598	70616	141939
2011	28282	18757	33785	80416	161240
2012	24370	17331	32786	80364	154852

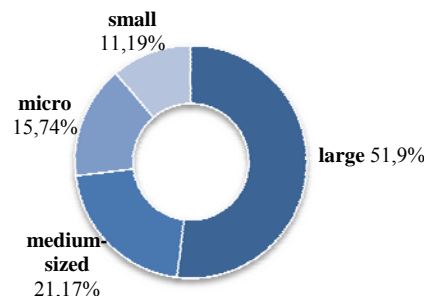


Figure 2: Structure of investment spending by the enterprise sector by business size in 2012 [10]

Regarding investment expenditure in 2003-2012 in respect of enterprise size, the figure was highest in the case of largest entities and reached PLN 80 364 m, followed by medium-sized enterprises (PLN 32 786 m), micro-enterprises ranking third (PLN 24 370 m), and small businesses coming last (PLN 17 331m) in the final year under discussion, that is, 2012. Diagram 2 above illustrates the structure of investment spending by enterprises of various sizes.

6. Conclusions

The sector of small and medium-sized enterprises is the backbone of each economy. This group constitutes approximately 99% of all enterprises operating in the Polish economy. Their power can be felt in particular in the job market. It is commonly estimated that small

businesses employ more than 70% of all workers in the economy. The numbers, or even the contribution of the SME sector to GNP, demonstrate this is the important core of the economy which does not offer spectacular development potential yet builds sound foundations of a regular socio-economic development.

The SME sector in Poland is a source of revenue for the national and local budgets, contributes to creation of the gross national product, provides new jobs, drives social change and functional transformations of an area (region, province, local community). Enterprises have a significant impact on emergence and development of an innovative economy.

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VALUATION OF SHARES AND THEIR FAIR VALUE OF THE COMPANIES LISTED ON THE WIG20 QUOTED ON THE WARSAW STOCK EXCHANGE IN POLAND WITHIN 2011-2015

Rafal Parvi

Wroclaw School of Banking

Fabryczna 29-31
53-609 Wroclaw, Poland
+48601536917
Rafalp4@o2.pl

Abstract: This paper examines share price of the companies listed on the WIG-20 and their fair value between 2005-2015. Data from 2005 to 2015 were collected from the Stooq.pl (Polish portal of shares). Two hypotheses are tested: (1) value of the shares based on the market price; (2) value of the shares as the fair value of shares.

Keywords: fair value of shares, company, market value of shares, profit

1. Introduction

The WIG20 stock exchange index is an index of the 20 largest joint-stock companies listed on the Warsaw Stock Exchange. A base date for the index is 16th of April 1994 and a base value is 1000 points. It is an index of a price type (only prices of transactions included therein are taken into consideration when calculating its value). Up to 5 companies from one sector can be listed within the framework of WIG20. Investment funds are not listed in this index. On the 23rd of September 2013, 10 new companies joined the index creating WIG30. The lowest value of WIG20 was recorded upon closure on the 28th of March 1995 as 577.90 points, and the highest one on the 29th of October 2007 as 3917.87 points.

A ranking of companies is created on the basis of points granted according to the formula:

$$R(i) = 0,6 * St(i) + 0,4 * Sc(i)$$

whereas the symbols mean:

R(i)– company's position in the ranking (i),

St(i)– participation of a company (i) in total dealing in shares of companies included in the ranking during the last year,

Sc(i)– participation of a company (i) in a share value in a free circulation of companies included in the ranking as per date of its preparation.

Allowing for a correction factor is intended to naturalize changes in the amount of capitalization of the market, such as: changes in the composition of an index portfolio, payout of a dividend [1,9].

The ranking is common for the indices: WIG20, mWIG40 and sWIG80.

The WIG20 index is calculated according to the formula:

$$WIG20 = [(M(t) / M(0) * K(t)] * 1000$$

whereas the symbols mean:

WIG20 – value of the WIG20 index,

M(t) – capitalization of the index portfolio in a session t,

M(0) – capitalization of the index portfolio on a base day

K(t)– correction factor of the index in a session t

The correction factor is calculated according to the formula:

$$K(t) = K(t-1) * [Mz(t) / M(t)]$$

whereas the symbols mean:

K(t) – correction factor in a session t,

Mz(t) – modified value of the market capitalization for a session t (e.g. added share value of a new participant of the index).

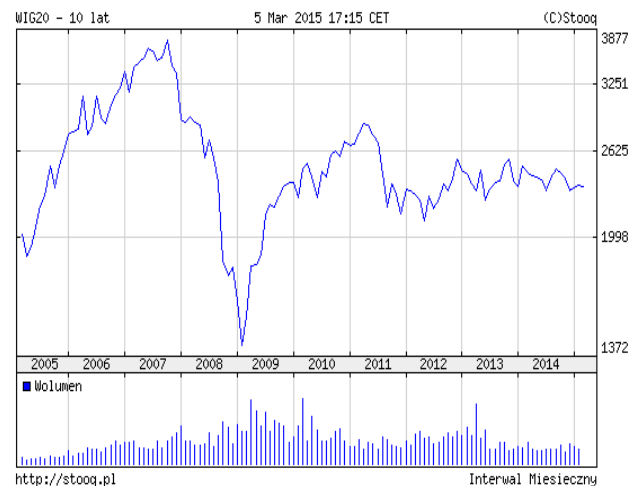


Figure 1: WIG-20 in the period from 01.2005 to 03.2015 [10].

In the diagram of the WIG20 index within recent 10 years before and after the crisis in 2008, it must be observed that companies listed in this index did not return to their values from 2007 as it was in other EU countries in the indices: DAX, CAC or in the USA in the indices: S&P and NASDAQ (Fig.1).

The companies listed in the mentioned indices recovered from the incurred losses and their value is estimates even over the value recorded before 2007, which means that the WIG20 index should reach the value of approx. 5200

points. This would be reflected in the fair value of companies listed therein (Fig. 1).

The diagram of WIG20 P/E presents the value as per the 5th of March 2015 (value of 14.30) which proves that a total relation of price to income is on the increase and should reach at least the value of 32 (Fig. 2).



Figure 2: WIG-20 P/E in the years 2006 - 03.2015[10].

The diagram of WIG20 P/BV presents the value as per the 5th of March 2015 (value of 1.34) which proves that a total relation of price to income is on the increase and should reach at least the value of 2.00 to 3.00 (Fig. 3).



Figure 3: WIG-20 P/BV in the years 2008 - 03.2015[10].

2. Analysis and valuation of the energy sector's companies quoted on the Warsaw Stock Exchange (WSE) in Poland

The current price of shares of the companies listed on the WIG20 should reflect their business value and their fair value, however, bearing in mind their maximum value, we should note that for well prospering companies their current value differs strikingly from the average or maximum value that was determined during quotations over the last few years, as shown in Table 1.

The share price of some of them has been reduced by 85% (JSW) and of some by less than 61% (KERNEL), which

proves their diverse structure and diverse financial possibilities.

Table 1 Companies listed on the WIG20 in Poland as of 05.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Average rating	rating
ALIOR	3.5/5.0	B-
ASSECOPOL	4.0/5.0	AAA
BOGDANKA	4.0/5.0	BBB
BZWBK	4.0/5.0	B
EUROCASH	3.5/5.0	CCC
JSW	3.5/5.0	BB+
KERNEL	3.5/5.0	AA+
KGHM	4.0/5.0	AA+
LOTOS	4.0/5.0	BBB
LPP	4.0/5.0	A
MBANK	3.5/5.0	B
ORANGEPL	2.5/5.0	BB+
PEKAO	3.5/5.0	B+
PGE	3.5/5.0	AA
PGNIG	3.5/5.0	AA+
PKNORLEN	4.0/5.0	BBB-
PKOBP	3.5/5.0	B-
PZU	3.5/5.0	BB-
SYNTHOS	4.0/5.0	AAA
TAURONPE	3.5/5.0	BB-

With good financial data and generating earnings per share, the companies should resist crisis and stagnation prevailing currently on the world markets.

Table 2 Companies listed on the WIG20 in Poland as of 05.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Current price PLN	Maximum price PLN from the beginning of the stock exchange quotation
ALIOR	80.62	97.15
ASSECOPOL	57.42	69.84
BOGDANKA	85.00	131.20
BZWBK	338.05	408.30
EUROCASH	32.30	63.44
JSW	19.07	124.20
KERNEL	32.00	82.90
KGHM	119.00	167.80
LOTOS	26.68	51.22
LPP	7070.20	10049.00
MBANK	441.00	538.40
ORANGEPL	9.29	15.04
PEKAO	185.25	206.50
PGE	19.94	22.10
PGNIG	5.05	6.01
PKNORLEN	55.90	59.64
PKOBP	33.99	43.31
PZU	471.20	505.00
SYNTHOS	4.47	5.16
TAURONPE	4.68	5.64

However, it is unjust to quote rating for some companies in a manner showing their weakness, since those companies generate profit and are capable of surviving on the market and maintaining financial liquidity, which is

proved by the financial results in tables 2 and 3. PKNORLEN may serve as an example.

In table 3, the most important ratios presenting the financial condition of the WIG20 sector's companies were presented.

The profit per share was generated in 20 examined companies. It shows that developers invest a lot, what determines their value and the generated profit per share [2].

In the WIG20 sector there are four companies, the values of which approach their maximum prices on 06.03.2015, can be recorded, and they are PEKAO, PGE and PZU. However, other companies do not show their maximum or even fair value, though they can show the net profit and good financial condition, and they are ALIOR, BOGDANKA, SYNTHOS and TAURONPE. Some companies were overvalued by even 30%. The flagship companies, such as PGE and PZU, stay ahead with the best results, as shown in Table 1-2.

Generally, the value of the index P/OE is a useful tool for determining an absolute share value referred to the operating profits. Using the operating profit instead of a net profit (the P/E index) allows for rejecting single events. Moreover, a net profit is easier to handle. Fewer companies incur losses at the level of an operating profit rather than a net value, which allows for a broader use of P/OE.

The P/BV index informs how the company's own capital is valued by the market at a given moment. A general interpretation of the index consists in the fact that the P/BV indices below 1 mean a low price of a company, whereas a value over 3 that a company is overrated.

The value of the C/P index is expressed in the way that when the value of the index is lower, then the price for the purchased company's shares is theoretically lower too, which means that the enterprise is more attractive. It is used in order to demonstrate cyclic profits and losses of the analyzed companies (the income is much more stable than the company's profit).

Table 3 Technical assessment of companies listed on the WIG20 as of 06.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	P/OE (price/ operating earnings)	P/BV (price/book value)	P/P (price/ profit)
ALIOR	14.54	1.93	2.60
ASSECOPOL	7.98	0.61	0.77
BOGDANKA	8.41	1.19	1.47
BZWBK	12.71	1.86	4.23
EUROCASH	15.60	4.32	0.26
JSW	-6.66	0.28	0.34
KERNEL	2.55	0.74	0.32
KGHM	6.57	0.97	1.14
LOTOS	-3.54	0.60	0.17
LPP	21.25	7.90	2.71
MBANK	11.26	1.68	3.48
ORANGEPL	12.36	0.98	1.00
PEKAO	12.62	2.02	5.55
PGE	7.32	0.83	1.33
PGNIG	7.75	0.99	0.87
PKNORLEN	-5.08	1.17	0.22

PKOBP	9.77	1.57	2.88
PZU	10.10	3.18	2.41
SYNTHOS	11.91	2.76	1.17
TAURONPE	4.64	0.45	0.44

The price to the operating earnings shows the losses of the company, and this state of affairs was reported in the examined stock exchange quoted companies (3 companies). The ALIOR, EUROCASH, LPP achieved a very high ratio, and the KERNEL – an average one.

In contrast, analysing P/BV and P/P, it should be noted that both the price to the book value and the price to profit demonstrate that four companies exemplary operate on the market and have a value of more than 2.0, and these are EUROCASH, LPP, PEKAO and SYNTHOS. Other companies do not significantly differ from the average values. Only TAURONPE is significantly below the thresholds and shows the negative values (0.45 and 0.44) [2, 3, 4, 7, 8].

Table 4 Value of the companies listed on the WIG20 as of 06.03.2015

Name	Fair value	Deviation from the fair value in PLN
ALIOR	96.45	15.83
ASSECOPOL	63.87	6.45
BOGDANKA	110.45	25.45
BZWBK	400.96	62.91
EUROCASH	48.63	16.33
JSW	52.77	33.70
KERNEL	53.10	21.10
KGHM	150.74	31.74
LOTOS	40.33	13.65
LPP	10000.00	2929.80
MBANK	502.65	61.65
ORANGEPL	12.88	3.59
PEKAO	199.41	14.16
PGE	20.38	0.44
PGNIG	6.00	0.95
PKNORLEN	59.03	3.13
PKOBP	40.34	6.35
PZU	500.99	29.79
SYNTHOS	5.10	0.63
TAURONPE	5.13	0.45

Deviation from the fair value in PLN = DevFV

$$\text{DevFV} = \text{Fair value} - \text{current value}$$

Other companies have shown a substantial profit which was generated in 2014, and they were 20 companies. Currently, the value of companies significantly deviates from the maximum value achieved a few years ago. The only exceptions are ASSECOPOL, ORANGEPL, PGE, PGNIG, PKNORLEN, PKOBP, SYNTHOS and TAURONE, which achieved almost the maximum value in its history. Other companies have the value less than 90% of the maximum one (Table 4).

However, the fair value which should be reflected by the share prices of the examined companies significantly differs from the calculated value, which was presented in Table 4. In some cases, it is even 90% of the current value.

The fair value is considerably higher than the current value of the examined companies.

3. Conclusions

The share price of companies listed in WIG20 is considerably underrated.

However, it may be suspected that the value of these shares is underrated intentionally for the investors moving around the globe with an investment capital which depends exclusively on the profit, i.e. quick purchase and sale of shares, whereas they are not interested in investing and receiving dividends, which is connected with maintaining shares in an investment portfolio.

Explicitly, it may be observed that the share price of companies listed in WIG20 differs considerably from the fair value that was calculated and presented in the elaboration. For this reason, it must be particularly stressed that the value should be reached in the future periods, which may be supported by an increasing value of a price/income relation (P/E) in the WIG20 index where the minimum level is left behind. The fair value of companies listed in WIG20 should be reached in the period of two years, i.e. until 2017 [5, 6].

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ANALYSIS OF THE TELECOMMUNICATION SECTOR IN POLAND ON THE EXAMPLE OF TELECOMMUNICATION INDUSTRY COMPANIES QUOTED ON THE STOCK EXCHANGE

Rafal Parvi

Wroclaw School of Banking

Fabryczna 29-31
53-609 Wroclaw, Poland
+48601536917
Rafalp4@o2.pl

Abstract: *This paper examines share price of the companies listed on the WIG-TELEKOM and their fair value between 2005-2015. Data from 2005 to 2015 were collected from the Stooq.pl (Polish portal of shares). Two hypotheses are tested: (1) value of the shares based on the market price; (2) value of the shares as the fair value of shares.*

Keywords: *telecommunication, fair value of the shares, company, market value of the shares*

1. Introduction

The structure of the telecommunication market in Poland has been stabilised for several years. Access to the Internet, mobile and fixed telephony generate more than 68% of the entire market's value. In 2013, the total value of the telecommunication market amounted to PLN 40.15 billion (total amount of revenue generated by the telecommunication entrepreneur, in respect of conducting the telecommunication business in the year under report, in PLN, excluding VAT). The year of 2014 was the one of declining revenues from the telecommunication services which amounted to 0.6% compared to the previous year. The largest decrease (3.7%) was reported in the case of the fixed telephony, although, it was lower by 15% than in the previous year. Declines did not exclude also services of the fixed telephony. They were higher than the previous year and amounted to 1.2%. The reduction of MTR (*Mobile Termination Rate*) as well as the further development of the flat-rate offers on the mobile market certainly contributed to this phenomenon [5, 6, 12, 15, 16, 17].

The only segment, which reported the increase of value, was the Internet access services. The mobile access was one of the most popular services, exceeding the European average with its level of satisfaction. Despite many actions undertaken by the Regulator, the Government, local government units and the telecommunication entrepreneurs, the access to the landline Internet still represented one of the lowest levels among the European Union's countries. The positive trends within the market definitely include the increase in the number of lines with higher and higher transfers offered by operators [17].

The mobile telephony was still an attractive segment of the telecommunication market, despite the high penetration and strong competition. Subscribers of the mobile telephony have increasingly used the data transmission in the phones. The reason for this is undoubtedly the increasing popularity of the packages included in the subscription. The mobile operators have expanded their offer beyond the area of mobile telephony, they established cooperation with the banking and energy sectors by offering a wider package of services [5, 17].

Bundling of offers was an important trend. It enables to meet the demand for a few telecommunication services at a

more attractive price than their individual purchase. The cable television operators were the main operators of the bundled services [6, 10, 18].

2. The development of the telecommunication market in Poland

The telecommunication market in Poland is developing at the level above the average in relation to the European Union average. The competition and innovation on the Polish telecommunication market was supported by the disposal of frequencies of the 1800 MHz band.

One of the most important events of the past year was the Global Symposium of Regulators (GSR) and Global Industry Leaders Forum, which was held in Warsaw. It was the first event of its kind not only in Poland but also in the European Union. XIII edition of the GSR was devoted to the innovation and evolution of the telecommunication services and regulation of the ICT sector of the IV generation. The theme of the discussion and meeting was to seek the answer to the question "*How to ensure the high competitiveness, quality of services and steady growth of the ICT sector in the condition of the increasing advantage of the greatest players?*". In the view of such posed challenges and the professional approach to the subject by telecommunication service providers, in the coming years, the telecommunication market in Poland will develop dynamically because it should already be considered as developed and entering the high-tech telecommunication technologies [17].

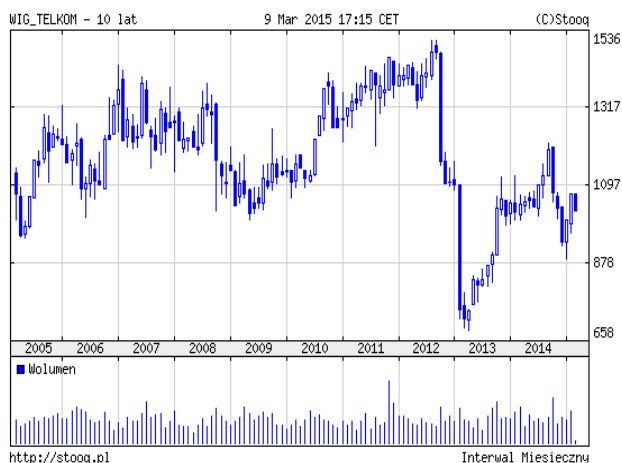


Figure 1: WIG-TELEKOM in the period from 01.2005 to 03.2015 [18].

The WIG-TELEKOM index, presented in Figure 1, shows that from 2012 to the first quarter of 2013, the telecommunication sector's companies in Poland showed a downward trend in their values.

However, since the second quarter of 2013 it has been possible to notice a significant upward trend. The values reported on 09.03.2015 reflect the upward trend and confirm it. However, the market values do not reflect their fair value.

In such a market, the introduction of new technologies and the beginning of a new era in telecommunication, and good financial conditions, the fair value should be included in the market value, however, the market value differs from it due to some other external factors on the financial market and even speculative factors in the development of the share price of the telecommunication companies quoted on the Warsaw Stock Exchange in Poland [3, 4].

3. Analysis and valuation of the telecommunication sector's companies quoted on the Warsaw Stock Exchange (WSE) in Poland

In the telecommunication sector, it is possible to record one company, the value of which approached to its maximum price on 09.03.2015, and this is NETIA. The remaining companies did not have its maximum or even fair value, though they can show the net profit and good financial condition, and it is ORANGEPL. Some companies were overvalued by even 92%. These companies are HAWE, HYPERION, MIDAS and MNI. However, the flagship companies, such as NETIA and ORANGEPL, stay ahead (Table 1-2).

Table 1 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 09.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Average rating	rating
HAWE	4.0/5.0	B+
HYPERION	3.5/5.0	CCC+
MIDAS	3.5/5.0	D

MNI	4.0/5.0	A-
NETIA	4.0/5.0	AA+
ORANGEPL	2.5/5.0	BB+

Table 2 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 09.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Current price PLN	Maximum price PLN from the beginning of the stock exchange quotation
HAWE	2.15	26.00
HYPERION	3.65	35.00
MIDAS	0.66	15.91
MNI	1.44	7.10
NETIA	5.95	6.24
ORANGEPL	9.21	15.44

Table 3-4 presents the key ratios that show the financial condition of the telecommunication sector's companies. Within the six examined companies, the generated profit per share was reported in 3 companies. It shows that the telecommunication companies prosper properly on the financial market and are able to record higher or lower profits. However, the profit was not reported in three companies, and they were HYPERION, MIDAS and NETIA.

The price to the operating earnings shows the losses of the company at the negative, and this state of affairs was reported in two stock exchange quoted company, and they were HYPERION and MIDAS. ORANGEPL and NETIA generated a positive double-digit ratio, and the other companies, HAWE and MNI generated a positive one-digit ratio but it is a satisfactory result.

In contrast, analysing P/BV and P/P, it should be noted that both the price to the book value and the price to profit demonstrate that three companies operate exemplary on the market and have a value of about 1.0, and these are: HYPERION, MIDAS, NETIA and ORANGEPL.

Other companies do not significantly differ from the average values, and these are HAWE, MNI.

Table 3 Technical evaluation of the Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 09.03.2015 (own development based on the financial data of the of the Warsaw Stock Exchange)

Name	P/OE (price/operating earnings)	P/BV (price/book value)
HAWE	5.80	0.62
HYPERION	-154.48	0.83
MIDAS	-3.45	2.21
MNI	8.40	0.38
NETIA	13.16	0.92
ORANGEPL	12.26	0.97

Table 4 Technical evaluation of the Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 31.12.2014 (own development based on the financial data of the Warsaw Stock Exchange)

Name	P/P (price/ profit)	Profit per share
HAWE	0.90	(QIII) 0.025
HYPERION	2.67	-0.065
MIDAS	2.27	(QIII) -0.041
MNI	0.81	0.033
NETIA	1.24	(QIII) -0.013
ORANGEPL	0.99	(QIII) 0.107

Table V-VI presents the studies concerning, among others, the net profit, depreciation, EBITDA and assets of the telecommunication sector's companies.

According to the obtained values, it is clear that only HYPERION, MIDAS and NETIA showed a loss, which was confirmed by the previous ratios included in Table 2. Other companies have shown a substantial profit which was generated in 2014.

Table 5 Technical evaluation of the Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 31.12.2014 (own development based on the financial data of the Warsaw Stock Exchange)

Name	Net profit (net loss) in thousands PLN	Depreciation in thousands PLN
HAWE	(QIII) 2694	(QIII) 4181
HYPERION	-873	0
MIDAS	(QIII) -61004	(QIII) 0
MNI	3296	0
NETIA	(QIII) -4416	(QIII) 0
ORANGEPL	(QIII) 140000	(QIII) 759000

Table 6 Technical evaluation of the Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 31.12.2014 (own development based on the financial data of the companies quoted on the Warsaw Stock Exchange in Poland)

Name	EBITDA in thousands PLN	Assets in thousands PLN
HAWE	(QIII) 8117	(QIII) 665997
HYPERION	151	144798
MIDAS	(QIII) -27532	(QIII) 1448143
MNI	6925	627767
NETIA	(QIII) 3112	(QIII) 2753541
ORANGEPL	(QIII) 1036000	(QIII) 21923000

According to the book value per share, it is possible to deduce that some companies are overvalued, and these are HAWE, HYPERION, MNI, NETIA, and ORANGEPL, and in the case of the MIDAS company, undervalued (Table 7).

Table 7 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 31.12.2014 (own development based on the data of the Warsaw Stock Exchange)

Name	Book value per share in PLN
HAWE	(QIII) 3.454
HYPERION	4.379
MIDAS	(QIII) 0.366
MNI	3.169
NETIA	(QIII) 5.967
ORANGEPL	9.457

However, it is important not to follow this opinion because the values are only the book values, and the calculation of them is purely mathematical and financial. In the case of using the economic attitude and interpretation, it would occur that the companies do not have the fair value [2, 11, 13, 14].

The profitability of the equity as well as the profitability of assets is shown only by NETIA, ORANGEPL, TELEPOLSKA, however, HAWE, HYPERION, and MNI do not have it. Only MIDAS is trying to show the minimum profitability. Therefore, according to the presented study, it is possible to observe that the flagship telecommunication concerns have the profitability and they are not threatened by any disturbance of the financial liquidity (Table 8).

Table 8 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 30.09.2014 (own development based on the data of the Warsaw Stock Exchange)

Name	ROE	ROA
HAWE	-1.08	-1.08
HYPERION	-1.72	-0.88
MIDAS	0.58	0.56
MNI	-3.99	-2.86
NETIA	9.09	6.58
ORANGEPL	10.20	4.82

Currently, the value of companies significantly deviates from the maximum value achieved a few years ago. The only one exception is NETIA, which achieved the maximum value in its history. Other companies have the value less than 50%, and even 90% of the maximum one (Table 9).

Table 9 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 09.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Current value	Maximum value
HAWE	2.15	26.00
HYPERION	3.65	35.00
MIDAS	0.66	15.91
MNI	1.44	7.10
NETIA	5.95	6.24
ORANGEPL	9.21	15.44

However, the fair value which should be reflected by the share prices of the examined companies significantly differs from the calculated value, which was presented in Table 10. In some cases, it is even 20% of the current value. The fair value is considerable higher than the current value of the examined companies, and only similar in one company, NETIA.

Table 10 The Telekom sector's companies quoted on the Warsaw Stock Exchange in Poland as of 09.03.2015 (own development based on the data of the Warsaw Stock Exchange)

Name	Fair value	Deviation from the fair value in PLN
HAWE	5.36	3.21
HYPERION	4.78	1.13
MIDAS	8.23	7.57
MNI	3.89	2.45
NETIA	7.90	1.95
ORANGEPL	14.95	5.74

4. Conclusion

The share price of the telecommunication sector's companies quoted on the Warsaw Stock Exchange in Poland is significantly underestimated by the current financial situation in the world [7, 8, 9]. Telecommunication companies should demonstrate the higher value, and at least the fair value because the telecommunication in Poland is developing very well, and is even a promising big development for the future years. In some European Union countries the development of the mobile telephony is slower, and the users still remain at the landline telephony. One such country is Sweden, where even 95% of families still have landline phones.

Telecommunication companies earn money because they largely focus on the sale of modern services connected not only with the phones, the ICT transmission, but they also introduce packet services and combine together telephony, television and the Internet [1].

The flagship telecommunication companies achieve huge profits, which was confirmed in the studies of ratios in the last few years and the net profit studies in 2014.

The fair value of the telecommunication sector's companies quoted on the Warsaw Stock Exchange in Poland should be achieved within four years, until 2020, because for this period, the further rapid development of the telecommunication in Poland should be estimated.

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THE CONCEPT OF DOWNSTREAM MERGER BUYOUT FINANCIAL STRUCTURE WITH REGARD TO LEGAL ASPECTS OF FINANCIAL ASSISTANCE FOR SHARE ACQUISITION IN TERMS OF SLOVAK AND EUROPEAN LEGAL FRAMEWORK

Matej Smalik

Comenius University in Bratislava, Faculty of law

Šafárikovo námestie 6

Bratislava, 810 00, Slovenská republika

smalik.matej@gmail.com

Abstract: *The author tries to deal in his paper with the topic of downstream merger buyout with regard to the financial assistance rules applicable in all of the member states of European Union. Author defines the downstream merger buyout as a possible structure for financing the companies' incentives to acquire the shares of the target companies and explains the possible problematic issues when entering into such financial transaction. The financial assistance rules for the acquisition of the company's shares are regulated by the member states themselves and by the respective Directive 2006/68/EC. Despite the existence of the Directive, the level of implementing of the Directive is various in all of the member states as the member states are not obliged to implement the Directive into their legal framework. Implementing of the rules regarding the financial assistance for the shares acquisition still only remains as an option for the member states and that causes that these rules differ or do not even exist in various member states. Author focuses on the Slovak legal framework compared to other member states and the Directive and proposes the solution even for the Slovak legislators and also for the companies willing to finance their acquisition plans.*

Keywords: *merger, leveraged buyout, financial assistance, share acquisition*

1. Introduction

In my paper I shall focus on the concept of the selected leveraged buyout scheme (downstream merger buyout) in accordance with the rules relating to the provision of financial assistance by a company when acquiring the shares of the very same company providing the financial assistance to the third party acquiring shares of the company. Essentially, leveraged buyout is an acquisition of a corporation as a whole or a division of a corporation mostly with cash, the cash being raised with a preponderance of debt raised by the acquirer [1]. Such acquisition vehicle structure consists of substantial amount of debt financing and also of equity. Leveraged buyout from the financial prospective consists of large amount of debt, each distributed into different layers, each characterized by different terms such as maturity, security or interest rate.

As we can see from the research made in the US [2], leveraged buyout structures are still popular within the companies to accrue the shares of the other company.

2. Downstream merger buyout and creditors protection

For the purposes of my paper I aim at only one certain type of leveraged buyout called the "downstream merger buyout". This type of financial structure is a contentious issue in the legal regime of the Slovak Republic as for the facts considering restricted financial assistance for the acquisition of the shares of the company. Reasons for this controversy will be clarified later in my paper. Downstream merger buyout is the financial structure often used by companies entering into a merger. A downstream merger buyout is a merger in which a partially-owned subsidiary takes over its parent company as per a financial dictionary [3].

As a result, a target subsidiary company takes over the debts and liabilities of the parent company, which also includes liabilities arising from the financing of the acquisition of its own shares by a third party. This means there is a functional correlation between the downstream merger and the acquisition of shares in the target company. The problematic issue, when talking about downstream merger buyout, is represented by the following situation. The acquiring company wants to acquire shares in the target company.

In order to perform such situation, the acquiring company gets leverage (debt) from the investor with the sole intent of acquiring shares of the target company. However, after acquiring the shares of the target company, the acquiring company merges together with the target company and the acquiring company ceases to exist which means that the target company takes over all of the assets and liabilities of the acquiring company as provided by law. This means that the debt (leverage) that was used for acquiring the shares of the target company will be secured and then satisfied from the funds of the target company [4]. Moreover, the target company as a legal successor of the acquiring company takes over all the assets of the acquiring company; this means that the target company acquires its own shares that were formerly owned by the acquiring company that ceased to exist as for the merger.

Such a transaction might constitute dangerous position for the company's creditors as for the fact that the target company takes over liabilities of its shareholders, which in most cases is SPV (special purpose vehicle) without any net assets. From this point of view, the creditors of the target company will be put in a more disadvantageous position than they were before the downstream merger. The third council Directive 78/855/EC concerning mergers of public limited liability companies stipulates that the

laws of the Member States must provide for an adequate system of protection of the interests of creditors of the merging companies whose claims antedate the publication of the draft terms of merger and have not fallen due at the time of such publication. The laws of the Member States shall at least provide that such creditors shall be entitled to obtain adequate safeguards where the financial situation of the merging companies makes such protection necessary and where those creditors do not already have such safeguards [5].

I agree with the opinion that this does not automatically suggest that creditors of the transferee target company can be aware of the dangers awaiting them as a result of the proposed downstream merger. Creditors should be given an opportunity to assess the post-merger credibility of their debtor target company. [6].

However, the method of disclosing credibility of the company still remains an important issue. Audit reports that are prepared by the auditors in most cases don't include expert opinion about share exchange ratios and the level of any cash amount what will be paid to shareholders of the transferor company. Such expert audit report does not reflect possible impacts of a downstream merger on the transferee target company in a buyout transaction. In general, in most of the member states the companies are obligated to disclose their balance sheets into their commercial registers. One of the aims of such disclosure is to give creditors an opportunity to request security for their claims.

I agree with Sismangil [7] that this technique of disclosing the companies' balance sheets is questionable. It is not sure whether the creditors of a transferee target company will be able to get reasonable access to such balance sheet numbers of a transferor target company and evaluate their position as creditors for the post-merger period. Generally, balance sheets of the companies entering onto a merger contract are attached to the application for merger. Since balance sheets of transferor legal entities will only be registered with the trade registry in the place of their registered seat, it should not be reasonably easy for creditors to have access to them in order to examine them, because they will probably not going to be made public. This might lead to a conclusion that a downstream merger of a parent company into its subsidiary may lead to disadvantageous situation of the creditors of the subsidiary.

Considering the fact that the acquisition of vehicle of leveraged buyout operation transaction will in most case be an under-capitalized entity due to acquisition finance-related debts, depending on the balance sheet status of the transferee target company might cause an over-indebtedness of the latter, and therefore might be interpreted as an unlawful avoidance of the financial assistance rule.

3. Slovak and European approach

The aforementioned described transaction might be seen as illegal under Slovakian Law [8]. Slovak Commercial Code in its Article 161e stipulates the following:

1st subsection: "In connection with the acquisition of its shares by third parties, the company must not provide such persons with advances, loans, credits or securities".

2nd subsection: "The provision of Subsection 1 shall not apply to legal acts undertaken within the scope of the ordinary activities of banks or to legal acts undertaken in connection with the acquisition of shares by the company's employees or for the company's employees, provided such acts do not reduce the company's equity lower than the value of the registered capital increased by the reserve fund compulsorily created by the company under the law." As we can see from Subsection 1 of the Slovak Commercial Code the company must not provide any advances, loans, credits or securities to other parties in order to acquire the company's shares. Can the aforementioned situation when the target company merges with the acquiring company and therefore obtains its own shares and the assets of the target company are used for satisfaction of the debt be seen as the violation of the Slovak Commercial Code and therefore be seen as null and void?

In general, merger buyouts are a contentious issue that has stimulated debate between European scholars in the field of mergers whether or not to keep up with the financial assistance rule. The European Union has responded to this debate and adopted the EU Directive 2006/68/EC. In my opinion, the wording of the directive has shown the intention of the European Union to make the rules regarding the financial assistance less strict and enhance the business activities considering mergers that might bring economic benefits to the member states in the end.

From my point of view, the wording of the directive is not strict enough and it does not force the member states to implement the wording of the Directive into its national legislation. "Where member states permit a company to, either directly or indirectly, advance funds or make loans or provide security, with a view to the acquisition of its shares by a third party, they shall make such transactions subject to the conditions set out in the second, third, fourth and fifth subparagraphs [9]." The conditions stipulated in the Directive are related to the responsibility of the board management for such transaction, fair market conditions. The aggregate financial assistance granted to third parties shall at no time result in the reduction of the net assets below the amount specified in the Directive and the amount of financial assistance shall be included in the balance sheet of the company.

A significant deficiency of the Directive is the permission for the member states to allow a company to provide financial assistance not that the member states shall allow the companies to provide the financial assistance. It might have a greater positive impact on business enhancement if it was implemented in all member states. Nevertheless, Slovakia has not incorporated the Directive into national law and such financial assistance might still be deemed as void if performed by the company. The financial assistance prohibition is based on the fact that if a company incurs the costs of acquisition of its own shares, this might lead to a decrease in a company's value and would be contrary to the idea of the company's share

capital maintenance and might also lead to damaging the shareholders., Such financial assistance shall not always be seen as damaging the company or the shareholders and the Slovak jurisdiction should allow the companies to enter into such financial transaction. Approval of the shareholders for such transaction might be the solution and the proper implementation of the 2006/68/ EC Directive might achieve the desired outcome.

We might see a degree of resilience from other member states where such assistance is allowed by proper implementing 2006/68/EC of the Directive. Even though there are some exceptions allowed in Slovak Commercial Code (rules shall not apply to legal acts undertaken within the scope of the ordinary activities of banks or to legal acts undertaken in connection with the acquisition of shares by the company's employees or for the company's employees, provided such acts do not reduce the company's equity lower than the value of the registered capital increased by the reserve fund compulsorily created by the company under the law), however, in Slovakia financial assistance breaching the rules set forth in the Slovak Commercial Code would be deemed as null and void and the Board of Directors of a company might incur civil and possibly criminal liability for granting financial assistance to a buyer of the company's shares.

4. Conclusion

Based on the aforementioned, I agree with Figueira that downstream merger buyouts are not always the best financial structure for the possible buyers of the company's shares. Given that in this case the purchaser itself merges with the target and the purchaser ceases to exist, the transaction usually involves the acquisition of its own shares upon the merger and violates financial prohibition rules or specific provisions on the acquisition of own shares, since the debt (leverage) raised to finance the leveraged buyout will be directly (or indirectly) refunded by the target. The success of a downstream merger may also be dependent on the absence of a specific clause in the targets articles of association forbidding or limiting the acquisition of own shares [10].

Despite the financial assistance rules valid in Slovakia, Slovak commercial law provides for some options to finance such transactions without violating the financial assistance rules stipulated in the Slovak Commercial Code as the "market itself" developed some techniques avoiding forbidden financial assistance. First of all, the best technique to avoid the possibility of violation the financial assistance rules is to enter into an upstream merger of the target and the acquiring company. Then, the target ceases to exist and the acquiring company does not acquire its own shares. The target company might after the shares acquisition by the acquiring company distribute a huge amount of dividends to the acquiring company that will be used to repay the debt that the acquiring company incurred in order to obtain the shares of the target company. Right for the dividend is one of the most important rights of the shareholders and it would be very harsh to see such transaction as the violation of the financial assistance rule.

These are the financial structures that in my opinion do not meet the criteria for the financial assistance rule violation.

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GLOBALIZATION – INFORMATION SOCIETY – GLOBAL SOCIETY – WHAT IS THE MOST IMPORTANT FACTOR IN THE FOLLOWING RELATION?

Agnieszka Rzepka

Lublin University of Technology
 Department of Management
 ul. Nadbystrzycka 38d, 20-618 Lublin
 +48 696476889
 a.rzepka@pollub.pl

Abstract: *One of the most important events in the modern world is a progressive globalization process [1]. It supports the rapid development of new technologies [2], bringing in changes in the economic and social planes. These changes are established in the so-called globalization of the great virtual discoveries (last quarter of a century). Globalization is a multifaceted and multidimensional process defined in many ways, which was developed with varying intensity until the late nineteenth century and in the last decades of the twentieth century acquired particular significance[3]. Each civilization is characterized by a different model of society and the economy functioning „The change of civilization model displaces existing models of not only the economy in general, but also the management, investment, trade, education, labor, employment, consumption, even the governments and family models that quickly become outdated. The majority of communication production and trade exchange methods transform.” Information society and interdependent technical progress are important, if not the most important, components of contemporary globalization. The aim of this article is to find answers to the following questions: 1) Is there a correlation between globalization, information society and the global society? 2) What affects the process of globalization; can it be clearly defined? 3) Are there any factors, and if yes, what is the most important factor in the following relation: globalization - information society - global society ?*

Keywords: *globalization, information society, knowledge-based economy, global society*

1. Introduction

At the beginning of the twenty-first century modification of the economy and communication, especially finance, banking, management and communication of information occurred. Today, the media shape the image of globalization in the minds of millions of people in a local and transnational communities. Through the satellite technology, the Internet and digital television, almost at the same time all over the globe reports of scientific discoveries, political and economic events crop up.

1.1. Globalization

The changes described above are colloquially referred to as globalization. This word, however, because of its frequent use in different contexts, loses uniqueness and becomes a term that is completely differently understood by various social groups. Multidimensionality of globalization makes extremely hard to understand this growing and omnipresent process. Most often globalization is analyzed in social and economic context. The concept of globalization occurred in our consciousness as a term defining economic processes. It is difficult to determine the precise time of the creation or development of the phenomena of economic globalization. Many researchers discern primary forms of globalization, its archetypes, in the Phoenicians, in ancient Rome, or the Middle Ages. However, there is no doubt that the economic order formed after World War II had all the hallmarks of the global order [4].

Firstly, on a regional scale: Western Europe, part of Asia, North America, and after the collapse of the ideological dichotomy of the world in the last decades of the twentieth century took on global features. On the eve of the twenty-

first century it has evolved unrestricted by any geographical limits or ideological system of the economy functioning named by researchers and analysts of globalization as the economy of globalization era [5].

Globalization in general sense may be understood as a process that is formed by world-wide phenomena and activities. To present this problem in a more specific way, globalization is a historical process and spontaneous process of liberalization and progressive merging of goods, capital and labor markets, technology and information in one interdependent market. It is a phenomenon of bigger and bigger correlations and increasing interdependencies between countries, groups of countries, their economies and enterprises. Globalization is thus an increase in internationalization of national economies and a clear penetration and convergence of markets [6].

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Globalization changes the nature of social relations by intensifying the disappearance of the "national society" model. By contrast, the organization of global society is indispensable because such a society must regulate deficiencies in the *global system of capitalism* [8].

1.2. Information society

Global society is undoubtedly the future. Today, the term information society is commonly used in which the main „capital is information"[9]. It should be, however, stressed that in such a society globalized information and globalized economy constitute its determinants.

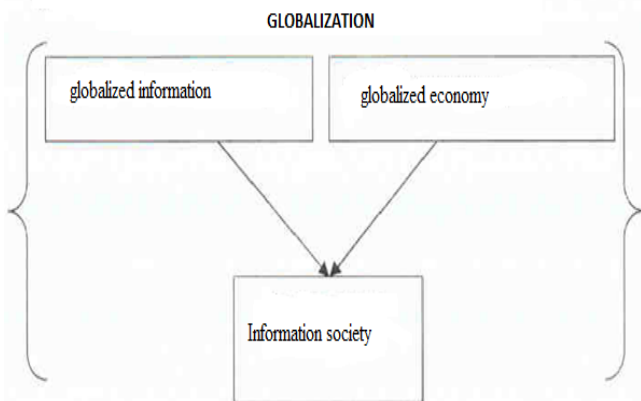


Figure 1: Information society and globalization.

Source: own study on the basis of: A.S. Targowski, *The Taxonomy of Information Societies* [in:] *Global Information Society. Operating Information Systems in a Dynamic Global Business Environment*, edited by Y. Chen, Hershey, London 2005, p. 3.

Globalization in the economic category - globalization of markets means that we make use of economic possibilities located in various parts of the world. Globalization is often interpreted as a global source of development of communication technologies and movements of capital. However, in a most simplified way, it may be understood as the expansion of trade and investment abroad[10].

Therefore, it may be said that we live in a world of globalized markets. Yet, it should be noted, that globalization is no longer solely seen in the category of world trade in goods and the ability to communicate across the globe. Production, trade and communication are factors that in the modern world are more often vulnerable to unstable actions[11].

One reason for this instability is too high concentration of capital in one sector, which makes the rest of the system exposed to slump. The growing digitization of economic activity and electronic flow of capital contributes to it[12]. At the top of the "list" is globalization of knowledge which is the result of lower costs of communication and information exchange. Transfer of knowledge which "reinforced" globalization, is, in turn, one of the major factors contributing to growth in emerging markets. Globalization of knowledge includes not only technical knowledge, but also the ideas that transform both communities and markets[13].

Ability to manage the current phase of globalization is getting out of control. Globalization involves a closer integration of countries in the world and this causes a greater interdependence. Socio-economic success in particular regions of the world depends on how it is possible to manage globalization in most efficient way.

Globalization has therefore become a phenomenon with which one can demonstrate clear differences between industrialism and age of networking[14].

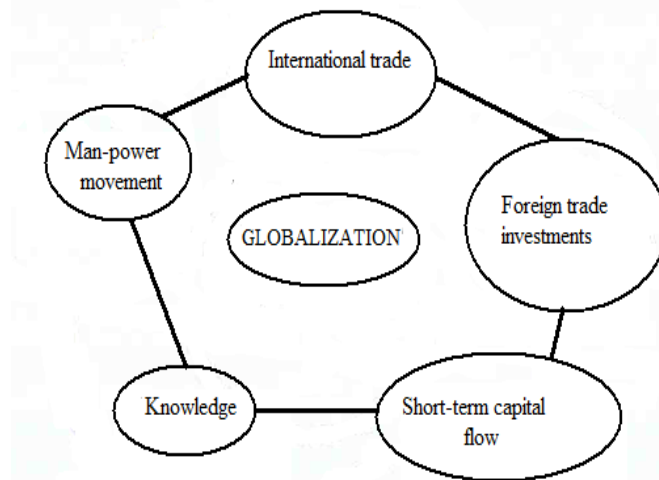


Figure 2: Elements of globalization

Source: J.E. Stiglitz, *Globalization and growth in emerging markets*, "Journal of Policy Modeling" 2004, No. 26, p. 470

We live, therefore, in a new economy, which consists of three pivotal features: 1) it is informational, that is, capable of generating processing and information management determines the productivity and competitiveness of all economic units, 2) new economy is global - financial markets, science and technology, international trade in goods and services, 3) the new economy is networked [15].

Today, the term technocapitalism begins to dominate, which was defined by S. Best, and D. Kellner, which is understood as a decline in the role of the state and increase in the role of the market, connected with the strengthening of transnational corporations. In other words, Best and Kellner specified the approach to globalization as a synthesis of economic and technological development[16]. R. Kuźniar writes[17]: „The processes of globalization are the source of the polarization of the international community. The dividing line created by globalization differs from those that have until recently determined the structure of international reality (ideology, imperial spheres of influence). It is the dividing line between the rich and and growing number of poor people. This line runs across countries and regions, and also inside societies in different countries. (...) Strobe Talbott wrote about new bipolarism, which is no longer the Iron Curtain between East and West. This is a line between stability and instability, integration and disintegration, welfare and poverty"[18].

There is also a division between what is 'local' and 'global'. The differences between this "localism" and "globality", and even more particularly between local man and global man, are enormous. According to Z. Bauman: "In a globalized world, locality is perceived as a sign of social

discrimination and degradation. The disadvantages of existence in local conditions result from the fact that public space, in which the meaning is created and negotiated, is beyond the reach of local existence, and therefore, locality more and more relies on sense creating and interpretive activities over which there is no control.

Also, the technology has contributed to the polarization of the global society, "progress measured by the number of mobile phones, fax machines, computers, internet connections per 1000 population is very large" but the author immediately adds that "the distance that divides the group of developed countries from developing ones and the third world countries is visible"[19]. Furthermore, "eliminating the time and spatial distances owing to technology not only unified human condition but polarized it. It liberates some individuals from the territorial bonds, and gives some of the factors that constitute the community an extraterritorial meaning, at the same time, however, the territory deprived of meaning, in the borders of which the others still live, becomes deprived of the potential to determine human identity" [20].

Along with the formation of new economy the information society is created. In recent years, in publications describing the issue of globalization, more and more often the concept of the information society appears, which function in an international scale. Development and progressive standardization of processing, collecting and transmitting data have become the main reasons for the describing the modern civilization as a "global village" in which the information is transmitted quickly between continents via telecommunications connections.

The information society is a society in which the information is treated as a commodity perceived as a particular kind of non-material good, equal or even more valuable than material goods. In this society the development of "3P" services occurs (storage, transmission and processing of information). The term information society refers to the technical tools of communication, storage and conversion of information [21].

In the information society, more and more spheres are subject to regulation via the market which becomes a universal *locus* of individual and collective life, and less and less is governed by public sphere. The structures of values are based in a lesser extent on the structure of thinking of business people and people from the field of technology [22]. The state loses its strength, the information society is even more market-based than the industrial society was.

2. Conclusion

In conclusion, I believe that the concept of the information society gives the basis to think about the existing paradigms relating to the knowledge-based economy once again. This results from the fact that from the point of view of an individual who is a member of this society, on the one hand, the man becomes more than ever a member of the global society, and on the other, the society allows the man to express individuality more fully. An important element between the knowledge-based economy and

information society is electronic currency. In relation to the process of globalization, we must take into account the dynamic growth of the knowledge-based economy, e-business and e-money. All of these factors may allow us to create a synthetic vision of globalization.

To sum up, I would like to associate this definition with the view of A. Müller who wrote that [23], If we assume as an axiom that globalization is a function of technical progress, we should recognize the statement expressed as Fukuyama that the process of globalization is unstoppable and that it is impossible to inhibit the development of technical progress as true [24]. That means, in my opinion, that **globalization is unstoppable**.

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THE STRUCTURE OF PUBLIC DEBT IN EUROPE

Elena Širá – Ivana Kravčáková Vozárová

University of Prešov, Faculty of Management

Konštantínova 16

Prešov, 08001, Slovakia

00-421-51-777 59 11

elena.siral@gmail.com – ivana.vozarova@smail.unipo.sk

Abstract: *This article deals with analysis of the structure of public debt in selected countries. The countries were divided into 2 groups, according to currency (euro or non-euro European countries). For better evaluation we used data per one year for structural analysis of public debt. We analysed the structure of public debt according to the following criteria: instruments and different government levels of the year 2013.*

Keywords: *structure of public debt, public debt*

1. Introduction

There are the differences among individual approaches to define public debt in professional literature. "From the perspective of economic theory, it is necessary to define "public debt" not only as the subject (who owes), but mainly as its content (what liabilities are included in it)" said [4], [13].

"Public debt is the sum of claims of other economic entities in relation to the state, regardless of whether they are incurred through fiscal way or otherwise" Hontyová states. [6]

In addition to the creation of public debt through budget, there may exist other causes of the debt outside the budget - taking over the liabilities of another entity, or deficits of extra-budgetary funds. [1], [3] Peková defines the term public debt as "the sum of claims of other economic entities to the state, the individual levels of local governments, public funds and other institutions of the public sector." [10] Thus, it is the debt of the government and other institutions included into the public sector. [2] Public debt can be seen as "the cumulative amount of all previously incurred and outstanding government borrowings and interest on those loans." [9]

Dvořák states mutually dependence between the public budget deficit and public debt, the budget deficits in many countries are one of the most important cause of the emergence and growth of public debt (i.e. long-term fiscal imbalances). [4]

Classical theory of Adam Smith refused deficient state economy and promoted golden rule equilibrium of the state budget. A significant change occurred in the 1930's, when the birth of a new macroeconomics was influenced by J. M. Keynes. The essence of his teaching was to increase economic growth by increasing demand from the state. [7] Stimulated aggregate demand would be caused by the growth of the state budget. This would result in higher long-term growth of potential and then the current gross domestic product due to larger scale of capital. Thus there was admitted the possibility of the transition of deficits caused by growth of the state budget expenses. The tool of Keynesian fiscal stabilization policy has become in addition to government spending also

progressive income taxes designed to have an impact on the amount of disposable income. Already in the 1970s, there appeared a criticism of this theory due to slowing down or stop of economic growth coupled with high inflation and rising unemployment in many countries. Monetarists came with the view that government intervention in the economy is undesirable and it must be fundamentally limited. They criticized the rising inflation rate, which reduces the propensity to invest, restricts economic growth and thereby promotes growth of unemployment. Inflation is caused just by the state budget deficit leading to public debt. Debt is subsequently covered by loans in the money market, which causes an increase in loan demand and thus the rise in interest rates. [11]

2. Material and methods

This paper points out the structure of public debt in European countries according to quarterly data in the year 2013. The countries were divided into 2 groups, into countries with euro and with own currencies.

The structure of public debt was analyzed according to the government's level and then according to the instruments. For this analysis there was selected the year 2013.

Based on the current ESA 95 methodology, government sector is divided into four levels according to the different degrees of responsibility:

- Central government,
- State government,
- Local government,
- Social Security Funds (SSF). [5], [8]

Social Security Funds as parts of Central government are in the UK, Malta and Cyprus.

Based on the current ESA 95 methodology, there are included into the structure of public debt three groups of financial Instruments, used to its clearance. They are:

- Securities,
- Loans,
- Currency and deposits. [5]

For better analysis and comparison European countries have been divided into two groups, namely the countries

that have adopted the € and those that do not have adopted the €.

3. Discussion and results

We analysed the structure of public debt according to government levels in 2013. We distinguish 3 basic levels; central, state and local governments and Social Security Funds. From the figure 3 we can see, that between countries with own currencies, there are 4 countries with the amount of central level of public debt in scale 60 % – 90 %. The smallest part of the national debt at the central level was in Norway (60 %). In other countries the public debt on national central level is more than 90 %.

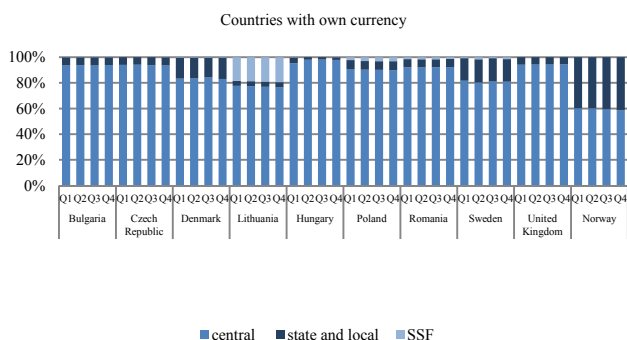


Figure 1: Structure of public debt according to government levels in 2013

When we compare the situation in the countries using €, we can see, that half of the countries has the amount of central level of public debt in scale 60 % – 90 %. The smallest part of the public debt at the central level was in Germany and Estonia (60 % – 70 %).

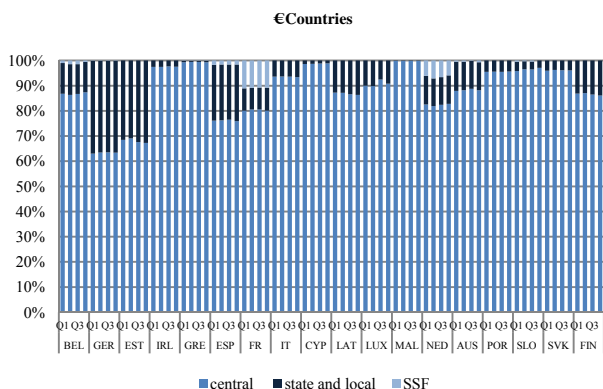


Figure 2: Structure of public debt according to government levels in 2013

The structure of public debt according to the instrument is divided into 3 types: currency and deposits (C & D), securities and loans. Overall, the proportion of Currency and deposits in the year 2013 in both groups of countries is less important, in some cases it did not occur at all. For most countries, with own currencies, there is the

dominant use of securities. In these countries we can see, that public debt was created mainly from securities.

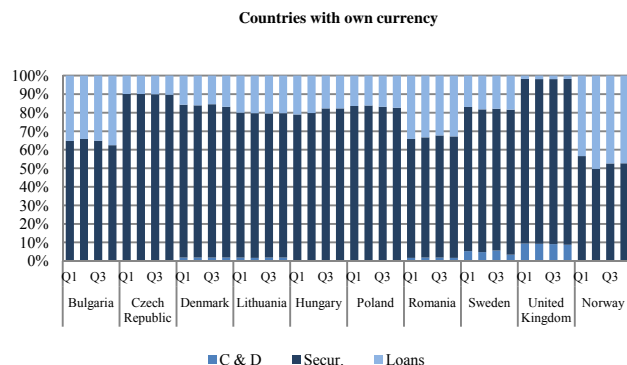


Figure 3: Structure of public debt according to instrument in 2013

In the case of countries with €, there is different situation. In Estonia, Greece, Cyprus and Latvia, there was covered public debt mainly from loans.

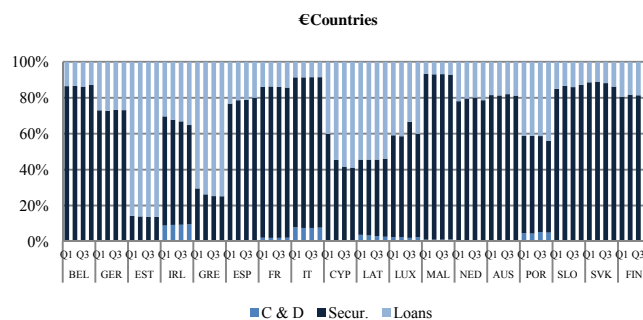


Figure 4: Structure of public debt according to instrument in 2013

4. Conclusions

Public debt is now in almost all countries in the Europe high [12] and in the near future, we cannot expect its significant reduction. Rather, it envisages that the old debts will be repaid from funds received from the sales of new government bonds. It is questionable, if the required return from new bonds will be acceptable for the states.

Subsequently, we analyzed the structure of public debt for the year 2013 in selected countries according to the government's instrument and level. We find there different situation between € countries and others. In some € countries, there was covered public debt mainly from loans. The question is how this situation affects the stability of euro zone in the future.

Acknowledgements

This paper is an output of the project KEGA- 032PU-4/2013 - Aplikácia e-vzdelávania vo výučbe

ekonomických disciplín študijného programu Manažment a nových akreditovaných študijných programoch na Fakulte manažmentu Prešovskej univerzity v Prešove and VEGA 1/0726/14 - Experimentálne skúmanie tendencií ekonomických agentov ku korupcii.

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LABOR MIGRATION AGREEMENTS WITHIN THE EURASIAN COMMON ECONOMIC SPACE

Spartak Tulegenov

High School of Economics
Kaprova 10, 25
Prague, 110 00, Czech Republic
+ 420 774306762
Nibelung_9@mail.ru

Abstract: *The Common Economic Space between Russia, Kazakhstan, and Belarus was launched in 2012. Since then countries experience unification and harmonization of various economic and social policies contributing to creation of common space. The paper addresses certain labor agreements between Russia, Kazakhstan, and Belarus in context of newly emerging unified migration policy from historical perspective. The key agreements which took place in 2010 provided certain benefits for the migrants across the Eurasian Common Economic Space are addressed in details. The paper also focuses on the studies which provide assessments of these benefits and drawbacks.*

Keywords: *labor agreement, integration, migration policy*

1. Introduction

The ongoing integration process that takes place between Belarus, Kazakhstan, and Russia has now offered access to the labor market across the territory of the CES (Common Economic Space) to citizens of member states. At present, citizens of all three countries do not need to apply for special work permits, and workers from the CES member states should be treated as a domestic workforce. Many studies within the CES today use the term “Eurasian migration system” applied to a formed structure with a powerful center of attraction of the workforce, focusing first in Russia and then spread to Kazakhstan. Currently, these two states are most attractive for immigrants and foreign workers from other post-Soviet countries [1]. Researchers also note that this happened due to the fact that Russia and Kazakhstan began to differ from other neighboring countries in terms of socio-economic stability, labor market capacity, and high level of wages. These factors, combined with the geographical proximity, the visa-free regime, ease of border crossing, common culture and language form flows of migrant workers within the CIS (Commonwealth of Independent States) in favor of Russia and Kazakhstan [2], [3], [4]. The paper highlights the agreements which occurred before creation of the union and thereafter focusing on particular qualitative assessments of the consequences.

2. Labor migration agreements

The start of regulation of migration processes in CIS countries dates back to October 9, 1992 when an agreement “On the visa-free travel for citizens of the CIS countries on the territory of CIS” was signed in Bishkek. It was determined that citizens of the CIS shall have the right to enter, leave and move within the territory of the CIS without visas if they have documents proving their identity or supporting their citizenship. Later, on November 13, 1992 an agreement “On mutual recognition of visas of the CIS member states” was signed in Moscow. It stated that “each Party recognizes entrance, exit and transit visas issued to foreign citizens by the competent authorities of the Parties”. These first agreements between the CIS

countries kept the vital visa-free regime on the large territory of the former USSR.

The next stage or a new direction in migration management at the regional level was associated with the strengthening of the process of economic and political integration. Examples of such cooperation include the creation and development of the Union State of Russia and Belarus, the Eurasian Economic Community, The Collective Security Treaty Organization, GUAM Organization for Democracy and Economic Development, and Central Asian Economic Community [5]. In April 1998, when the Eurasian Economic Community was established, the Statement “On Ten Simple Steps Towards Ordinary People” was adopted as one of the most important steps towards improving the living conditions of the population aimed to “ensure that citizens have free and equal right of crossing borders”. This Agreement provided that the Parties will take steps to organize checkpoints at state borders, as well as in international airports, introduce the simplified order, including, if necessary, the establishment of special “corridors”. These agreements were elaborated in May 2000, in Minsk, with the decision of the Interstate Council of Heads of States approving basic areas of cooperation in the humanitarian sphere between these states. An important provision was to preserve the existing visa-free crossing, while holding a single visa policy towards third countries. Later, the integration process concerning single migration regime continued. In November 2000, the Governments of Belarus, Kazakhstan, Kyrgyzstan, Russia, and Tajikistan signed one more agreement on mutual visa-free travel of citizens.

It is necessary to mention that during disintegration years many countries also had to sign bilateral agreements. The main reasons for the transfer of the regulation of migration processes from international agreements to bilateral was the increase of illegal migration, organized crime, smuggling of weapons and drugs in the CIS, and the impossibility of ensuring security in the framework of agreements between member states [2].

For example, the Russian Federation has concluded several such agreements with the Republic of Kazakhstan: the Agreements of January 20, 1995 “On the Legal Status of Citizens of the Russian Federation permanently residing in the territory of the Republic of Kazakhstan, and the citizens of the Republic of Kazakhstan, permanently residing in the Russian Federation”, “On the simplified procedure of acquisition of citizenship by citizens of the Russian Federation arriving for permanent residence in the Republic of Kazakhstan, and citizens of the Republic of Kazakhstan, arriving for permanent residence in the Russian Federation”; the Agreement of 26 January, 1995 on cooperation of border regions of Republic of Kazakhstan and the Russian Federation; the Agreement of July 6, 1998 “On managing migration and protecting the rights of migrants”. Since October, 2007 Russia and Kazakhstan agreed to coordinate migration policy, strengthening cooperation in solving migration problems. Also, the Republic of Kazakhstan is a party to a number of bilateral agreements with other Central Asian countries regarding labor migration. In addition, since 1st January 2013, Kazakhstan introduced a new law under which citizens of the three countries - Russia, Belarus, Kyrgyzstan can engage in individual enterprises. Kyrgyzstan had privileges, despite the fact that the country is not a member of the CES. However, until now Kyrgyzstani workers in Kazakhstan in majority do not have registration or necessary permits as labor migrants, not to say about individual entrepreneur registration [5].

The birth of the integration structures between the CES members gave birth to a new stage of regulation of labor migration; in 2010 Russia, Kazakhstan and Belarus signed agreement to allow their citizens to seek employment freely in the territory of the created Customs Union. As concerns Russia and Belarus results of studies state that some steps to ease the migration regime were made on the basis of bilateral agreements prior to creation of mentioned integration structures, that is in fact there was a single labor market within these states already before 2008 [2].

On November 19, 2010 core important “Agreement on the Legal Status of Migrants and Their Families” and “Agreement on Cooperation against Illegal Labor Migration from Third Countries” were signed in St. Petersburg in order to protect rights of labor migrants inside the CES and protection of the common market from illegal migrants from third countries. These agreements elaborated further on the harmonization of legislation on migration and employment of foreigners; highlighted the concept of exchange of information and experience concerning regulation of illegal labor migration and combating illegal employment. The first agreement stated that citizens of Russia, Belarus, and Kazakhstan received exempt from registration in the police departments within 30 days and free order of employment in the Russian Federation, Belarus and Kazakhstan for citizens of any of these states. In particular, a simplified procedure for the conclusion of an employment contract for these countries was introduced and the time limit for actions needed for migration registration and maximum period of temporary stay of a migrant worker and the members of his family

from one State Party in the territory of another State Party were prolonged. Migrants within the CES acquired rights to join labor unions, children of a migrant worker who live together with him/her in the State of employment (Russia, Belarus or Kazakhstan) acquired right to visit schools in that State, family members acquire right for the same conditions for free healthcare and social security services as citizens of the country. The framework for taxation of income of migrant workers was worked out to avoid double taxation of citizens of the CES states.

These agreements signed in St. Petersburg in 2010 were evaluated positively by many experts [1], [3], [6], [7]. Although, some drawbacks were mentioned, like the introduction of the rules on the non-recognition of certain restrictions on employment migrant workers as discriminatory, for example, in the framework of the measures taken by the member states against unemployment. The agreement also did not contain many definitions in the field of labor migration, or those definitions (for example, a key – “migrant worker”), do not meet internationally recognized standards [3]. In Russian legislation, for example, the generic term “migrant” is missing [1]. The mentioned study broadly explains the confusions which can arise concerning different juridical definitions among member states. A thorough analysis conducted concludes that the most secured in terms of legislative recognition of basic concepts (migration, migrants, migrant, illegal migrant) and the regulation of the legal status of the migrant appears to be the legislation of the Republic of Kazakhstan. It also stresses that it should be noted that the legal effects of the investigated Agreement have unambiguous priority over the laws of the Russian Federation and Kazakhstan. However, according to the Constitution of the Republic of Belarus (legal act of higher legal force in the territory of that State) there is confusion about priorities.

However, in general, the evaluation is mostly positive and corresponds to the first agreement. The second agreement was regarded as mainly determining the forms and methods of cooperation in the field of combating illegal migration from third countries [1]. According to one more study this agreement represents a more ideological than a practical document. It repeats the errors of the Russian legislation on the legal status of foreign citizens in the Russian Federation adopted in 2002, which equated the CIS citizens and foreign nationals from countries of the so-called “far abroad” setting both categories on almost identical conditions of employment in Russia [3].

It is important to mention here that the degree of cooperation has been greater between Belarus and Russia than between Belarus and Kazakhstan. As concerns migration, Russia and Belarus enjoy wider sets of rights for their citizens in each other’s countries (for instance, migrants are able to acquire their work experience cumulatively from both countries). The researchers from Belarus note that the framework of bilateral inter-agency treaties on cooperation in the field of migration is better developed with Russia than with Kazakhstan, which certainly needs to be rectified [8]. The same study argues that with potentially greater interdependence in the

common labor market, there is a need to further align national legislation with international treaties regulating labor rights expressing idea of a coordinated approach in migration policy [8]. Researchers from Belarus state that certain benefits would be received only after harmonization of migration policies across the CES states elaborating on almost the same list of measures to be done by the governments.

To sum up, the legal framework of the Common Economic Space concerning migration legislation was formed and necessary prerequisites for the emergence of a common labor market, which demands now unification of migration policies, were set.

3. Conclusion

As Kazakhstan experienced economic growth since 2000s it also gradually became a migrant-recipient country. Simplification of border regime with Russia in the framework of the CES may also increase flow of workers to the territory of Kazakhstan for transit to Russia.

There are certainly positive actions taken in the framework of creating common labor market as evaluated by researchers. The agreement "On the Legal Status of Migrant Workers and Members of Their Families" undoubtedly expanded the benefits that may be used by the labor migrants. As a result, workers who have arrived from the CES member countries can enjoy the same professional and social preferences, e.g. the placement of children in schools and preschools or the possibility to use the services of medical institutions. In accordance with the decision of the Supreme Eurasian Economic Council of 19.12.2011, administrative procedures, including permits and quotas for the workforce will be removed. Despite such liberalization of the labor migration, countries still try to protect their interests. There are rules which provide special regulation when it comes to the protection of national security, particularly, in industries of strategic importance. Here, the state has the right to establish limitations. As it was mentioned, measures of States aimed at social protection against unemployment also leave ambiguity [5]. Nevertheless, most of Kazakhstani national researchers contradict to that by evaluating the fact that from January 1, 2012 the citizens of the Common Economic Space are no longer necessary to obtain work permits to migrate inside the Union with an assumption about severe facilitations in labor market [7]. The adoption of the agreement excluded the work permit procedure that countries have established in order to protect the domestic labor market for the member states, according to them.

A rather long period of stay is allowed in the territory of the CES member states without the need for them to get registered with corresponding government bodies, and the scope of rights that they enjoy in the member states is practically equal to the rights enjoyed by citizens of the countries of stay now. Equal rights are ensured in education, property relations, including real estate, labor relations (employment, remuneration and labor terms, working schedule and leisure time, work safety; social security, and medical care). The only exceptions are the rights to elect and be elected to the highest public offices

and representative government bodies in the country of stay. The degree of integration in this area is also emphasized by the fact that Russian and Belarusian citizens enjoy the same rights to elect and be elected to elected bodies in the Union of Belarus and Russia [8].

In general, considering the legal framework regulating labor migration, some of the researchers postulate that it is not formed yet [3]. However, as concerns practical measures, other researchers believe that a number of international legal acts successfully implemented today laid the foundation for emergence of conditions for pursuit of coordinated migration policy, convergence of national legislations in the field of migration, and enhanced cooperation and information exchange between governmental and non-governmental institutions in the field of migration [8].

In November, 2013 the Kazakhstani parliament adopted amendments to the law on labor migration, which simplify the procedure for issuing permits for foreign labor individuals, establishing a maximum period of temporary residence in the Republic of Kazakhstan for labor migrants (no more than 12 months) and regulating the size of the individual income tax revenues. These amendments eliminate the gaps in the labor legislation of the employment of migrants in the households, legalize their work, increase tax revenues and generally contribute to the regulation of migration processes [3]. At the same time, there is a clearly discernible trend towards a reduction of attracting foreign labor and preferential appointment of local leaders and experts in Kazakhstan organizations and companies. This policy has led to a paradox in the labor market of Kazakhstan, where there was, on the one hand, the shortage of staff, on the other hand - the excess of specialists who are looking for and cannot find a job that they want. In 2013 the deficit was observed in sectors such as construction (especially civil and road), engineering, agriculture, food and health care [3]. Possibly, the adoption of key agreements in 2010 could partially solve the problem by attracting labor force from Russia. However, a certain amount of time should pass in order to make correct conclusions whether this helped or not.

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OMBUDSMAN IN POLAND – AN ATTEMPT OF EVALUATION

Aneta Makowiec - Bogusław Przywora

Jagiellonian University

Gołębia Street 24

31-007 Krakow, Poland

(+48) 512501260, (+48) 667520759

aneta.makowiec@uj.edu.pl - bprzywora@op.pl

Abstract: *The subject of this essay's analysis is the presentation the legal framework for the Ombudsman (hereinafter referred to as Ombudsman or Polish Ombudsman) in Poland and to evaluate the effectiveness of this institution. It should be emphasized that this institution belongs to the catalog of fundamental institutions in a democratic state, standing on guard to protect the rights and freedoms of citizens. The study incorporated many levels - the Constitution of the Republic of Poland of 2 April 1997, the Ombudsman Act of 15 July 1987 and the analysis of annual reports of the Ombudsman concerning actions undertaken by him and the level of observance of human and civil rights and freedoms.*

Keywords: *Ombudsman, Polish Ombudsman, the Constitution of the Republic of Poland of 2 April 1997, civil rights and freedoms, the Ombudsman Act of 15 July 1987*

1. Introduction

The Ombudsman (hereinafter referred to as Ombudsman or Polish Ombudsman) in Poland belongs to the fundamental institutions of a democratic state safeguarding the protection of civil rights and freedoms. This issue is widely described in literature [1]. This paper attempts at evaluating the effectiveness of this institution. The study incorporated many levels: the Constitution of the Republic of Poland of 2 April 1997 (hereinafter referred to as Polish Constitution or basic law), the Ombudsman Act of 15 July 1987 (hereinafter referred to as Ombudsman Act) and the analysis of annual reports of the Ombudsman concerning actions undertaken by him and the level of observance of human and civil rights and freedoms [2].

2. The notion of Ombudsman

The basis for the establishment of the Ombudsman institution was the idea of ensuring, to the greatest possible degree, that the constitutional rights and freedoms of human will be observed by public authorities, improving legislation within the area of human rights and shaping legal awareness [3]. What should be underlined is the fact that in various countries these bodies are called differently. "Ombudsman" is the term that is most often encountered in the literature. It originated from the first institution of this type established already in the 18th century in Sweden [4]. The fundamental features of the Ombudsman that can be determined are:

- 1) in principle, an independent constitutional state authority, explicitly separated from the executive branch and the judiciary;
- 2) an authority whose functions are incorporated within the control functions of the parliament; nevertheless, in relations with the parliament, the Ombudsman has a great level of independence despite organizational connections with the legislative branch;
- 3) an authority whose objective is to hear citizens' complaints about improper acts particularly of the executive branch as well as to undertake actions remedying violations occurred;

- 4) an authority operating in a not very formalized manner, which results in an easy access for citizens [5].

The institution of the Ombudsmen was established in Poland in 1987.

3. Political position of Ombudsman

The Ombudsman is a constitutional state authority independent of bodies of public administration and the judiciary. The constitution makers classified the Ombudsman under the category of bodies for legal control and protection. The adopted solution should be evaluated positively since it enables the performance of the tasks that the Ombudsman is entrusted with: safeguarding the rights and freedoms of the human being and citizen defined in the Polish Constitution and other regulations (Article 208 (1) of the Polish Constitution). Analyzing the content of this provision within the light of Article 87 of the basic law, we should assume that the term "other normative acts" includes not only statutes but also international agreements and regulations. Consequently, the scope of the Ombudsman's competence do not include the rights of the individual arising out of contractual relationships which are subject to the jurisdiction of courts. The Ombudsman may enter into this sphere only in situations that represent an infringement of legally defined court procedures [6].

Moreover, in cases concerning children, the Ombudsman cooperates with the Ombudsman for Children. In cases concerning the protection of freedoms and rights of human being and citizen, the Ombudsman examines whether the existing law, principles of social co-existence or social equity were violated as a result of an act or omission of authorities, organizations or institutions obliged to respect these freedoms and rights. The Ombudsman functions also as a reporting body for the prevention of torture and other cruel, inhuman or degrading treatment or punishment (national mechanism of prevention) within the meaning of the Optional Protocol to the Convention against Torture and other Cruel, Inhuman or Degrading Treatment or

Punishment adopted by the General Assembly of the United Nations in New York on 18 December 2002.

The legal nature of the Ombudsman institution was defined in particular by the manner of appointing the Ombudsman, its mode of operation and first of all, by its position with regard to other state bodies. The guarantee of effectiveness of the Ombudsman's operations is its sovereignty and independence of other state authorities [7]. The constitution makers determined that the Ombudsman in its operations is sovereign and independent of other state authorities, and he is answerable only to the Sejm under principles specified by law (Article 210 of the Polish Constitution). The basic law defined also the manner of appointing the Ombudsman. Pursuant to the applicable law, the Polish Ombudsman is appointed by the Sejm upon the approval of the Senate for the term of 5 years (Article 209 (1) of the Polish Constitution). It should be underlined that the actual term of the Ombudsman may exceed the 5-year term in certain situations. Under Article 3 (6) of the Ombudsman Act, the current Ombudsman holds the post until the office is taken by the new Ombudsman. If the parliament cannot appoint the new Ombudsman, the current Ombudsman holds the position until the parliament appoints the new Ombudsman, and the new Ombudsman takes an oath before the Sejm [8]. However, the office cannot be held by one person longer than two terms.

Relations of the Ombudsman with the parliament are characterized by a great degree of independence both in terms of organizational and functional relations [9]. The procedure of dismissal is regulated in Article 7 of the Ombudsman Act, defining in detail the list of reasons entitling the Sejm to dismiss the Ombudsman prior to the end of the term (if: the Ombudsman resigned, became permanently incapable of performing his duties because of illness, disability or decline of strengths – confirmed by a medical certificate, filed a false vetting representation, which is confirmed by a final court ruling, acted against his oath).

The Ombudsman must be a Polish citizen of outstanding legal knowledge, professional experience and considerable authority resulting from the individual's moral values and social sensitivity. The expression "of outstanding legal knowledge" is not tantamount to legal education. In the case of qualifications required to pursue legal professions, the legislator directly refers to the requirement of formal legal education. In practice, because the Ombudsman apart from measures of demand nature has also litigation rights (option to bring an action before the court, lodge complaints with the administrative court, file cassation appeals with the Supreme Court and applications with the Constitutional Tribunal), the requirement of at least higher legal education should be considered a minimum standard [10].

Holding the office of the Ombudsman requires certain guarantees. That is why the basic law introduced a list of prohibitions and limitations. The Ombudsman may not hold any other post, except for a professorship in an institute of higher education, nor perform any other professional activities, belong to a political party, a trade union or perform other public activities incompatible with

the dignity of his office (Article 209 (2 and 3) of the Polish Constitution).

Another guarantee of the independence of the Ombudsman is the immunity granted and personal inviolability [11]. The Ombudsman may not be held criminally responsible nor deprived of liberty without prior consent granted by the Sejm. The Ombudsman may be neither detained nor arrested, except for cases when he has been apprehended in the commission of an offence and in which his detention is necessary for securing the proper course of proceedings. The Speaker of the Sejm is notified forthwith of any such detention and may order an immediate release of the person detained (Article 211 of the Polish Constitution).

The constitution makers granted the Ombudsman the right to make applications to the Constitutional Tribunal regarding secondary review of constitutional conformity (Article 191 of the Polish Constitution). The Ombudsman is granted other powers under the Ombudsman Act.

The Ombudsman takes measures: upon a request of citizens or their organizations, a request of bodies of local governments, a request of the Ombudsman for Children, on the Ombudsman's own initiative (Article 9 of the Ombudsman Act). A request is free of charge. It does not require any special form. It should contain a designation of the applicant and the person whose freedoms and rights the case concerns as well as define the subject-matter of the case. The Ombudsman upon the examination of each application may: take up the case, instruct the applicant as to the actions the person is entitled to take, refer the case to the competent body, not to take up the case advising the applicant and the person involved on the actions they are entitled to (Article 11 of the Ombudsman Act). Having taken up a case, the Ombudsman may: carry out his own investigation procedure; request that the case or a part thereof be investigated by relevant agencies, especially agencies involved in the supervision, prosecution, and state, professional or public audits; request the Sejm to commission the Supreme Audit Office to investigate the specific case or a part thereof (Article 12 of the Ombudsman Act). The literature distinguishes between various categories of measures for the protection of rights and freedoms that the Ombudsman may use: measures of auditing and investigative nature, measures of signaling and interventionist nature, measures of inspirational nature, as well as measures of informational and educational nature [12].

The constitution makers obliged the Ombudsman to annually inform the Sejm and the Senate about his activities and the level of observance of the freedoms and rights of persons and citizens (Article 212 of the Polish Constitution).

Within the meaning of the basic law, under principles defined by law, every person has the right to file a request with the Ombudsman for assistance in the protection of freedoms and rights violated by bodies of public authorities (Article 80 of the Polish Constitution).

4. Evaluation of the activities of the Polish Ombudsman

In order to present the effectiveness of the Ombudsman, it is worth referring to statistical data of 2013 contained in the information prepared by the Ombudsman Office [13]. The report shows that the Ombudsman receives many requests. Only in 2013, the Ombudsman received in total 70 002, including applications in new cases – 35 310 (increase with regard to 2012 by 22.2%). Most applications concerned issues of administrative and business law (35.0%), criminal law (31.1% of the total) and labour and social security law (13.2% of the total) [14].

In 2013, 581 cases were taken up on the Ombudsman's own initiative (including 128 in the form of direct recommendations) [14]. Within the period covered by the mentioned information, 42 430 cases were heard, of which 19 746 were taken up since they manifested a possibility of violation of civil rights or freedoms. In 19 803 cases, the applicants were instructed about the measures they are entitled to, in 831 cases the applicants were requested to supplement their applications, and 766 cases were referred to other competent bodies. A great number of cases in which the applicants had to be informed about the measures they are entitled to shows the lack of suitable educational programmes and a low legal awareness. It means that there is no system of common free of charge legal assistance, hence a great number of people addressing the Ombudsman.

Within this period, the Ombudsman issued 281 task recommendations. Within the last scope, the Ombudsman in 2013 issued 143 recommendations with the request for legislative initiative [13]. Regardless of that, the Ombudsman exercised also litigation rights whose aim is to challenge the existing normative acts.

In 2013 The Ombudsman filed with the Constitutional Tribunal 27 pleas of illegality of normative acts as non-compliant with the provisions of higher category or the Constitution, and in 13 cases the Ombudsman joined the proceedings before the Tribunal initiated as a result of constitutional complains lodged by other entities. In relations with the judiciary, a significant role is played by legal enquires of the Ombudsman referred to expanded adjudicating panels. Such enquires aim to standardize the judicature, and simultaneously constitute a legal measure that aims to protect the principle of equality before the law. Within the period of the functioning of the Ombudsman institution (1 January 1988–31 December 2013), in total 1 291 021 cases were reported. Only in 2013, the Ombudsman Office attended 6 592 enquirers, and 39 683 phone calls were conducted providing advices and explanations [13].

5. Conclusions

In consideration of the above, it should be stated that the Ombudsman institution perfectly supplements the system of authorities for state auditing and protection of law. The introduced legal regulations concerning the Ombudsman institution that guarantee its independence when performing the assigned duties should be also evaluated positively.

The Ombudsman institution is generally construed positively as caring for the welfare of the state and the individual, gaining social trust. Persons acting as the Ombudsman are defined as model officials.

In order to strengthen the scope of competence of the Ombudsman, the idea of granting him the right of legislative initiative within the area of civil rights and freedoms is worth considering. Such solution would enable the Ombudsman to initiate solutions directly to perform the assigned duties. Worth considering is also the organizational structure of the Ombudsman Office. It seems that together with the increase in the duties entrusted to the Ombudsman Office, its budget should be adjusted accordingly.

Moreover, it seems justified to establish regional Ombudsman representation offices in every Province. Doubtless, such solution would help many people to access free of charge professional legal assistance.

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Zvaková, Zuzana

ACCIDENTS WITH ANIMALS AND MEASURES TO THEIR REDUCTION

¹Radka Matuszková – ²Ondřej Budík – ³Michal Radimský^{1,3}Brno University of Technology, Faculty of Civil EngineeringVeveří 331/95
Brno, 602 00, Czech Republic
+420 724 573 969
matuszkova.r@fce.vutbr.cz²HBH Projekt spol. s r.o.Kabátníkova 5
Brno, 602 00, Czech Republic
+420 549 123 411
o.budik@hbh.cz

Abstract: Accidents with animals has appreciable share in the overall accident rates in every country in the world. Consequences are reflected in human injuries or deaths, vehicle damages and at last but not least in financial losses from roadkills. Paper states comprehensive statistic of accident rate in Czech Republic, including aftermath of traffic accidents involving animals over last 21 years. It also briefly informs about collisions statistics from other countries. Over the world are numerous methods which aim to lower traffic collisions with animals. Distribution between these which affect animals, drivers and roads themselves is listed in this paper.

Keywords: traffic accidents, animals, domesticated animals

1. Introduction

Generally we distinguish two types of accidents with animals. The first type is collision with wild animal and the second one with domesticated animal. Unfortunately available data for statistical analysis are quite inaccurate, mostly for two reasons. First reason of inaccuracy is due to different responsibility for financial loss. Owners are responsible for their domesticated animals, so they are also obliged to cover vehicle damages caused by their animals. On the other hand, wild animals do not have responsible owner. This means, that vehicle owners lose their motivation to report accidents with wild animals, because damages will be covered by their insurance. [4]

Second reason is fact, that not every vehicle collision with animal is reported. In some countries reporting of accidents is set as obligation only when overall financial damage on property reach at least set limit. On the other hand accidents with animals are in many countries considered as special and are advised to be reported to the police even when financial damage is not reached. Police than notify appropriate hunting club. Main reason is dead animal removal, which cannot be managed by driver himself or herself, since he/she would commit the crime of poaching.

2. Animal's accident rate in Czech Republic

According to statistics taken between years 1993 and 2014 accidents with wild animals occurred 7.8 times more often than accidents with domesticated animals. However collisions with domesticated animals are 2.5 times more serious than conflicts with wild animals. From total number of people killed during years 1993 - 2014, percentage of traffic accidents with animals was 0.14 %. Most accidents happen during October and November, but also May is above overall average. Most of the accidents

happen in the early morning or in the evening, when visibility is impaired. [5] [6]

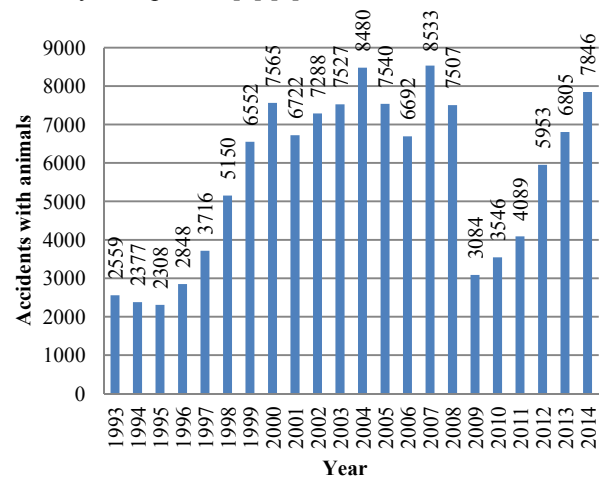


Figure 1: Accidents with animals in Czech Republic

During 21 years (1993-2014) there was reported 124,687 accidents in Czech Republic, 111,755 was with wild animals and 12,932 with domesticated animals. These accidents were fatal for 33 people. It is necessary to note, that in 2009 law in Czech Republic was changed, and financial limit from which drivers are obliged to report accidents rise to 100,000 Czech crowns (CZE). This can be recognized in the graph, as total number of accidents in 2009 is more than 2 times lower than in 2008. Statistics from last 6 years show, that percentage of accidents with animals from total number of accidents is increasing in Czech Republic. In 2009 there were 4.1 % accidents with animals, next year 4.7 %, following with 5.4 %. In last 3 years 2012, 2013 and 2014 was recorded 7.3 %, 8.0 % and 9.0 % accidents with animals. [6]

However it is necessary to take above mention statistic with care, as Mendel’s university argue, that about 129 thousands does die on road each year. That is almost 18 times more, than number of officially reported accidents with animals, where all species are included. Research by this university also found, that each year die on roads 144 thousands of hares, 39 thousands of pheasants, 19 thousands of martens, 17 thousands foxes and pigs and 8 thousands of badgers. Cats with 100 thousands of deaths are the most frequent victims of roadkills among domestic animals, second are dogs with about 10 thousands roadkills per year. Costs of vehicle’s repairs after the collisions with animals are estimated to 1.3 billion CZE, losses from roadkills and costs of returning animals back to the wilderness are estimated to 3.3 billion each year. [7]

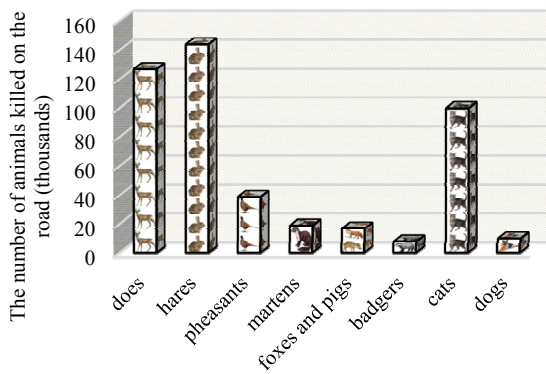


Figure 2: The number of animals killed on the road in Czech Republic

3. Accidental rate in the other countries

For example 230 thousands of accidents with animals are reported in Germany each year, which on average cause 20 fatalities and 3,000 injured people. According to insurance companies, property damages during recent years reached about 500 million euros per year. [8]

In Sweden, the yearly average of reported collisions with a moose is 4,500, but the real estimated number is 10,000 accidents, since not all accidents are reported. Also each year there are about 27,000 accidents with deer in Sweden. [9]

4,000 accidents with deer are reported on daily average in the US. Annually in such accidents 200 people die and 29,000 are injured. [10]

In 2009 in Poland 17,500 traffic accidents involving animals were reported (no distinction, whether wild or domesticated), the police estimates that only one in four of the accidents with animals is reported. [11]

In Australia over 3,000 accidents with animals are reported each year, that is approximately 5.5 % of the total number of traffic accidents. The most common species involved in animal’s accidents are kangaroos, taking up to 45 % of collisions with animals. [3]

In Slovakia police registers about 190 accidents with animals per year, but the largest insurance company in Slovakia records annually about 1,300 accidents involving animals with financial loss of 2.2 million euros.

4. Measures against conflicts with animals

Both abroad and domestically, placement of traffic signs is the most frequent measure against conflicts with animals. However, drivers do not take this solution too seriously, since it doesn’t reflect the real current state, but only aware of potential danger in area. Within the Czech legislation are mentioned devices discouraging animals from entering the roads. First are reflectors, which are placed on delineators to reflect lights of passing vehicles. Delineator itself doesn’t serve as a reflector. The second is the odor fencing, which release predator odor for a certain period of time. Smell is recognized by other animals and prevents them from entering the roadway.

Groups of measures, which prevent collisions with animals, are divided according to what or who they influence. Groups are as follows:

- influencing a driver,
- influencing an animal,
- influencing a road.

The first group is focused on driver awareness about incoming animals. These systems are mostly in a phase of development, but available figures from Switzerland shows, that frequency of collisions with animals was reduced by 82 % on experimental sections. One of the possible measures is the system which detects animals and sends a warning signal, either via a warning signs, or by using the detector directly in the vehicle. Several methods exist for detection of animals. The first system works on the basis of terrain coverage around the roads. Active systems (microwave radar) analyze transmitted signal from a source that is reflected from the animal. Passive systems detect signals based on the video detection or infrared radiation. These systems require complex algorithms that distinguish moving objects. The second system works by transmitting infrared, laser or microwave beam. Animals are detected when the beam is interrupted. The third system includes seismic sensors which detect vibrations in the ground caused by the movement of animals. The last is radio transmitter system located directly on the animals, when receiver detects signal, driver is alerted. [2] [12]



Figure 3: Warning device to alert for animals [13]

The second group focuses directly on the animals. Just as in the Czech Republic also abroad reflectors and odor repellents are widely used. Foreign researches are quite contradictory to these measures. For example, the crystal glass reflectors provided in different colors by company Swareflex (originate from Swarovski group) in some areas

proved high effectivity and in others were quite ineffective. Similar results were achieved also with odor repellents, in specific locations accident rate was reduce by 85 % (Norway), elsewhere were repellents without effect. Another way how to avoid collisions is usage of signals and whistles that are installed on the vehicles and emit a sound or signal which evokes danger to the animals. This type of measure does not have positive results yet. Some methods can be used only locally. Example is supplemental feeding which is based on strategic supplemental feeding of animals placed in locations far from the road, so animals are led to be far enough from the roadway. This measure proved 50 % reduction of accidents with animals. Locally you can also use relocation of animals (capture and transport them to another location) or population reduction. Lowering the number of animals which live in an area leads to reduced numbers of collisions. In state of Minnesota (US) led reducing the total number of animals by 46 % into reduction of the total number of accidents by 30 %. [2] [1]



Figure 4: The crystal glass reflectors by company Swareflex [1]

The last group includes measures used to change the nearby of roads or taking into account the occurrence of wildlife directly during the construction. In foreign countries and also in Czech Republic is often used fencing. Depending on the type of animals is determined height of the fence. All the studies show a success rate of collisions decrease by fencing no less than 70 %, in British Columbia success rate reached even 97% success rate. Fencing disadvantage is the fact that it behaves as an impermeable barrier and thus prevents the natural migration of animals. Creating permeable sections can neglect this aspect. Permeable sections have to be marked on the road distinctly. Another way is building of underpasses or overpasses (wildlife crossings), where natural vegetation is grown. Width of wildlife crossing depends on the type of fauna, but usually ranges between 50 and 70 meters. Road nearby of these constructions should be then fenced off to guide animals on overpasses and underpasses. Both in the world and also in Czech Republic, wildlife crossing coupled with roadside fencing is generally considered as the best solution in terms of safety for both humans and animals, but it is also very expensive. Ecologically unfavorable but effective in terms of road safety is also removal of dense and high grown vegetation around roads. Most often is required minimum of 40 meters strip around the road cleared from vegetation. This allows better

visibility for drivers and according to studies reduces the number of conflicts with animals by 20-56 %. [2]



Figure 5: Overpass on the road R35 [13]

5. Conclusions

These statistics on accidents with animals clearly show that the problem with accidents involving animals is not local but global. The consequences of accidents with animals are reflected not only in the consequences on health but also in the high costs of vehicle repairs. An indispensable part represents financial losses caused by the death of animals. Road signs are the most widely used measure to avoid a collision with animals, but they have only a small impact. Frequently used and also very effective is fencing along the roads, which successfully reduce the collisions by 70 %. Usage of wildlife detection systems installed in vehicles will probably increase in the future. Especially those which inform the driver about an unknown object motion.

Acknowledgements

The publication was supported by project OP VK CZ.1.07/2.3.00/0.0226 “Support networks of excellence for research and academic staff in the field of transport”, which is co-financed by the European Social Fund and the state budget of the Czech Republic.

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SUSTAINABLE MOBILITY IN CITIES

Marta Segíňová

Slovak University of Technology in Bratislava, Faculty of Civil Engineering

Radlinského 11

Bratislava, 810 05, Slovak Republic

+421 2 59 27 41 11

seginova@gmail.com

Abstract: *The negative impact on the environment and human health is becoming a theme and a top priority to ensure sustainable development of the city. The growth of road traffic causes an increase of countrywide communication burden and increases emissions from the exhausted gas, secondary dust and thereby negatively affects the air in the breathing zone of a person with limited dispersion conditions due to urban development. The emissions produced by transport depends mainly on its intensity, composition of the traffic flow, the technical condition of vehicles, mode of transport, vehicle speed and climatic factors. Urban sprawl is highly dependent on automobile transportation. Most of the activities, such as shopping and commuting to work, schools, cultural and social activities require the use of a vehicle due to the isolation of this area of the city and the isolation of space in the living area. Transport plays a key role in creating sustainable cities. The key to improving is a coordinated and targeted planning. It is important that cities generate long-term objectives in the field of transport systems. Rising living standards leads to increased transport operation. Sustainable urban transport is to give priority to public transport against the individual, prepares intelligent services for people living in and develops new strategies in parking policy. In terms of space requirements and ecological aspects the positive result of public transport is evident.*

Keywords: *public transport, sustainable development*

1. Introduction

The concept of sustainable transport continues to sustainable urban development and describes the means of transport and transport planning systems that are consistent with the broad interests of sustainability. The main pollutants from automobile traffic are carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), polycyclic aromatic hydrocarbons (PAHs), particulate emissions, lead and other compounds. From the space requirements of vehicles the benefit of public transport is significant. Public transport is 18 times more effective as buses carrying 180 passengers takes 45 m² of communication. This same area takes 5 cars carrying not more than 10 people [1]. Public transportation is affordable, operates efficiently, offers a choice of transport modes, and supports a competitive economy, as well as balanced regional development. Traffic in the city and transport largely affects the overall appearance and perception of the city, both important for the management of the town and potentially having a negative impact on the overall quality of life in the city. High proportion of "green mobility", ie transport, walking and cycling. [2] is of great importance in building sustainable cities. In this paper, we are investigating the issue in the city of Nitra.

1.1 Problems of sustainable transport

The role of urban transport's accessibility is to fulfill the purpose of the present objective - transportation for work, shopping, etc.,. But it also supplies other operating functions. Shipping outside the built-up area is intended to fast, smooth and safe connection of the main goals of cities and major resorts. Traffic flow in undeveloped areas is not affected by other activities necessary, whilst in cities such influence is naturally present as a consequence of space functionality. Urban area is served mainly by pedestrians,

whose share of all movement (road) is two-thirds to three-quarters. In terms of the environment, it is necessary to tackle rising automotive consistent and predictable manner in urban planning, infrastructure, roads and parking areas and create conditions for alternative transport (public transport - building bus lanes, bus stops, bike path). An important contribution to the quality of life and the environment is sustainable, easily accessible and cost-effective urban transport network, which connects lines to transport systems within the urban area. The share of public transport volumes in Nitra is decreasing from 50% in 1995 to 30% in 2008 and the share of individual motorized transport in this period was increased to 70%. In order to reverse the decline of passengers in public transport and reduce the intensity of individual automobile transport which leads to worsening air quality, certain measures must be taken to make public transport more attractive as a way of mobility for people in cities and regions. In the chart below you can see the percentage of the various modes of transport, where it is clearly seen that individual services with the greatest demands on static traffic are predominant. The research was conducted in 2012.

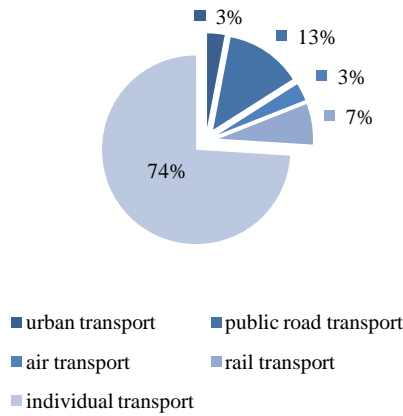


Figure 1: The share of transport modes in 2012
Source: own processing

1.2 The concept of sustainable mobility

Sustainable transport continues to sustainable development and describes the means of transport and transport planning systems that are consistent with the broad interests of sustainability. Proposed measures for achieving sustainable mobility include:

- development of strategic documents and territorial planning,
- building and renovation of cycling infrastructure,
- additional infrastructure (eg. protected parking for bicycles, charging stations for Electro, etc.)
- building elements to calming down traffic (pedestrian areas, exclusion of transport from e streets except public transport and cycling, and so on)
- revitalization of public spaces in order to prioritize public passenger transport and non-motorized transport,
- increasing safety of vulnerable road users, removing bottlenecks in pedestrian traffic, removing barriers to changing trains, and so on.

The European Commission in 2009 [3] adopted the so called "Action Plan on Urban Mobility" comprising 20 measures to be implemented by 2012, the results of which are currently being evaluated. In 2011 they published a "White Paper on Transport", which provides two specific objectives for urban mobility:

- gradually abandon the use of conventionally fueled vehicles in urban areas by 2050,
- achieve introduction of a CO2-free city logistics in 2030 in the centers of large cities.

Road safety, increased noise, increased pollution and increased duration of transport and traffic jams form the mentioned quality of life affected by traffic situation in the city. On one hand, cities are developing along the transport systems, on the other hand, the transport systems are adapting to needs of cities. Demand for public transport services is usually positively influenced by the following factors:

- reliability,
- short time spent in the vehicle,
- effective frequency of services, time to change from one means of transport to another, availability of stops at the residence and workplace.

- higher fuel prices,
- expensive parking charges,
- charging for access to city centers.

Public transport must comply with the requirements in terms of housing, job requirements, environmental requirements and public spaces. It must be designed and implemented so that the disadvantaged neighborhoods are better integrated into the urban and regional networks. Part of the planning concept of sustainable mobility should be a cyclotransport, which is an integral part of life. In recent decades it was supported by large number of places, not only in Europe as an alternative means of transport. Slovak cities are trying to achieve integration of cycling in the transport system, similar to transport cycle transport concept in some European countries (Germany, Austria, Great Britain, Netherlands), where the development of cycling does not stand in isolation, but it is part of a complex spatial development, linked to the public transport and transport infrastructure [4]. Status of infrastructure for non-motorized transport can be evaluated as unsatisfactory, while its biggest drawback is patchy network of roads for non-motorized transport with a number of local discontinuities, poor quality construction work, lack of continuity of the network of public transport and low levels of pedestrians' safety and cyclists. Development of cyclotransport for the city and its inhabitants has beneficial effect, mentioning at least some of them:

- economic benefits - lower costs compared with the car, reducing time lost spent in traffic jams,
- health benefits - sport activity,
- energy efficient transport,
- environmental benefits - better environment, more areas in public spaces.

2. Results

Nitra is an important regional transportation hub and communication crossroads of regional and supra-regional character and important transport objective of established state executive, offices, education and economic infrastructure. It has more than 100 000 inhabitants including suburban district. An average of 50,000 cars daily passes through the city, while the coefficient of increase of this number is expected to raise in the coming years till 2020 from 1.36 of light trucks up to 1.2 for heavy trucks. The repeated traffic census confirmed that in five years the volume of traffic on certain transit routes increased by up to 40%. We also saw an increase in traffic of more than 280% on a route that connects the new locations of individual housing construction to the city center, see Table 1, where the individual players increase traffic on selected road sections.

Table 1 Comparison of the observed increase in the ID section of the City communications [5]

Annual average traffic volume of passenger cars in 24 hours. on selected roads - compare the years 2005 and 2010		
Symbols Trip	2005	2010
Andrej Hlinka Street	20 140	28 711

Stefanik street-centre	25 699	26 041
Zlatomoravecká street	13 513	14 494
Levická astreet	13 556	17 199
Crossroads Chrenovská street.	13 556	30 331

Increased share of transport was caused by intensive increase of private transport, since the volume of public transport has a decreasing character - see chart n. 2

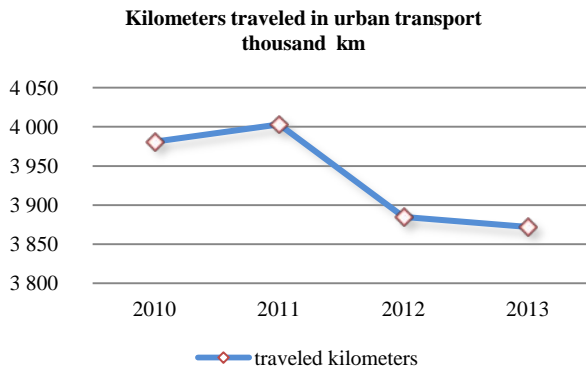


Figure 1 Kilometers traveled in urban transport in Nitra for year 2012
Source: own processing

Public transport in the city of Nitra is provided by a network of bus lines of urban transport. The concept of urban development plans changes in the localization of public transit in order to create new built-up areas in the city within walking to the stop up to 500 m, thereby reaching a good level of service quality city public transportation. Improving transport service city can substantially affect the dedicated traffic engineering documentation aimed at organizing the transport properties of urban transport system in Dublin. Under the Integrated Programme for improving the air quality of the city of Nitra [5] from data on the number of vehicles registered in Slovakia in 2010, reached the level of motorization 1: 3.26 (population 1 passenger car) motorization 1: 2.75 (population 1 vehicle). Over the last decade the greatest progress has been recorded in increase of the number of cars. In 2014, a survey has been done on the opinion of residents of city of Nitra and specific urban areas in order to obtain information with satisfaction of housing including the issues of population mobility, too. It is clear that mobility of families, lack of communication with pavements and green liner and place for static traffic is increasing. New urbanized locations are not served by public transport, due to insufficient infrastructure in frequent cases, nor it is possible to complete because of the complete lack of sufficient space for communication needed parameters. Cities solve the problem of static traffic by directioning streets in one direction, expanding toll roads and increasing charges for parking.

3. Conclusions

Spatial planning and transport planning is generally understood as the design or modification of the proposed use of urban space. Integrated Transport policies within

the city organism control balance and distribution of infrastructures due to the different modes of transport, and creates a natural space that a single transport needs. In terms of the environment, it is necessary to tackle rising of automotive consistent and predictable manner in urban planning, infrastructure of roads and parking areas and put emphasis on creating the conditions for alternative transport (public transport - building bus lanes, bus stops, bike path). Secure bicycle lane as implemented in developed countries should be an inspiration for us. Each trip using private transport also consists of parking needs - static traffic. Athens Charter of 1933 [7], which dealt with the functionality of sites, addressed in its paragraphs 51-64 on transport issues in accordance with the prospects of the modern city and the principles of "healthy city", "open city" "(to give citizens access to services without unnecessary travelling through city) and "green city" (principles of sustainable development). The binding land-use plans are essential for any new construction to address transport connections and parking. Cities in Slovakia are in terms of solutions of static traffic deeply underestimated. Use of space for parking areas and parking is less profitable than use of the construction of residential houses or multifunctional objects planning. In any case, whether it is the widening of the road at the expense of green, or the path or channel replaced by tramway track, or whether the parking spaces are replaced by bicycle path, it is always at the expense of something. To prevent such solution is an integrated planning tool which takes into account all modes of transport and aim:

- Mobility focused on faster, safer and more comfortable transporting people to their final destination,
- increase the quality of living in cities, which is associated with the safety, health, attractive environment to live, work and relax.
- traffic and transport in the city to promote health economic development.

Sustainable urban mobility and sustainable transport development concept are the output of the city's transport policy [6]. Designing communications from scratch is only possible for new cities and new neighborhoods. Current city creation does not provide lot of space for such planning. Land use planning with transport development planning must take into account the existing situation and conditions, since most urban areas have already had its function defined. In practice, this means public space define a new function, depending on whether we are looking for more parking spaces for cars, whether we want to improve public transport, or whether we plan to support the development of pedestrian zones and expand cycling infrastructure.

A common mistake of promoting the development of cycling is that you only need to add only some cycling route and thus solve the problem of integration of bicycle transport system in the city. The issue is much more complex and random creation of routes along the river or through the park might not work.

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NUMERICAL ANALYSIS OF NOISE BARRIERS WITH NOVEL CAPS

Jan Slechta

University Centre for Energy Efficient Buildings of Technical University in Prague

Address

Buštěhrad, 273 43, Czech Republic

+420 737 307 360

jan.slechta@uceeb.cz

Abstract: Paper presents a comprehensive analysis of the insertion loss of noise barriers with novel caps (partially inclined barrier, T barrier, Y barrier, arrow barrier, Y barrier with edges, trident barrier and fir tree barrier). The boundary element method is used in order to model the scattered sound field and calculate the insertion loss of noise barriers with various novel caps for one-third octave frequency bands. Special emphasize is put on the partially inclined barrier which is analyzed from the perspective of orthogonal distance of the receiver and the sound source from the axis of noise barrier. Influence of the partially inclined barrier height on the resulting insertion loss is also investigated. Furthermore, different variants of the flow resistivity of upper horizontal edge of T barrier are modelled. Paper contains a graphical comparison of the insertion loss of several noise barriers with novel caps. Suitability of different noise barriers with novel caps for practical purposes is discussed.

Keywords: boundary element method, insertion loss, noise barrier, novel cap, sound diffraction

1. Introduction

Noise is a serious problem for well-being and at least 25% of EU population experiences the reduced quality of life because of the noise annoyance as it was stated in [10]. These findings imposed legislative measures in the Czech Republic as well as in the European Parliament. The Directive 2002/49/EC of the European Parliament and of the Council [2] started the process of strategic noise mapping and action plans in member states of the European Union. The purpose of this directive was to decrease the noise load in the member states of EU and therefore decrease the occurrence of noise-caused diseases. The strategic noise mapping was focused on the noise caused by the road traffic, railway traffic, aircraft and the noise caused by the industry. Especially, the road traffic is a noise source which causes significant noise load and there is only a limited number of possibilities of mitigating noise caused by this source. Responsible authorities can apply low noise road surfaces, decreasing speed limits, traffic redistribution and noise barriers [8].

Low noise road surfaces are efficient but their quality is usually decreasing with time. Report [1] uses a rule of thumb for porous surfaces which says that the porous road surface without a special maintenance should be less than five years old. Decreasing speed limits is quite annoying for drivers and has an impact on the traffic continuity. Traffic redistribution is very efficient tool which enables to exclude heavy trucks out of residential areas. However, this tool should be applied in the phase of urban design.

Report [7] stated that noise barriers belong among most effective ways for the noise mitigation. On the other hand, [7] also claimed that noise barriers belong among the least cost-effective measures.

Calculation procedures for “classical” noise barriers with rectangular profiles are well-established. One of these routines is e.g. NMPB 2008 [9] which is based on the path difference of direct and diffracted sound ray. Unfortunately, the scattered sound field has more

complicated structure in the case of noise barriers with novel caps and that is why the insertion loss of such barriers cannot be estimated with a method based on the path difference.

2. Methods

Numerical methods are very convenient tool for the calculation of the insertion loss of noise barriers with novel caps. In this paper, the boundary element method (abbrev. BEM) is employed. BEM has several software implementations and the author of this paper decided to use an open source implementation OpenBEM [6]. This implementation was developed mainly at the University of Southern Denmark.

BEM deals with homogeneous conditions of sound propagation and therefore it is not able to take into account meteorological phenomena like temperature gradients and the direction and the gradient of wind.

BEM is a numerical technique which solves Helmholtz equation. Helmholtz equation is a partial differential equation of the second order and it is valid for time harmonic waves [5]:

$$\frac{\partial^2 p}{\partial x^2} + \frac{\partial^2 p}{\partial y^2} + \frac{\partial^2 p}{\partial z^2} + k^2 p = 0 \quad (1)$$

Where p is the sound pressure, x , y , z are the coordinates of Cartesian coordinate system and k is the wave number.

BEM finds the solution of Helmholtz equation in two steps. In the first step, the solution on the boundary of domain is obtained and in the second step, the sound pressure in field points is calculated.

There is a difference between an algorithm for the 2D and the 3D BEM implementation even though the basic idea is the same for both cases. 2D implementation is used in this paper because it is time efficient when calculating the noise barrier insertion loss. 2D BEM takes into account a linear sound source and an infinitely long barrier.

Nevertheless, resulting values of the insertion loss for the 2D BEM are close to the values of insertion loss calculated by the 3D BEM with “very long” barriers [3].

2. Results

Infinitely rigid ground is used in all processed calculations. Centre frequencies of one-third octave bands from 50 Hz to 5000 Hz are investigated. Sound speed input in the calculation based on ambient conditions is 343.986 m/s. Both sound sources and receivers are always placed on the ground in order to exclude the ground effect. Thickness of all barriers is 150 millimeters.

Insertion loss is defined as the sound pressure level in a situation with the noise barrier subtracted from the sound pressure level in the same situation without the noise barrier. Therefore, it expresses how much the noise barrier is able to attenuate the sound pressure level.

2.1 Partially inclined barrier

Partially inclined barrier is probably the most used noise barrier with a novel cap. Basic geometry of a situation with the partially inclined barrier is shown in Figure 1 (dimensions are in millimeters). Partially inclined barrier is modelled as infinitely rigid.

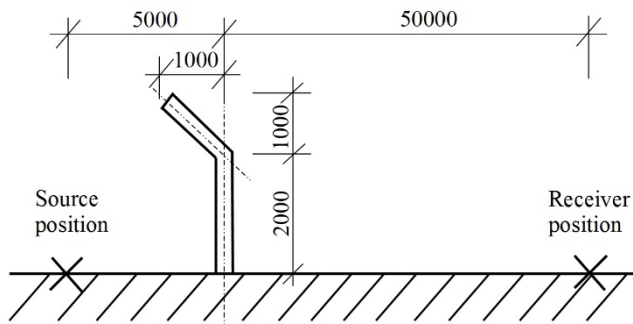


Figure 1: Geometry of partially inclined barrier [mm]

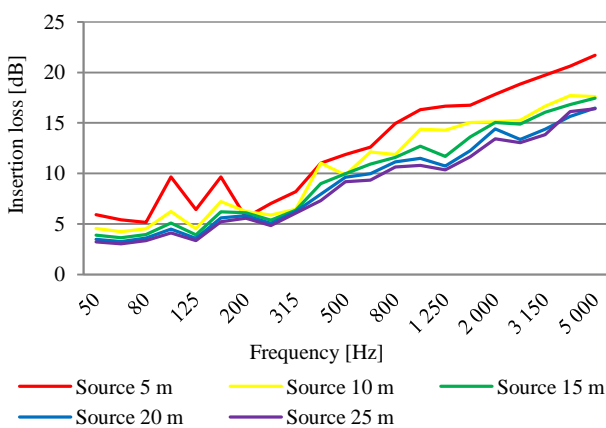


Figure 2: Insertion loss as a function of the frequency and the orthogonal distance of sound source from the partially inclined barrier

First analysis is focused on the orthogonal distance of sound source from the axis of partially inclined barrier. Receiver distance remains still the same (see Figure 1) and

the source distance is: 5, 10, 15, 20 and 25 meters. First analysis is shown in Figure 2.

Second analysis deals with the orthogonal distance of receiver from the axis of partially inclined barrier. Source distance remains still the same (see Figure 1) and the receiver distance is: 10, 20, 30, 40 and 50 meters. Second analysis is depicted in Figure 3.

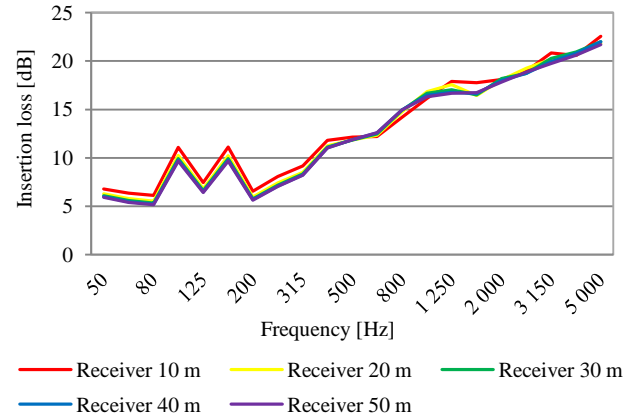


Figure 3: Insertion loss as a function of the frequency and the orthogonal distance of receiver from the partially inclined barrier

Third analysis examines the influence of height of the partially inclined barrier on the insertion loss. Source and receiver positions are still the same (see Figure 1). Height of the novel cap itself is in all cases 1 meter (as in Figure 1) and the overall height of partially inclined barrier, which is 3 meters in Figure 1, changes: 2.5, 2.75, 3.0, 3.25 and 3.5 meters. Third analysis is shown in Figure 4.

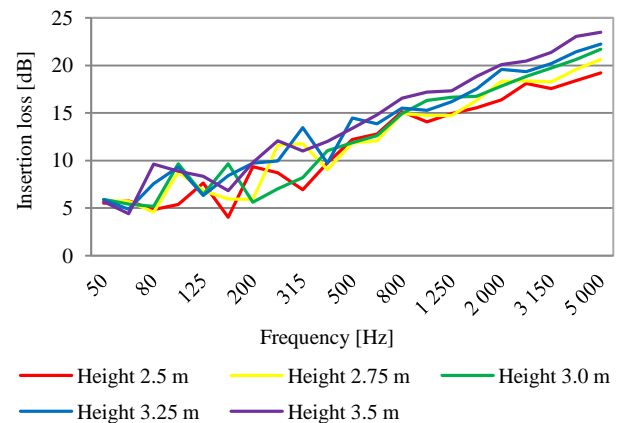


Figure 4: Insertion loss as a function of the frequency and the height of partially inclined barrier

2.2 Other noise barriers with novel caps

Additional six noise barriers with novel caps which were inspired by the list in [4] are modelled in this paper. First three noise barriers with novel caps which are shown in Figure 5 (dimensions are in millimeters) are modelled both absorptive and rigid (T barrier, Y barrier and arrow barrier). When the absorptive variant is modelled, the flow resistivity of upper edges of a novel cap is $50 \text{ kN}\cdot\text{s}\cdot\text{m}^{-4}$. Other edges are modelled infinitely rigid.

Other three noise barriers with novel caps are depicted in Figure 6 with dimensions in millimeters (Y barrier with edges, trident barrier and fir tree barrier). These noise barriers are always modelled as infinitely rigid. Thickness of all barriers is 150 millimeters.

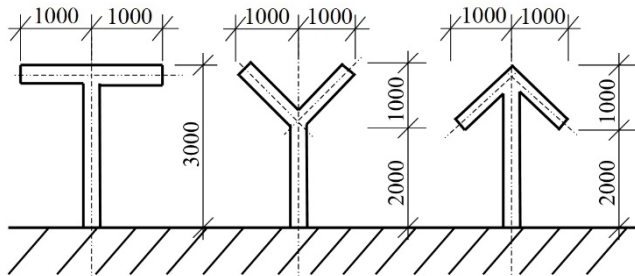


Figure 5: Geometry of T barrier, Y barrier and arrow barrier [mm]

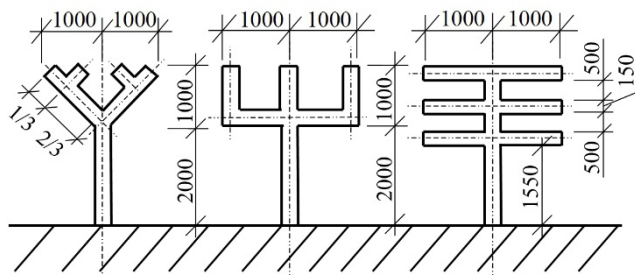


Figure 6: Geometry of Y barrier with edges, trident barrier and fir tree barrier [mm]

2.3 Flow resistivity of T barrier

Sound absorbing materials are usually applied to prevent the reflection of sound wave from the noise barrier. When designing noise barriers with novel caps, sound absorbing materials can also provide additional insertion loss.

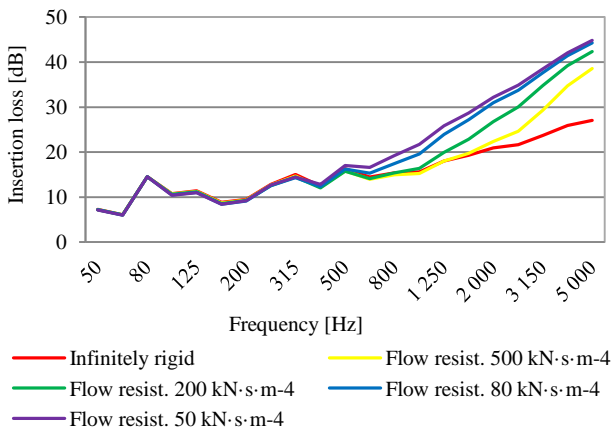


Figure 7: Insertion loss as a function of the frequency and the flow resistivity of upper edge of T barrier

Geometry of T barrier is shown in Figure 5. T barrier was modelled with five variants of the flow resistivity of upper horizontal edge: infinitely rigid, 500, 200, 80 and 50 $\text{kN}\cdot\text{s}\cdot\text{m}^{-4}$. It is important to mention that only the flow

resistivity of upper horizontal edge of T barrier is altered and other edges are always modelled as infinitely rigid. Positions of the sound source and the receiver are the same as in Figure 1 (i.e. the orthogonal distance of sound source from the noise barrier axis is 5 meters and the orthogonal distance of receiver from the noise barrier axis is 50 meters). Results of this analysis are shown in Figure 7.

2.4 Comparative study

Ten different noise barriers are compared in this section. Geometry of these noise barriers is described in Figure 1 (for the partially inclined barrier) and in Figure 5 and Figure 6 (for other barriers).

Positions of the sound source and the receiver are again the same as in Figure 1. Some of noise barriers are modelled also in the absorptive variant which is described in the section 2.2. Comparative study is shown in Figure 8.

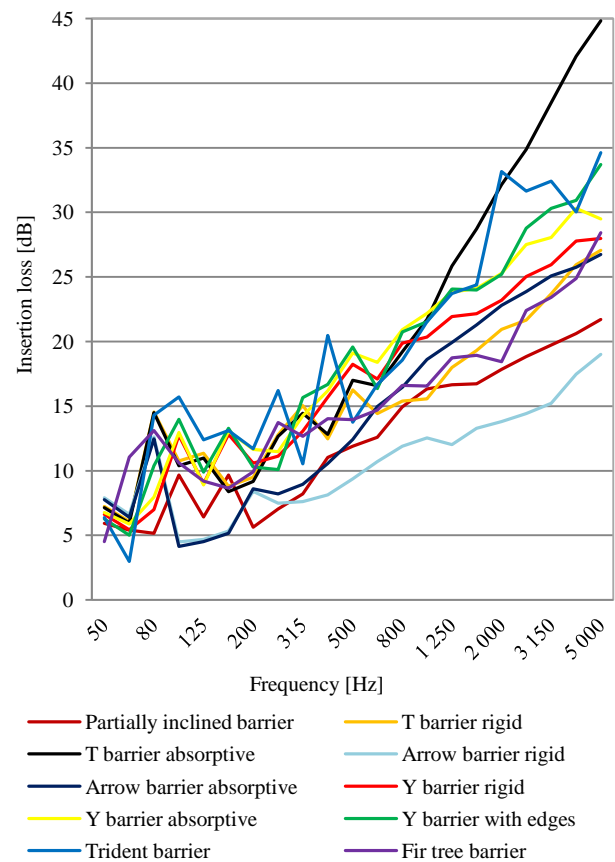


Figure 8: Insertion loss as a function of the frequency for different noise barriers with novel caps

5. Discussions

The partially inclined barrier is analyzed from three perspectives. The first perspective is the impact of orthogonal distance of the sound source from the axis of noise barrier on the insertion loss which is shown in Figure 2. One can observe that the shorter distance of sound source from the noise barrier, the higher insertion loss is achieved. It can be also observed that the highest insertion loss is by far obtained with the source distance 5 meters.

The decrease of insertion loss is less significant when placing the sound source further from the noise barrier.

Figure 3 depicts the dependence of insertion loss of the partially inclined barrier on the receiver – barrier distance. It is demonstrated that the resulting insertion loss is not considerably going down with higher distance of the receiver from the noise barrier.

The third analysis which is shown in Figure 4 examines the influence of height of the partially inclined barrier on the insertion loss. Resulting curves in Figure 4 are well behaved mainly at high frequencies when it holds that the higher noise barrier height, the higher insertion loss. At low frequencies, the wave length of sound wave is comparable to some dimensions of the noise barrier. It can be seen that at low frequencies the increase of noise barrier height might even cause the decrease of insertion loss.

Another analysis is presented in the section 2.3. The insertion loss as a function of the frequency and the flow resistivity (which expresses the sound absorption) of upper horizontal edge of T barrier is described. One can see in Figure 7 that when the wave length is long, then the flow resistivity have no influence on the insertion loss. On the other hand, the flow resistivity is very important parameter when considering high frequencies with short wave lengths.

Probably the most interesting graph is Figure 8. The insertion loss as a function of the frequency of in total ten different noise barriers is compared. Even though it is difficult to make a clear conclusion about convenience of particular noise barrier for an attenuation of low frequencies, one can still get a rough idea about how efficient different noise barriers at low frequencies are. At high frequencies, the noise barriers can be approximately lined up from the most efficient to the least one: T barrier absorptive, trident barrier, Y barrier with edges, Y barrier absorptive, Y barrier rigid, arrow barrier absorptive, fir tree barrier and T barrier rigid, partially inclined barrier and arrow barrier rigid.

It is appropriate to mention that these results are valid only for the calculated situation and for homogeneous conditions of the sound propagation. Analysis of larger amount of data is necessary to make generally valid conclusion. Still, one can see which barriers are suitable for practical use, i.e. T barrier absorptive, trident barrier and Y barrier (both rigid and absorptive) and which barriers are the least suitable, i.e. partially inclined barrier and arrow barrier rigid.

It can be surprising that the partially inclined barrier is probably the most used noise barrier with a novel cap and at the same time it is not very efficient from the point of view of achieved insertion loss compared to other noise barriers with novel caps. This analysis deals only with acoustical properties of noise barriers and does not examine financial costs of different types of noise barriers. However, a cheaper solution might be preferred in practice to a more expensive one.

6. Conclusions

Results of several analyses of various noise barriers with novel caps have been presented in this paper. Special

emphasize has been put on the partially inclined barrier because of its often practical usage. The boundary element method has been employed in order to model the scattered sound field.

Since the road traffic noise is an important issue to solve for improving the quality of life and accomplishing healthier environment, the noise barriers are worth further research. While straight noise barriers are thoroughly investigated, noise barriers with novel caps could be still a subject of optimization. This optimization might result in lower economical costs of noise barriers with novel caps and in the increase of their practical application.

Acknowledgements

This work has been supported by the European Union, OP RDI project No. CZ.1.05/2.1.00/03.0091 – University Centre for Energy Efficient Buildings.

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USING OF ABC ANALYSIS IN INNOVATIVE PROCESS OF HANDLING AND STORAGE IN AN EXAMPLE OF COMPANY "X"

Miroslava Lovichová

Pardubice University
Studentská 95
Pardubice, 532 10, Czech Republic
+420 608 609 378
Lovichovamirka@seznam.cz

Abstract: This paper focuses on the issue of handling and storage in the example of an existing medium-sized company with the name "company X" in this paper. The first part of this paper describes the issue connected handling and storage in general terms. In the subsequent chapters there is introduced an imaginary production enterprise "X". This enterprise is used as an example for analysis of material flows with the help of ABC analysis. There will be chosen a default warehouse for an example of its application. On the basis of this analysis there are proposed new measures to improve the current system in handling and storage.

Keywords: handling, storage, ABC analysis, company

1. Introduction

Currently, many companies leave from inventory in warehouses. There is a reduction in the number of stores, but stocks of materials or finished products are one of the significant logistics quantity. The aim of enterprises and the reason why inventories are minimized are funds that are embedded in stocks and that can be used in another part of the logistics chain. However enterprises cannot exist without minimum stocks. According to their possibilities enterprises have different amounts and different types of stores. Storage is an integral part and plays an important role in every business.

The aim of the paper is to show the essence of storage, analysis of the current state of storage, handling and also suggest improvements that will have benefits for the enterprise.

There is brought an example of an existing company with the name "Company X" for purpose of this paper. The company is used for application of theoretical knowledge in the field of ABC analysis. There is an assessment of the current status of individual stores. Then the most important one is selected for using of the ABC analysis. After that there are proposed measures for its better optimization in storage at the end of the paper. The proposals for improvement may lead to improvement of stock management system, its clarity and fluency.

1.1 ABC analysis

ABC analysis (or Selective Inventory Control) is an inventory categorization technique. ABC analysis divides an inventory into three categories - "A items" with very tight control and accurate records, "B items" with less tightly controlled and good records, and "C items" with the simplest controls possible and minimal records.

The ABC analysis provides a mechanism for identifying items that will have a significant impact on overall inventory cost while also providing a mechanism for identifying different categories of stock that will require different management and controls.

It suggests that inventories of an organization are not of equal value. Thus, the inventory is grouped into three categories (A, B, and C) in order of their estimated importance.

"A" items are very important for an organization. Because of the high value of these "A" items, frequent value analysis is required. In addition to that, an organization needs to choose an appropriate order pattern (e.g. 'Just-in-time') to avoid excess capacity. "B" items are important, but of course less important than "A" items and more important than "C" items. Therefore "B" items are intergroup items. "C" items are marginally important.[1]

2. "Company X" and its warehouses

The "Company X" is focused on manufacturing of industrial products. Its material is stored in five indoor warehouses and in one outdoor warehouse. In these warehouses there is stored material needed for producing and helping material and packaging for manufactured ranges of products. Specific warehouses are for: oil storage, abrasives, packaging of finished products and metallurgical material. All the material is imported into the company by trucks. After the arrival of the truck a warehouse employee carries out the material receipt. The various types of material in the company are divided into major classes and other subgroups. All conditions of material are recorded in the warehouse information system. This system provides important information about the minimum stock.

2.1 The amount of storage items in different warehouses

This section describes and compares the average number of inventory items. This comparison will help find out which warehouse has the largest volume of stored items, and select the warehouse for change suggestions. The following Table 1 [2] and Table 2 [3] show a summary of single items in the company warehouses.

Table 1 Volume analysis of stored items per month

Warehouse	Average volume of stored items per month
Oil	1 560 (l)
Abrasives	1 840 (pc)
Packaging	44 523 (pc)
metallurgical material	209 630 (kg)

Table 2 Average number analysis of shipped items per year

Warehouse	Average volume of stored items per month
Oil	23 554 (l)
Abrasives	9 862 (pc)
Packaging	74 390 (pc)
metallurgical material	735 285 (kg)

The analysis shows that the largest volume of stored items has metallurgical warehouse. It is also the largest stock. This store is also the most important stock and for that reason it is chosen for practical demonstration of ABC analysis applications. It is assumed that the total capacity of the shelves is about 244 200 kg. [3]

Metallurgical warehouse contains a large volume of items. For this reason the warehouse is divided into four main groups according to the product ranges. The following Table 3 [3] shows all main groups together with the average annual consumption expressed in kilograms.

Table 3 Main groups of material in the metallurgical warehouse

Main groups of material	Average consumption per year in kg
scrolls	103 941
components	175 657
roundels	223 493
tapes	232 195

There will be done ABC analysis for single group. On the basis of this analysis there will be designed further actions in the metallurgical warehouse.

2.2 ABC analysis of inventory items in the metallurgical material

Basic data for analysis of ABC is annual material consumption. The consumption is obtained by the product of the annual consumption of material in the units and price per unit. For the analysis there is available 244 items which are stored in the metallurgical warehouse. After determining annual consumption, it is necessary to express each item as a percentage of the total consumption of 244 items that amounts to CZK 34,163,551. [3]

Thus, the percentage expressed the need to sort the data from highest ones to the lowest ones and perform its accumulation. Based on all of these steps the items are categorized according to the analysis groups A, B and C, as shown in the following Table 4. [4]

Table 4 Number of items in single groups

Group	Scrolls	Components	Roundels	Tapes	Total sum
A	26	15	15	21	77
B	25	20	9	13	67
C	18	38	18	26	100
Total sum	69	73	42	60	244

Due to the large number of items cannot be determined which of the four major groups belong to the group A, B or C. From the analysis is clear, however, that the items in the group A should be supervised and should be under the strict control because they bring the largest turnover to the Company X. Further, they also should be ordered in smaller quantities. In the group B there should be followed classical inventory control, and the last group C requires minimal control and its item should be ordered in large quantities. These conclusions are expressed in the following Figure 1. [4]

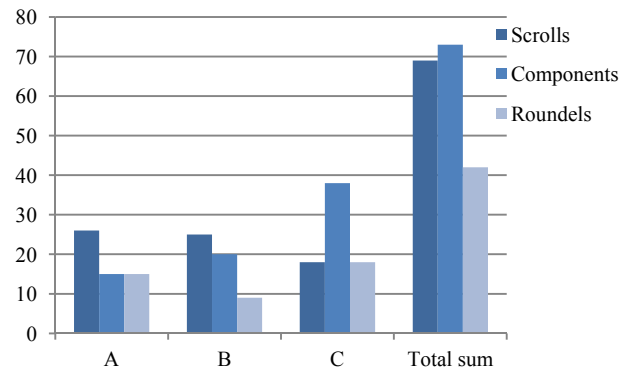


Figure 1: Graphical expression of ABC analysis

2.3 Interpretation of ABC analysis according to the Pareto principle

In the metallurgical warehouse there were made three main groups A, B and C. From the number research it is clear that there are some items with higher importance and some others with lower importance. To sum it up there is brought an interpretation with different approaches of single group with the help of the Pareto principle: 80% is represented by the groups A and B because these groups have the similar number of total items. In the view of the fact these groups can be considered for continuously supplied groups. The group C with the highest amount of items is represented by the remaining 20%. The Table 4 and Figure 1 show that the highest numbers of items in the C group. The highest number signifies that items in this group bind money because this group is not interconnected with the production efficiently.

2.3 Suggestions and benefits of ABC analysis

ABC analysis can bring economic and non-economic improvements to the Company X. Through this analysis the company knows that in the metallurgical warehouse there can be used larger space for dispensing. On the base of the ABC analysis it was found that after the introduction

of the changes in the metallurgical warehouse there is possible to occur the crossing of material flows in the warehouse. This will shorten the route for forklift trucks. It means that fuel can be saved and thanks to this step the company efficiency will increase. The metallurgical warehouse will be well arranged, organized according to the activities that follow each other. Stored material is placed in the shelves, and handling with the items will be clearer for fast retrieval of material. It will increase the overall efficiency of the warehouse.

3. Conclusion

The aim of this paper was to find a solution to the shortcomings in the handling and storage of the Company X. This issue is related with stock and main functions of storage. The paper analyzed six main warehouses used in the company. In terms of the greatest importance there was selected a metallurgical warehouse for the ABC analysis. On the base of single items analysis in the metallurgical warehouse a better and efficient layout was suggested and recommend. Analyzed and the final values are given in the tables and a figure for better clarity of the results. In the last part of the analysis there is interpreted the ABC analysis according to the Pareto principle where the groups A and B were assigned to 20% of the rules and a group C with the largest number of items such as 80% which also binds the money in the warehouse. These are suggestions and conclusion for future arrangements in the Company X.

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THE ASSESSMENT OF THE IMPACT OF TRANSPORT ON THE ENVIRONMENT ACCORDING TO THE EXPERIENCE FROM DENMARK

Miroslav Patočka

Brno University of Technology

Veveří 331/95

Brno, 602 00, Czech Republic

tel: +420 541 147 344

patocka.m@fce.vutbr.cz

Abstract: This paper deals with transport impacts on environment. Transport impacts are the direct impacts from transport activities and depends mainly on traffic volumes, traffic patterns (transport mode, route) and travel speed.

Procedure stated in this paper involve small environmental impact assessment (EIA), which focuses on following aspects: accidents, noise, air pollution, barrier and perceived risk. It will be explained, how to calculate and estimate these transport impacts and how to work out simple environmental analyses. GIS and excel calculating is recommended for these purposes, especially when dealing with large areas.

Keywords: environmental impact assessment, accidents, noise, air pollution, barriers

1. Introduction

The aim of this paper is to share a knowledge and experience with assessing of the impact of transport on the environment, which author obtained during the studies in Denmark.

Following environmental impact assessment will consist of these aspects: accidents, noise, air pollution, barrier and perceived risk.

2 Accidents

The cost of traffic accidents is a main socio-economic cost of transport. The methodology commonly used for valuing traffic accidents is based on economic theory (similarly to the case with the valuation of environmental effects). This approach could seem to be cynical, on the other hand, it may serve to strengthen planning efforts to increase traffic safety.

In EU the following definitions for different types of causalities are used [3]:

- fatality – death within 30 days for causes arising out of the accident
- serious injury – causalities which require hospital treatment and have lasting injuries
- slight injury – causalities whose injuries do not require hospital treatment or, if they do, the effects of the injuries quickly subside

2.1 Calculation of accident costs

The Danish Road Directorate has developed a method to calculate the accident frequency based on the type of road.

The method divides the accidents into two categories [2]:

- accidents on free stretches between intersections
- accidents in intersections

For free stretches between intersections is used:

$$A_{stretches} = a \cdot N^p \quad (1)$$

where:

$A_{stretches}$ is the number of accidents each year per km road,

N is the average daily traffic on the road,

a and p are constants depending on the road type.

The a and p parameters are separated into two groups, one for primary roads and one for urban streets [4].

Experience has shown that there is a greater safety benefit on new roads. Therefore, the number of accidents on new-constructed roads will be found by multiplying (1) by the factor 0.6.

The output of (1) does not include accidents in junctions. A model for calculating accidents in junctions appears in (2):

$$A_{intersections} = a \cdot N_{pri}^{p1} \cdot N_{sec}^{p2} \quad (2)$$

where:

$A_{intersections}$ is the number of accidents in the intersection each year per km road,

N_{pri}^{p1} is the average daily traffic on the primary road,

N_{sec}^{p2} is the average daily traffic on the secondary road,

a , $p1$ and $p2$ are constants depending on the type of intersection.

The Danish unit prices for accidents are shown in Table 1.

Table 1 Danish unit prices for accidents [6]

€ per (2010)	
Fatality	2,339,935
Serious injury	400,890
Slight injury	60,386
Average	324,151

3 Noise

Noise level is affected by following parameters: distance from source, type of adjacent surface, traffic volume, traffic composition, noise screens, vehicle speed, gradient of road, reflection and meteorological conditions.

3.1 The A-weighted equivalent sound pressure level L_{Aeq}

The sound pressure level from road traffic is not constant. Therefore the A-weighted equivalent sound pressure level, L_{Aeq} , is used as a measure for varying sound over a time period. L_{Aeq} is equal to a constant sound with the same A-weighted sound-energy as the varying sound. L_{Aeq} for road traffic can be assumed as the average noise level during a certain time period.

The noise level, L_{Aeq} , is found by using (3) [9]:

$$L_{Aeq} = L_{Aeq,10m} + \Delta L_{distance} + \Delta L_{ground} + \Delta L_{screen} \quad (3)$$

where:

$L_{Aeq,10m}$ is the basic noise level 10 meters from the road axis,

$\Delta L_{distance}$ is a distance correction,

ΔL_{ground} is a ground correction,

ΔL_{screen} is a screen correction.

3.2 Basic noise level $L_{Aeq,10m}$

The basic noise level, $L_{Aeq,10m}$ (10 meters from the road axis), is calculated on the basis of (4) - (7). First the sound exposure level, $L_{AE,10m}$, has to be found [9]:

$$L_{AE,10m \text{ light vehicles}} = 71,1 \quad (4)$$

$$30 \text{ km/h} \leq v \leq 40 \text{ km/h}$$

$$L_{AE,10m \text{ light vehicles}} = 71,5 + 25 \log \left(\frac{v}{50} \right) \quad (5)$$

$$v > 40 \text{ km/h}$$

$$L_{AE,10m \text{ heavy vehicles}} = 80,5 \quad (6)$$

$$30 \text{ km/h} \leq v \leq 50 \text{ km/h}$$

$$L_{AE,10m \text{ heavy vehicles}} = 80,5 + 30 \log \left(\frac{v}{50} \right) \quad (7)$$

$$50 \text{ km/h} < v \leq 90 \text{ km/h}$$

where:

v is the mean speed.

The basic noise level can be determined on the basis of (8) - (10) [9]:

$$L_{Aeq,10m \text{ light vehicles}} = L_{AE,10m \text{ light vehicles}} + 10 \log \left(\frac{N_{\text{light vehicles}}}{T} \right) \quad (8)$$

$$L_{Aeq,10m \text{ heavy vehicles}} = L_{AE,10m \text{ heavy vehicles}} + 10 \log \left(\frac{N_{\text{heavy vehicles}}}{T} \right) \quad (9)$$

$$L_{Aeq,10m \text{ mixed}} = 10 \log \left(10^{\frac{L_{Aeq,10m \text{ light vehicles}}}{10}} + 10^{\frac{L_{Aeq,10m \text{ heavy vehicles}}}{10}} \right) \quad (10)$$

where:

N is a traffic volume,

T is the time period for traffic volume in seconds. If ADT is used, $T=86,400$ s.

3.2 Distance correction

Noise level will decrease with increasing distance from the road. Distance correction can be found by using (11), assuming that the sound source is placed 0.5 m above the road surface [9]:

$$\Delta L_{AV} = -10 \log \left(\frac{\sqrt{a^2 + (h_m - h_b - 0,5)^2}}{10} \right) \quad (11)$$

where:

a is the distance from receiver to road axis along the normal to the road,

h_m is the receiver height,

h_b is the height of the elevated road relative to the plane of reflection.

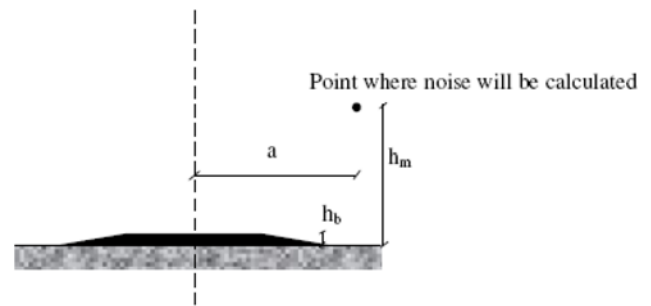


Figure 1 Parameters in noise calculations [1]

3.2 Ground correction

The noise propagation is very sensitive to the ground type surrounding the road. The ground can be described as acoustic hard (e.g. asphalt and water) or soft material (e.g. plantation, gardens or fields). The ground correction can be calculated by (12) and (13) [9]:

Hard ground:

$$\Delta L_M = 0 \quad (12)$$

Soft ground:

$$\Delta L_M = -6 \log \left(\frac{\sigma^2}{1 + 0,01 \sigma^2} \right), \sigma = \frac{a \cdot 10^{-0,3 h_b}}{10 \cdot h_m},$$

$$\text{if } \sigma \leq 1 \text{ then } \Delta L_M = 0 \quad (13)$$

3.3 Screen correction

The calculations of screen corrections can be fairly comprehensive. In this context some results serve to indicate the effect of a noise screen, see Table 2.

Table 2 The effect of noise screen on noise level [1]

Distance	Reduction in noise level [dB]	
	Screen height 2 m	Screen height 4 m
20	8	16
30	7	15
50	5	12
100	4	9
200	3	7

Formulas for calculating screen correction are available in [9].

3.4 Noise from several roads

To calculate the total noise level of a house which is exposed to noise from *n* roads, (14) can be used:

$$L_{Aeq,total} = 10 \log \times \left(10^{\frac{L_{Aeq,1}}{10}} + 10^{\frac{L_{Aeq,2}}{10}} + \dots + 10^{\frac{L_{Aeq,n}}{10}} \right) \quad (14)$$

3.5 Calculation of noise costs

The net change in noise annoyance is calculated by use of an index measured in SBT (noise annoyance index) units. The index is computed by summing the number of dwellings in noise zones, each with a different noise level. Before summation the number of dwellings is multiplied with a nuisance factor, see *Table 3* [8]:

Table 3 Danish noise model parameters

Noise level	55-60	60-65	65-70	70-75	>75 dB(A)
Nuisance factor	0.11	0.22	0.45	0.93	1.92
Number of dwellings	B _A	B _B	B _C	B _D	B _E

Nuisance factor for noise exposure below 55 dB(A) is neglected.

The SBT index is calculated as [8]:

$$SBT = 0.11 \times B_A + 0.22 \times B_B + 0.45 \times B_C + 0.93 \times B_D + 1.92 \times B_E \quad (15)$$

The price of noise is in Denmark set to 2 965 € per SBT per year.

4 Air pollution

The air pollution is connected to emissions of NO_x, HC, SO₂, CO and particles, which have harmful consequences for the public health and in addition damage buildings and other surroundings. It is calculated for the various transport modes split on country and city and either based on average account for ratios of emissions per driven kilometer.

4.1 Calculation of air pollution costs

The emissions from vehicles depend on a number of factors such as fuel type, weight and load. Representative emission factor for each vehicle category as seen in *Table 4* can be used for preliminary air pollution survey.

Table 4 Emission factors for representative transport in 2009 price level [6]

Vehicle	Fuel	Unit	SO ₂	NO _x	HC	CO	PM _{2.5}
Car	Petrol	g/km	0.006	0.148	0.092	0.848	0.004
	Diesel	g/km	0.005	0.445	0.022	0.113	0.029
Bus	Diesel	g/km	0.036	10.436	0.660	2.291	0.291
Lorries	Diesel	g/km	0.048	7.919	0.283	1.280	0.149

The estimates for air pollution for Denmark are presented in *Table 5*. The best estimate combined with high and low values is shown.

Table 5 Recommended Danish estimates for air pollution costs [5]

€/per kg	Urban			Rural		
	PM _{2.5}	75.98	244.82	1332.09	18.76	51.99
NO _x	1.21	2.41	9.51	1.34	2.68	10.72
SO ₂	5.49	9.65	29.48	2.14	5.23	23.72
CO	0.000	0.002	0.005	0.000	0.001	0.001
HC	0.54	0.67	1.07	0.54	0.67	1.07

4.2 Climate change (CO₂)

CO₂ emissions does not affect people’s health, but it is a greenhouse gas and probably contributes to the global heating.

As for air pollution the amount of CO₂ emitted is measured either from an average account for the ratio of emissions per transport mode per kilometer driven.

Costs associated with climate change are based on prices determined by trading of CO₂ allowances.

4.3 Calculation of climate change costs

The estimates for Denmark are presented in following *Table 6* and *Table 7*.

Table 6 Climate change factors for different modes [6]

Vehicle	Fuel	Unit	CO ₂
Car	Petrol	g/km	127
	Diesel	g/km	110
Bus	Diesel	g/km	1079
Lorries	Diesel	g/km	990

Table 7 Recommended Danish estimates for climate change costs per kg emitted [5]

€/per kg	Low	Central	High
CO ₂	0,008	0,013	0,025

5. Barrier effects and risk perception

Barrier effect can be described as the limitation of people to move freely caused by roads and relate to pedestrian and cyclists.

5.1 Barrier size

The barrier size can be calculated on the basis of (16):

$$Barrier\ size = 0,1 \times \sqrt{ADT} \times \left(\frac{v}{50}\right)^3 \times \left(\frac{w}{8}\right) \times (1,87 \times La + 0,63) \times \left(1 - \frac{K}{20-L}\right) \quad (16)$$

where:

ADT is the average daily traffic

v is a mean speed

La is the proportion of heavy vehicles

K is the number of crossing facilities (pedestrian crossings, pedestrian tunnels etc.)

L is the length in kilometers

w is the road width in meters

The qualitative assessment of the barrier size could be based on the values in *Table 8*.

Table 8 Qualitative assessment of barrier size

Barrier size	Qualitative assessment
< 5.5	Insignificant or small
5.5 - 9	Moderate
9 - 15	Large
> 15	Impossible to cross the road

5.1 Need to cross

The amount of people who need to cross the road depends on the land-use activity on both sides of the roads.

Table 9 Land-use weights [7]

Land-use activity	Weight
Stores, public offices and blocks of flats	4
One family houses (detached houses, terraced houses etc.)	2
Holiday cottages	1
Industry and recreational areas	1
Undeveloped sites	0

The need to cross is based on (17) [7]:

$$Need\ to\ cross = Land\ use\ weight_{left} \times Land\ use\ weight_{right} \times Length \quad (17)$$

5.2 Barrier effect

The barrier effect can be described by (18):

$$Barrier\ effect = Barrier\ size \times Need\ to\ cross \quad (18)$$

5.3 Risk size

The risk size is calculated for each side of the road by (19) and then added up [7].

$$Risk\ size = 0,5 \times 0,1 \times \sqrt{ADT} \times \left(\frac{v}{50}\right)^3 \times (1,87 \times La + 0,63 \times C + F) \quad (19)$$

where:

C is the cycle facility factor (C-factor)

F is the side walk facility factor (F-factor)

Table 10 C- and F-factor [7]

F-factor		C-factor	
No side walk	0.5	No cycle path	0.5
Only side walk on opposite side	0.4	Two way cycle path on other side	0.4
Mixed side walk and cycle path	0.3	Mixed side walk and cycle path	0.3
Side walk	0.1	Cycle lane	0.2
		Cycle path	0.1

$$Need\ to\ travel\ along\ the\ road = Land\ use\ weight \times Length \quad (20)$$

5.4 Perceived risk

The perceived risk can be described as the risk (or insecurity) a person will perceive by travelling along the road.

$$Perceived\ risk = Risk\ size \times Need\ to\ travel\ along\ the\ road \quad (21)$$

5.5 Barrier index

$$Barrier\ index = Barrier\ effect + Perceived\ risk \quad (22)$$

5.6 Barrier cost

Barrier cost was set indirectly from the price of noise.

$$Barrier\ cost = 1605\ \text{€} \times Barrier\ index \quad (23)$$

6. Conclusions

Transport is a key factor in the design, approval and success of new developments. However, new projects (transport as well as non-transport) may lead to other indirect impacts (noise, vibrations, air pollution, congestions, accidents, etc.). In order to assess a project's environmental impacts properly, its transport impacts must be considered.

Acknowledgements

Article publication was supported by the project OP VK 1.07/2.3.00/20.0226 "Support networks of excellence for research and academic staff in the field of transport", which is co-financed by the European Social Fund and the state budget of the Czech Republic.

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ANALYSIS OF TECHNICAL PROPERTIES OF WIND ENERGY

Nadežda Pondušová – Lubomír Naščák

Technical University in Zvolen, Faculty of environmental and manufacturing technology

Študentská 26

Zvolen, 960 53, Slovak Republic

pondusovan@gmail.com – lubomir.nascak@tuzvo.sk

Abstract: The fastest growing renewable energy source is wind energy. The article deals with the analysis of the technical properties of wind energy. Wind energy transforms the kinetic energy from the wind into electricity by using wind turbines. The basic components of wind turbines are described. Wind speed is an important factor to wind energy. So the features of wind speed are analyzed, and the wind energy is calculated. Finally, the environmental impacts of wind power are presented.

Keywords: wind energy, wind turbine, wind speed, technical properties, environmental impacts

1. Introduction

Wind is a sustainable energy source since it is renewable, widely distributed, and plentiful. With the serious problem of environmental pollution caused by fossil fuel, wind is emerging as one of the most attractive clean technologies and it is planned to be a major source to meet future electricity needs [4].

Wind is the most mature and cost effective source among different renewable energy technologies [6]. Wind energy is energy from moving air, caused by temperature (and therefore pressure) differences in the atmosphere. Irradiance from the Sun heats up the air, forcing the air to rise. Conversely, when temperature falls, a low pressure zone develops. Winds (air flows) balance out the differences. Hence, wind energy is solar energy converted into kinetic energy of moving air.

Since wind is free and inexhaustible, the price of wind power is stable, unlike electricity generated by fossil fuel powered source that depends on fuel of which price is high and may vary considerably. In addition, it contributes to the greenhouse gas emissions reduction and it can be used as an alternative to fossil-fuel-based power generation [5]. Nevertheless, the major challenge of wind power can be its intermittent power supplies, because wind doesn't always blow. Due to the intermittency characteristics of wind power, it results in the variability, unpredictability, and uncertainty of wind sources [7]. Wind energy has been used for centuries to pump water and grinding.

The paper analyzes and studies the corresponding technical properties, including wind turbines, wind speed, wind energy and provides for the analysis basis and reference for further research of power systems using wind energy.

2. Technical properties of wind energy

2.1. Wind Turbine

Wind turbines capture the kinetic energy of winds and convert it into an usable form of energy. The kinetic energy of winds rotates the blades of a wind turbine. The blades are connected to a shaft. The shaft is coupled to an electric generator. The generator converts the mechanical power into electrical power as shown in Figure 1 [5].

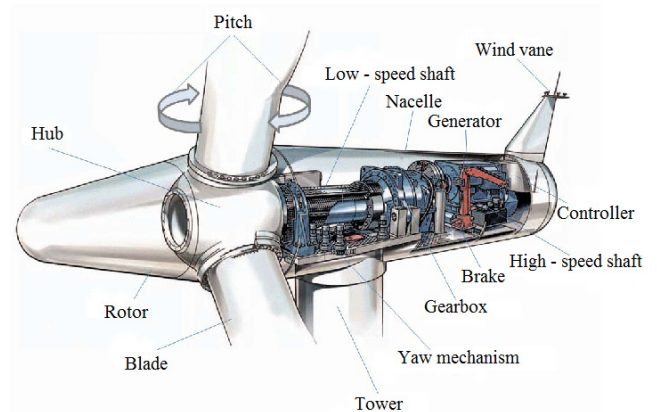


Figure 1: Diagram of a wind turbine.

The modern wind turbine is a piece of machinery with aerodynamically designed rotor and efficient power generator, transmission and regulation components [1, 9]. Its output ranges from a few Watts to several million Watts. Most of today's machines are horizontal axis wind turbines with three bladed rotors. Most components of a horizontal axis turbine are contained within a nacelle, which sits on top of a tower.

The blades together with the hub are called the rotor. The rotor drives the generator by harnessing the kinetic energy of the wind. The blades are aerodynamically shaped to best capture wind. The amount of energy wind turbine can capture is proportional to the rotor sweep area.

Gearbox is used for most turbines above 10kW to match the rotor speed to the generator speed. If required generator is asynchronous. Otherwise, optional. Drawback is that gearbox makes noise and suffers from wear and tear, potentially leading to higher costs. Advantage is that it works well with asynchronous generators, which are cheaper.

Generator/Alternator is a part which produces electricity from the kinetic energy captured by the rotor. A generator produces DC power and an alternator produces AC power, depending on the application for the turbine

Nacelle is the housing which protects essential motorized parts of a turbine.

Two convertors transform the generator's output frequency to the grid required frequency. If the turbine has a fixed rotor speed (with no pitch), the convertors are not required. Most wind energy convertors have a variable rotor speed (as they operate at fixed tip speed ratio). The convertors can control both frequency of current and speed of the asynchronous generator. In the configuration with a synchronous generator, the grid connection is completely via convertors.

2.2 Small wind turbine

The output power rating of small wind turbines is less than 20kW. Small wind turbines are used for residential applications, supplying households with electricity, and they are designed for low cut in wind speeds (generally 3–4 m/s).

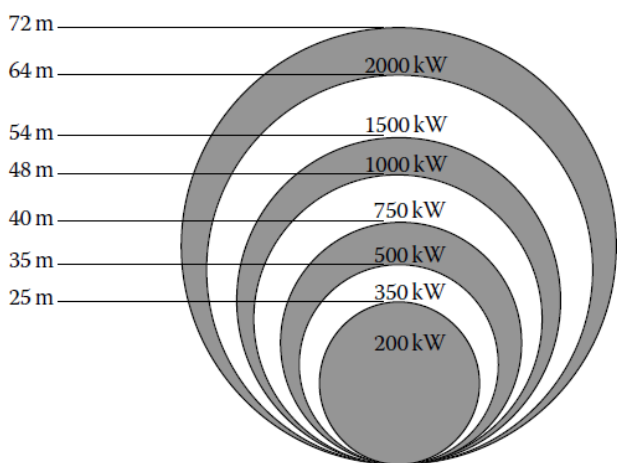


Figure 2: Turbine output power for different wind turbine diameters.

They are also suitable for remote places, where the grid is far away and the power transmission is difficult. Small wind generators provide isolated power systems for a household's load, and are usually connected to batteries, as shown in Figure 3 [5].

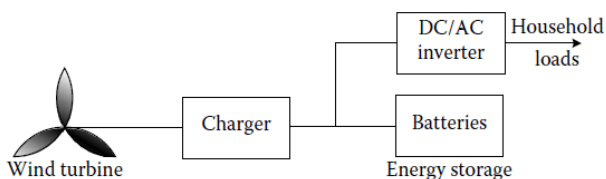


Figure 3: Connection scheme of a typical small wind turbine

2.3 Power curve and power coefficient

Wind turbine manufacturers provide data sheets with power coefficient and electric power curves over a range of wind speeds. These curves are essential for estimating the energy yield and to pick the right wind turbine for the site. The power curve of a wind turbine is a graph that represents the turbine output power at different wind speed [8].

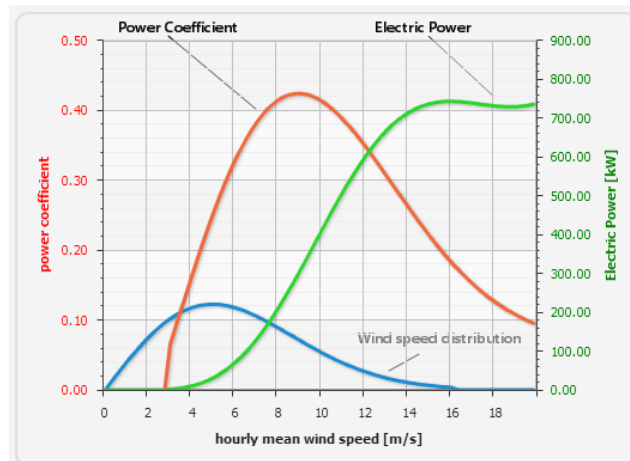


Figure 4: Wind turbine power curve

The power coefficient measures the percentage of wind power that is transformed onto the shaft into mechanical power. If all wind power could be captured by a rotor device, the air would be completely still behind it, so wind could not pass. Hence, there is a limit to the rotor efficiency. Modern wind turbines come close to 50%. The power coefficient is also dependant on the wind speed. Low wind speeds (below the cut in speed) will not move the blades. In high wind speeds, the efficiency decreases again. Figure 4 shows an example of a wind turbine power curve. The power coefficient depends on the pitch angle, which is defined as the angle between the blade surface and the plane of the wind rotor, as shown in Figure 5.

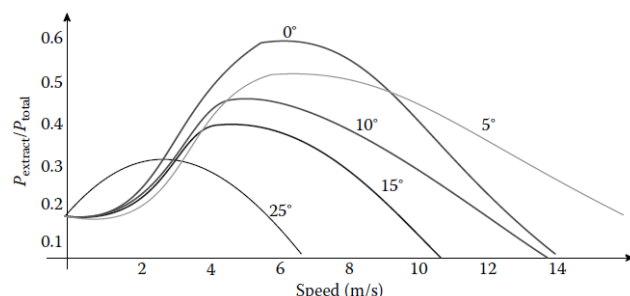


Figure 5: Speed versus power with respect to different pitch angle values

2.4 Wind Speed

Wind speed is one of the most important parameters in determining the available wind power. Because the power in wind is cubic function of wind speed, changes in speed produce a remarkable effect on power. Doubling the wind speed does not double the power available it increases a whopping eight times. Wind speed varies over time. Wind speed varies by the minute, hour, day, season, and even by year. It is influenced by weather system, the local land terrain and its height above the ground surface. The required minimum wind speed for most of the suggested installation designs is about 2 m/s. Wind speed patterns can be depicted as a wind speed spectrum. A high value indicates a significant change in

wind speed over the corresponding time period. Although this graph is obviously site-specific, there are distinctive similarities.

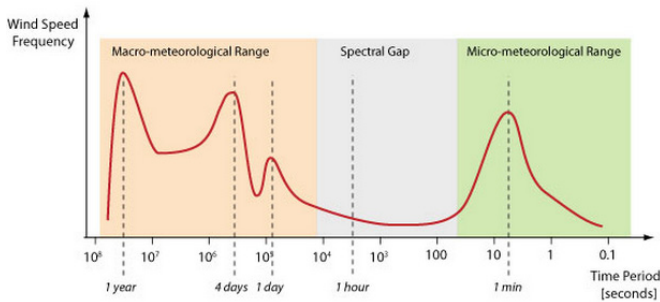


Figure 6: Wind speed spectrum

The peaks in the wind speed spectrum account for annual, seasonal and daily patterns as well as short-term turbulences. A striking phenomenon is the spectral gap between time periods of 10 minutes to 2 hours. These patterns are important not only for yield estimations, but also for forecasting of wind power output.

2.5 Wind Power

Wind power is a function of air density, the area intercepting the wind and the wind speed [10]. It is calculated as below:

$$P = \frac{1}{2} \epsilon \cdot S \cdot v^3 \tag{1}$$

where P is the output power in watts, ϵ is the air density in kg/m^3 , S is the area in m^2 where wind is passing and v is the wind speed in m/s .

Wind energy is power over some unit of time. The energy production can be calculated substituting the average wind speed value in power equation (1). Then multiplying the equation (1) by the hours of the period, the energy is obtained as shown below:

$$P = \frac{1}{2} \epsilon \cdot S \cdot v^3 \cdot H \cdot D \tag{2}$$

(2) where E is the total energy in Wh, H is hours, D is days, and the variable v can be either the arithmetic mean wind speed or the cubic root cube wind speed, but using the cubic root cube wind speed is better estimation of the average wind speed than the arithmetic mean wind speed.

2.6 Environmental impacts

The impacts of wind power on environment are relatively small. The impacts on wildlife in operation stage are related to the noise of wind turbines. The noise from wind turbines stems from aerodynamic noise - the motion of the blades causes turbulence when passing the tower, shaft noise - this is noise from the shaft and bearings moving and gearbox noise can be reduced by using different tooth profiles on the wheels.

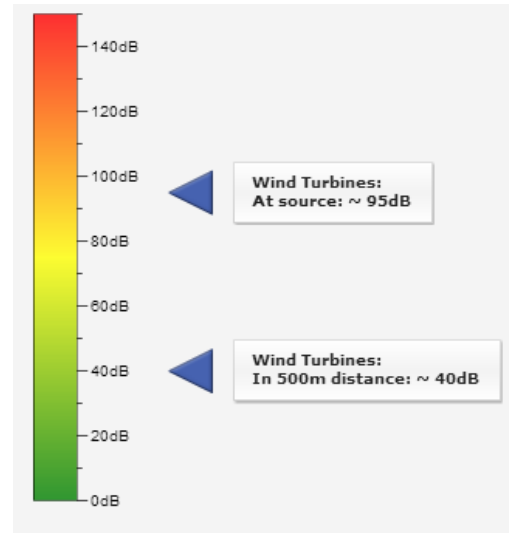


Figure 7: Noise from wind turbines

Wind turbines cast a shadow on their vicinity in direct sunlight. As the blades are turning they may cut through the light beams, causing a flickering effect.

This flicker effect is only experienced in one point for short periods of time, as it requires a certain angle of the sun.

Wind turbines are highly visible structures in any landscape. Some manufacturers offer turbines painted in grey or bases in green paint in an attempt to make wind turbines blend into the surroundings.

Birds colliding with rotor blades is perhaps the most emotionally charged subject of wind energy. Wind farm developers ought to keep minimum distances to bird conservation areas and breeding grounds of sensitive species.

Apart from direct bird collisions, the huge pressure changes around wind turbines can cause serious internal damages to some birds, especially bats.

The risk of bird collisions can be mitigated by increasing the visibility of rotor blades using white flashing lights and keeping migration corridors free.

3. Conclusions

A wind turbine is a machine which converts the kinetic energy from wind into mechanical energy. The mechanical energy is then converted to electricity. The output power rating of small wind turbines is less than 20kW. Wind turbine is basically composed of a tower base, three blades and a generator at the middle hub where the motion of the blades is transformed into electricity by means of inductance.

The power curve is a diagram that shows a specific output power of a turbine at various wind speeds, which is important for a turbine design. Power curves are made by a series of measurements for one turbine with different wind speeds. The power coefficient is the ratio of the electrical output power of the wind turbine to the total (potential) wind power, which depends on the wind speed.

The advantage of power curve is that it includes the wind turbine efficiency. Wind speed is a quite important element to wind energy.

Due to the environmental concerns and diminishing fossil fuels, wind energy harvesting has been one of the most attractive solutions for future energy problems. Wind energy conversion systems are becoming more cost-effective as the technology is gradually improving. Therefore, this clean source of energy will be wider and even more economical in the near future competing existing energy sources and other renewable sources of energy.

From these derived technical properties, the analysis basis and reference can be provided for further study of the power system including wind energy.

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IN-HOUSE SMART GRID ARCHITECTURE

Tomáš Hruza

Czech Technical University in Prague, Faculty of Electrical Engineering, Dept. of Telecommunication Engineering

Technická 2

Prague, CZ-166 27, Czech Republic

+420 22435 2101

tomas.hruza@live.com

Abstract: A smart grid is, by itself, a decentralized network, where intelligence is distributed across several devices. These devices may have to take autonomous decisions, in order to react quickly and efficiently to changes in energy demands, faults and such events. The paper describes suitable architecture models composed by the different type of the elements that shall be applicable for the in-house smart grid networks. End-customers' motivation shall be led by the effective combination between external and internal electricity supply in order to minimize the cost of electricity. The traditional view of the customers is changing, as they will be a producer of electricity as well. The consumer becomes a prosumer. Therefore, architecture of smart grid network has been getting critical for integration different appliances into cooperation network. Presented paper is aimed at finding basic architecture concept of in-house smart grid.

Keywords: Smart Grid, Smart House, Multi-Agent System

1. Introduction

One of the most appropriate definition of Smart Grid was defined in the project [1]: "A smart grid is an electricity network that can intelligently integrate the actions of all users connected to it—generators, consumers and those that do both—in order to efficiently deliver sustainable, economic and secure electricity supplies". However, the infrastructure is only one part of the smart grid system, the other being business models established on top of this technical system [2]. Figure 1 illustrates a conceptual framework of the electricity system as a combination of technical equipment, ICT systems and business models. While the technological foundations are necessary for creating an intelligent energy system, it is the economic incentives that may ultimately decide whether and how potential stakeholders will participate in such a system.

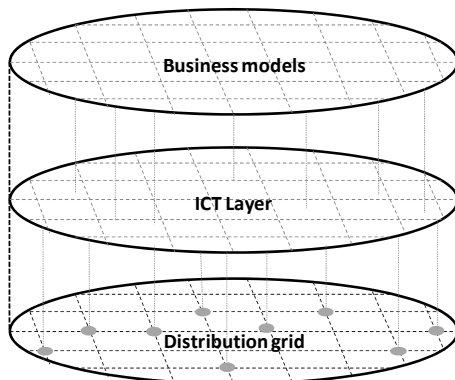


Figure 1: ICT interconnects physical and market layer in the smart grid architecture [2]

Network technology communication greatly simplifies information exchange between dispersed and organizationally separated parties (grid operator, generators, and consumers). The physical layer remains the backbone of the system but control and usage may become more efficient.

The household appliances account most of the residential electricity consumption. More and more of those appliances are becoming "grid-aware" and gaining the ability to monitor and report their own usage and to increase or decrease their electricity usage by centralized control and management of the in-house grid.

The Small and Home Office and commercial building sector together are responsible for over 50% of Europe's electricity consumption. The European Commission estimates the EU-wide energy saving potential of households at approx. 27% [3]. Presented paper focuses on the in-house grid is in line with the key priorities of The European technology platform that has announced top priorities for research topics in period of 2035. One of the priorities is a research area "Smart Retail and Consumer Technologies" [1].

2. Architecture overview

Recent advances in "Smart Grid" energy management technologies have increased house-holds potential elasticity and reduced the cost of the advanced electricity meters required to record hourly consumption. An approach of [4] is based on the three elements including in-house energy management using a user feedback, real-time tariffs, intelligent control of appliances and provision of (technical and commercial) services to grid operators and energy suppliers.

The smart grid must provide possibilities to monitor and control the system status on a local level in real time. Distribution grid control can evolve from central operation mode into a more sophisticated dynamic task in a complex granular system on in-house level which enables householder to improve overall efficiency. This shall be key success factor to achieving a better balance of supply and demand over in-house end-user devices incl. both consumers and resources.

2.1 Basic architecture

The complex management system provides a different approach that enables the coordination of the actors. The system provides an architecture that supports complex interactions between the agents based on an advanced agent communication language.

The project [5] provided an In-House Architecture model consists of:

- Intelligent nodes/agents that perform communication and control operations over these communication systems
- A dedicated communication gateway to the outside world
- Several devices operated by the customer and measurement nodes
- A user interface

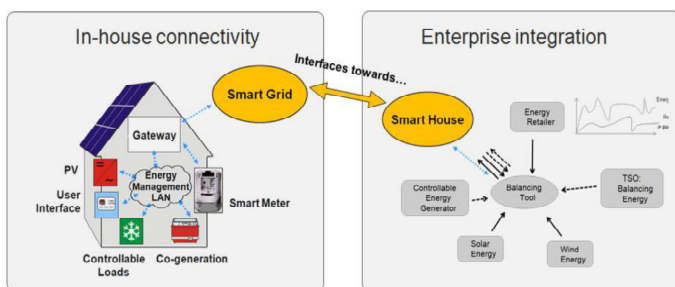


Figure 2: Integration between in-house network and smart grid [5]

A smart grid is, by itself, a decentralized network, where intelligence is distributed across several devices. These devices may have to take autonomous decisions, in order to react quickly and efficiently to changes in energy demands, faults and such events.

2.2 Multi-agent architecture

A multi-agent system (MAS) is a system of multiple interacting software agents. A software agent is a self-contained software program that acts as a representative of something or someone. A software agent is goal-oriented: it carries out a task, and embodies knowledge for this purpose. For this task, it uses information from and performs actions in its local environment or context. Further, it is able to communicate with other entities for its tasks [6].

The paper [4] presented a multi-agent system as a system composed of different components:

- Houses
- Appliances (single devices, of different classes, installed into a house)
- Vehicles (electric vehicles able to store energy into batteries)
- Cities
- Power Stations

In [6] MAS is defined as PowerMatcher that is designed for controlling energy networks. This architecture is extension of the concept [4] into technical solution focusing on the design of autonomous cells. The Power Matcher is a coordination mechanism for balancing

demand and supply in clusters of Distributed Energy Resources (DER). Within a PowerMatcher cluster the agents are organized into a logical tree. The leaves of this tree are a number of local device agents and, optionally, a unique objective agent. The root of the tree is formed by the auctioneer agent, a unique agent that handles the price forming, i.e., the search for the equilibrium price. In order to obtain scalability, concentrator agents can be added to the structure as tree nodes. In Figure 3 an overview of a cluster structure is given. The integrated node of the cluster is the Auctioneer agent, which receives a series of bids from other agents (Objective or Device). Upon receiving their bids, the Auctioneer is able to determine the prices and subsequently communicate them to the other agents.

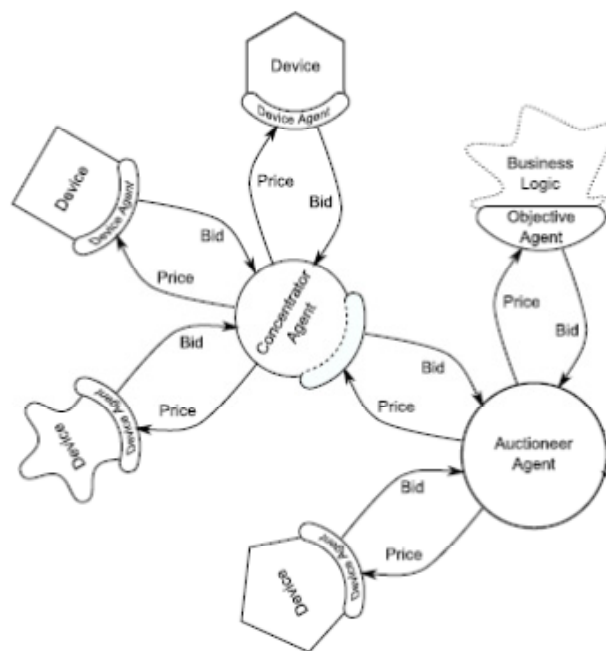


Figure 3: Basic elements of the PowerMatcher cluster [6]

MAS is associated to electronic markets, computing frameworks for distributed decision making based on microeconomics and Game Theories. The system can make use of the already developed techniques and methodologies to realize the so-called market-based control [6].

As in [7], authors designed a simulation model based on software agents using MAS architecture applied to the smart city. The authors described the approach for simulating different types of appliances and created dynamic infrastructure that can partially simulate the behavior of the future smart grid city.

3. Conclusions

The new challenge of in-house smart grid is to create a coordination mechanism that combines balancing at a system level with distribution network management at a local level. The demand response coordination will benefit from the use of end-customer provided flexibility and, in an unbundled electricity market. The finding of demand

and supply equilibrium will be performed on the different level of network simultaneously - on the distribution network and the in-house network.

As in [6], there is made a definition of Demand response as an ability of electricity consuming installations and appliances to alter their operations in response to (price) signals from the energy markets or electricity network operators in (near-)real time.

Connected appliances have different states that affect their energy consumption profile. Consumption profile divides appliances into several categories that hold information for the load distribution, presence and schedule for all the appliances of that category. The load is represented by a probability distribution function and indicates how much energy the appliance consumes over time.

Connecting individual devices to the Demand Side Management (DSM) is an extension of the concept of smart house designed in [6], [8], and [9]. The whole system shall use standardized system interfaces [10]. This will make it possible to design a control unit DSM as well as a control communication protocol for the exchange of necessary information between DSM and devices (generators and appliances) connected to the network.

The developed architecture model shall be designed by assuming a lot of constraints from both economic and technical point of view. For the extension I have been aiming at set of technical constraints that consists of:

- Devices are autonomous entities
- All in-house entities have a direct access to in-house network
- Environment constraints are considered in the production curve
- System restoration is minimized
- System ability to switch on to the distribution network is limited to the zero
- In-house transmission capacity is not limited
- An electricity is commodity which cannot be stored for the long-time period
- Transmission grid load forecast doesn't influence in-house grid

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BLAST RESISTANCE OF FENESTRATION

Zuzana Zvaková – Lucia Figuli

University of Zilina, Faculty of Security Engineering

Ul. 1. Mája 32,

Zilina, 01026, Slovakia

+421 41 513 6615

zuzana.zvakova@fbi.uniza.sk – lucia.figuli@fbi.uniza.sk

Abstract: The paper is focused on the windows system blast resistance. The source of the blast load can have the origin in terroristic attack using an improvised explosive devices. Blast resistance remains a top priority for last years with the increment of such terrorist attacks. We are preparing the field test of windows system subjected to the blast load. The aim of the presented paper is the preliminary analysis of the windows system and setting an explosive (type, weight and stand-off distance) which will cause the failure of such windows. The structure was analysed using a different approach (1 D, 2 D model and experimental data) and three different type of explosives were selected. The stand-off distance was equal for each type of explosive.

Keywords: blast load, fenestration, windows, strength

1. Introduction

Blast resistance remains a top priority for last years with the increment of terrorist attacks using improvised explosive devices. During any blast-type event, building can be damaged or collapsed and building occupants can be injured or killed. There are various situations of loadings possible. The direct exposure to blast loading (pressure or shock waves), the impact of fragments and debris, impact with surroundings when either a structural element or person is impelled by the blast waves, or structural collapse.

The most vulnerable part of the building is fenestration (windows, doors, skylights) and glass façade systems due to the fact that normally fenestration is not designed for such extreme pressure (how the blast load is).

Our research is focused on the blast resistance comparison of old wooden windows and new plastic windows used for office buildings. We are presenting the setup characteristic for prepared open air experimental testing of such windows system.

1.1 Blast load

The real detonation of a spherical charge runs in such way that the detonation wave extends from the centre of the charge in all directions. Its front strikes against the surrounding environment at the charge brim. From this point the blast wave extends and after the gas explosions the reflected one is distributed.

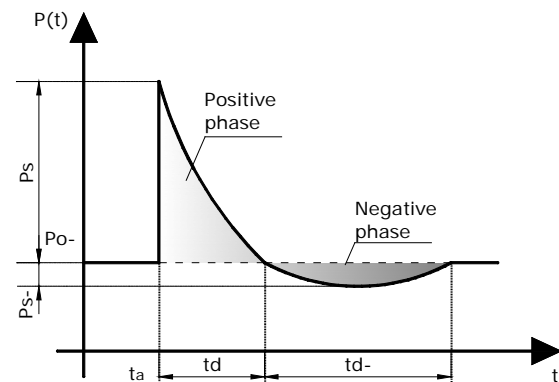


Figure 1: Time profile of the blast wave

where

t is the time after the pressure wave arrival

P_s is the peak pressure

P_0 is the ambient pressure

t_d^+ is the duration time in the positive phase

t_d^- is the duration time in the negative phase

The blast wave profile has two phases – positive and negative one. Its real form is approximated with the regular shape with one peak and then it drops below the ambient pressure. The peak pressure of the blast is dependent on the charge weight. Figure 2 illustrates the interaction between a blast wave and building.

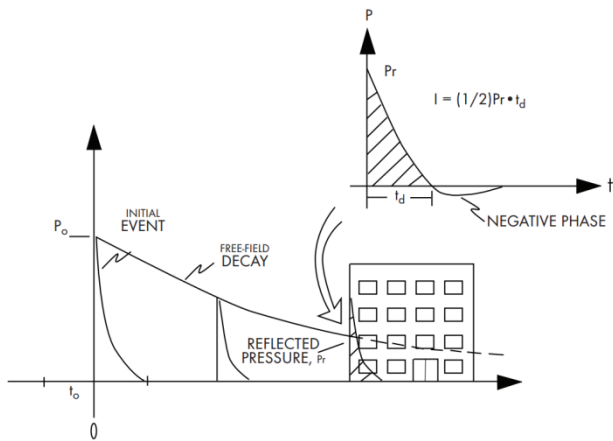


Figure 2: Shock wave interaction with building [1]

2. Windows system

2. 1 Criteria for the design of blast-resistant fenestration system

The basic criteria for the design of blast-resistant or blast mitigating fenestration systems are that the glass should remain intact and in the frame, broken but not blown out; the frame must stay attached to the wall; and the wall must remain intact to hold the frame. Protective glazing measures would also be appropriate for buildings that are located near high-risk targets, even though the buildings themselves are not considered a target [1].

windows is 1210 x 1380 mm and the glass plate width is 1050 mm and height is 1120 mm. Glassing is plain plate glass. The age of wooden windows is 51 years and the thickness of glass plate is 3 mm. The wooden windows system is an old uniform system of windows used in former Czechoslovakia in 1960s.



Figure 4: Real window system

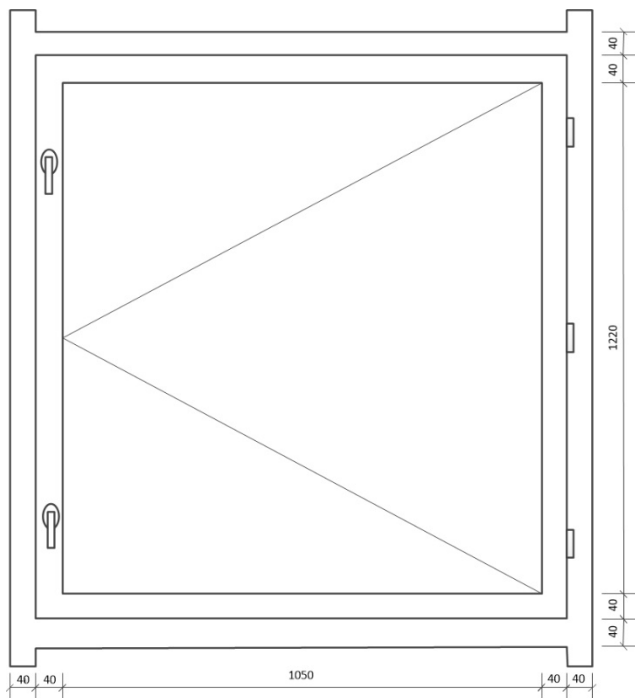


Figure 3: Dimension of analysed window

2.1 Description and mechanical characteristics

Old wooden windows in the comparison with new plastic windows were chosen for the testing. Both windows systems have same dimensions. The sizes of whole

Due to the property of pure elasticity with brittleness, glass never deforms plastically as it is in the case for other materials (see figure 5). Glass fails without warning as shown on a stress-strain curve.

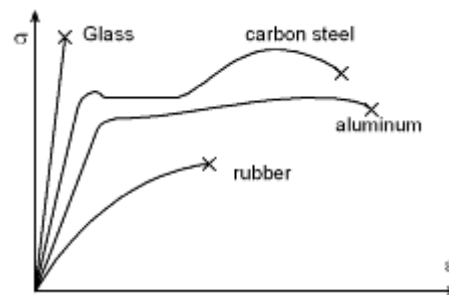


Figure 5: Stress-strain diagram for various materials [4]

Flexural strength of such glass depends on the duration of loading. Flexural strength for very short duration (in milliseconds) is 55 Mpa and for long duration of blast wave (in seconds) the flexural strength is equal to static strength and it is 13 Mpa (the values specified in standards and codes). Other mechanical characteristics are in the table 1[2].

Table 1 Mechanical characteristics of glass plate

Mechanical characteristic	
Flexural strength	55 Mpa
Static strength	13 Mpa
Modulus of elasticity	$6.0 \cdot 10^4$ Mpa
Poisson's ratio	0,26
Glass weight	2.7t/cu.m
Limit rotation	6°
Ductility factor	1

2.2 Window failure

Since a blast wave is characterised by magnitude and time, it is dynamic load. Accordingly, window will have a dynamic response which is dependent on both the strength and stiffness.

The cases of the failure of the window under the blast wave can occur when:

- a) the tensile strength of glass in the extreme fibres of the glass plate is attained
- b) the ultimate flexural deformation (or ultimate inclination of the deflection curve of the structure is exceeded, or
- c) the whole window structure is torn-out from the masonry or other wall material[2].

3. Preliminary response analysis of window blast resistance

The analysis of dynamic response of blast-loaded structures is very complex. To simplify the analysis, the structure is idealized as a single degree of freedom (SDOF) system. For structures under the impulsive loads (blast loads) a damping has much less importance because the maximum response will be reached in a very short time before the damping forces can absorb much energy from the structure. We have idealised the analysed structure in various type. For the setting of the ultimate load in the case of failure when the tensile strength in extreme fibres of glass plate is attended the SDOF beam was done. The windows was idealised as a beam with the width = 1 m and the length of the beam was 1.24 m.

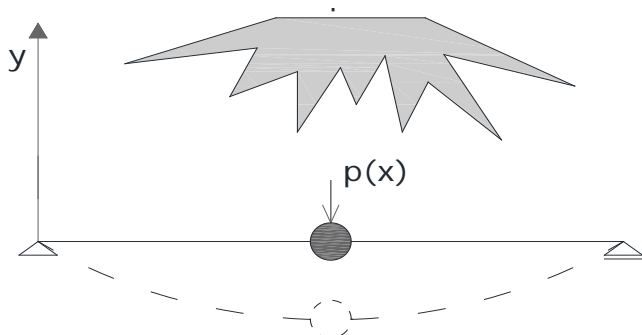


Figure 5: Model of calculated element [3]

Detailed analysis and approach of such structure are written in [3]. Because of non-plastic deformation of glass, only elastic analysis can be done.

The windows as the beam and the plate were used in the analysis of the ultimate flexural deformation according to

the approach in [5]. It is about the evaluation of the structure based on dynamic displacements and rotations around the central line of beam or plate systems. The criterion used to evaluate the response occurring at the angle (ultimate dynamic rotation of central line of a structure). The angle of rotation is obtained from the relationship (1).

$$\varphi = \arctg \left(\frac{y_m}{0,5l} \right) \tag{1}$$

Where y_m = maximum achieved dynamic displacement caused by blast load and l is the span of the structure. Ultimate rotation angle for glass is set 6°.

Another value of ultimate load of the window was obtained from the diagram based on experimental measurements (figure 6) where the limit bearing capacity of glass plate under the blast wave load is written [2].

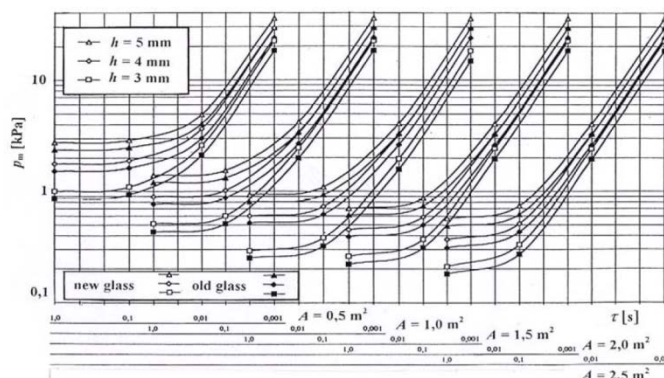


Figure 6: Limit bearing capacity of glass plate under blast wave load [2]

Every analysis were done using supposed set up data. Velocity of the blast wave is app. 0,001 ms, mechanical characteristic are in table 1. Dynamic factor for the beam model was 0.013 and for plate model 0.055. The decisive failure of the window is when the inclination of the deflection curve is exceeded (see table 2).

Table 2 Ultimate load of windows

Type of model	Type of analysis	
	Ultimate tensile strength	Ultimate inclination
1 D Beam model	33.02 kpa	10.55 kpa
2D Plate model	38.05 kpa	17.80 kpa
Experimental data	15.00 kpa	

Destructive pressure of windows depend on the type and weight of explosion and the distance of load structure from the source of explosive (stand-off distance). In our research, three different explosives were used: TNT, ANFO (industrially made called DAP 2) and SEMTEX. The distance between windows and explosion was the same, 3m. Estimations of the peak overpressure due to a spherical blast are based on scaled distance (2). The ‘‘cube root law’’ states that if the detonation of two charges made

from same material, in the same form but with different weights, occur in the same atmosphere, then this phenomenon generates similar blast waves in the same scaled distance. The scaled distance is expressed as

$$Z = R/W^{1/3}, \quad (2)$$

where R - the actual effective distance from the explosion expressed in meters

W the weight of the charge in kilograms.

The pressure depends on the characteristics of the explosives. According to the accepted theory, the pressure of the blast wave depends on the density and the heat of combustion. But according to our research this theory is not valid for all cases. We supposed that it is about the dependence of explosive pressure and density of explosives.

Table 3 Characteristics of explosives

Type of explosives	Density [g.cm ⁻³]	Explosive pressure [Gpa]
TNT	1.58	18.4
ANFO (DAP 2)	0.65	2.95
SEMTEX	1.45	21.7

Ultimate peak pressure of the blast wave was calculated using our relationship (3) publicised in [6]

$$P_+ = \left(\frac{0,202}{Z} + \frac{0,224}{Z^2} + \frac{1,182}{Z^3} \right) \cdot 0,5 \cdot e^{0,035R} \quad (3)$$

The weight and ultimate peak pressure of the blast wave of chosen type of explosives are seen in table 4. The value of blast pressure is an average value of the failure pressure resulting from the above analysis of window system.

Table 4 Type and weight of explosives

Type of explosives	Weight [g]	Pressure [kpa]
TNT	45	16.08
ANFO (DAP 2)	80	16.68
SEMTEX	40	16.99

5. Conclusions

We are focused on the windows system blast resistance in our research. The source of the blast load can have the origin in industrial catastrophes or in terroristic attack using an improvised explosive devices. We are preparing the field test of windows system subjected to the blast load. The aim of the presented paper was the preliminary analysis of the windows system and setting of an explosive (type, weight and stand-off distance) which will cause the failure of such windows. The structure was analysed using the different approach (1 D, 2 D model and experimental data) and three different type of explosives were selected. The stand-off distance was equal for each type of explosive.

Acknowledgements

This paper is the result of the research supported by the project IGP 201401 „ Program for the evaluation of the blast wave effects on the selected buildings and persons“.

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MANAGEMENT OF DOCUMENTATION AND THE POSSIBILITY OF TIME AND COST SAVING IN THE COMPANY

Karolína Zídková

The University of West Bohemia

Univerzitní 8

Pilsen, 30614, Czech Republic

+420 720 308 702

kajina3@kto.zcu.cz

Abstract: Work with documentation is in the company part of every daily working time. Thanks to this it represents a large part of workday many workers, but their job duties should be different. The employee should work primarily on the increasing of product value added. If the company uses standards ISO 9001 of quality management system, is forced to adequately manage the documentation. This is meant to create procedures for its issuing, saving, etc. The aim of the company should be minimalists the quantity of documentation and optimize to work with the documentation. One of the possibilities of this optimization is to use VBA programming language and macros in Microsoft Word or Excel. A programmed function then allows unlimited possibilities. The user can make routine activities automatic, design complex applications for a specific purpose, etc. Thanks to using the macros in the Microsoft Excel can be achieved significant time and cost savings.

Keywords: Quality management system, 8D Report, Microsoft Excel, macros, VBA

1. Introduction to management of documentation

The issue of management of documentation is very topical in many companies which are focused on the quality of their products. Quality of products directly affects the customer satisfaction and customer loyalty with the company. For the manufacturing quality products is necessary to ensure adequate management system. In this time is the most widely used the QMS (Quality Management System) according to standard ISO 9001:2008. In automotive industry it is moreover standard ISO TS 16949:2009. Automotive is very specific part of industry and brings for companies in supplier chain one very important requirement. It is certificate their management system according to standard ISO 9001:2008. Every company which is certificate according this standard is obligated to follow the rules for structure of company documentation. Exists four main areas of quality management system documentation:

- 1) Quality manual
- 2) Directives, procedures, instructions
- 3) Instructs, commands
- 4) Other documents (forms, records, ...)

This is only the basic structure of documentation in the company, but for the functional quality management system is necessary to managed many types of documents. For example records about customer's satisfaction, records about internal and external nonconforming products, suggestions of corrective actions and preventive actions and so on. The volume of documents is in the company significant. The standard ISO 9001:2008 don't specify how documents are to be created and how are to be managed. It is caused by internationality of this standard. The difficulties in the area of culture, laws and habits are between countries substantial. And because it the international standard it must be very general.

The aim should be created documentation most efficient and most easy to applicable for the company. When is documentation created regardless of these principles it will result in the many dead time. And dead times primary leads to financial losses. If the work with documentation leads to increasing of the work time it is resulting in the problem with the lack of time for the main job content.

The second problem is that the inefficient work lead to employee's dissatisfaction and their loss of loyalty for the company. Employee gets the disinclination to do the inefficient filling documents which could be fully or partially automated.

2. Area with big potential for improving

Any documentation in the company can be source of the dead times. In the companies focused on the quality is the problem even bigger. This is primary caused by the claims on the many provable records. Any activity or process that may have primary consequence by the quality of product must be documented. But the procedures and formats are still the same. For example if the company solves the nonconformity should documented what have been happen, who is responsible for this, where is the root cause, how the risk is big, prepare preventive and corrective actions and so on. All these activities must be documented. The automotive industry is specific in the issue of management of nonconformities products. For recording is most often used the form 8D Report.

2.1 Structure of 8D Report

This form summarizes all described requirements in the one sheet. Despite on the fact that the 8D Report is most efficient for the problem solving is also time-consuming. This form is called on the basis of the eight main disciplines:

1D – Nomination of team members

2D – Description of problem

- 3D – Isolation of problem
- 4D – Analyze and chosen root cause of problem
- 5D – Proposing of permanent corrective action (s)
- 6D – Implementation of permanent corrective action (s)
- 7D – Design of preventive action (s)
- 8D – Team success evaluation

Figure 1: Part of the 8D Report [3]

As is evident from the figure, for the filling of 8D Report is requiring a lot of records. But the structure of this form is still the same. And this fact can be used for effectively automated.

3. Automated of documentation

Not only the 8D Report can be effectively automated. The following description can be used on every documentation where there are repetitive activity (filling the date, number of part, name, department number, etc.). In this modern IT world is possible to created documentation sophisticatedly and remove all time-consuming repetitive actions. This is possible easily in the Microsoft Word or Excel with using of advanced tools as macros. Microsoft Word and Excel contain in their structure the possibility of programming user own functions or user guides. For this it used an object-oriented programming language VBA (Visual Basic for Application). Work with this programming language is in the Microsoft Word or Excel is possible through the interface of VBA Editor. If the user wants to view the VBA editor must first add "Developer tab" into the ribbon. Instructions how to add them are given in the Microsoft Help and slightly differs according to the program's version.

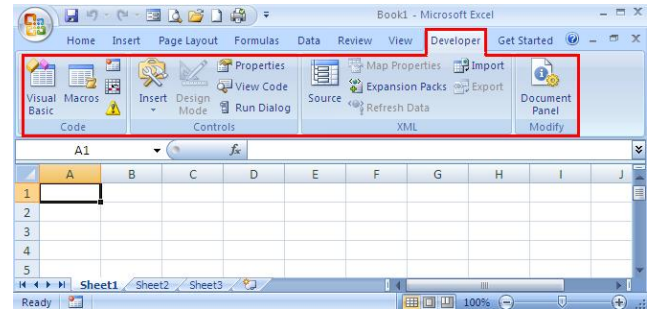


Figure 2: The Developer tab in MS Excel [1]

The VBA Editor can be started either by button on the left side of the ribbon or by keyboard shortcut "Alt+F1". VBA Editor don't run separately. Consequently VBA Editor will not run without opened MS Excel. The VBA Editor is important for creating, managing and correction of macros. Macro represents the sequence of command which together make some specific function. In MS Word and Excel it is most often used for creating a small applications or functions which give more comfort for user. User then can do nonstandard operation in the MS Office interface. More advanced users can create and write their own macros in the VBA language. This is more difficult because user should know syntax of VBA. Easily way how create a specific function in MS Excel which isn't in the main menu is records the macro by the button "Macro Recorder" in the Developer tab. This is for beginners which don't have many programming experiences because the "Macro Recorder" records all user's actions in the sheet and converts them into macro code.

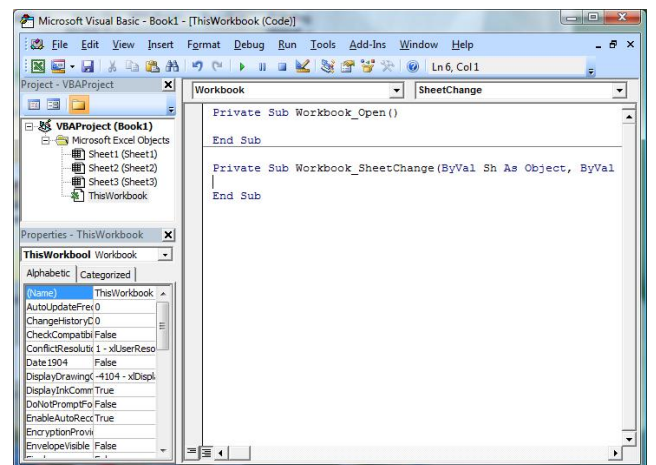


Figure 3: Window of VBA Editor [2]

Thanks to VBA and macros can user make from the ordinary spreadsheet application a powerful tool. Advantage is the general requirement MS Office skills. The employees across positions should be able to work with MS Office pack and thanks to is the interface well known for them. Then isn't so difficult learn how to write own macros. In this time a lots of companies require on the applicants the knowledge in the macros area or at least a readiness for learn it.

3.1 UserForms for time saving

Another application of VBA and macros can be creating of "UserForms". These are the small interfaces into the main MS Excel or Word interface. Open UserForms is possible either based on user-defined button or any user-defined specific action of sheet (for example open, save etc.) or by user-defined keyboard shortcut. UserForms may be created fully by needs of user and may have any needed appearance. UserForms can be very helpful with filling of any kind of documents and forms. This may take the form of the window, which will help user with clarity of filling in easily interface This may also take the form "user guide" and give user a tour of all filling items step by step. The VBA language, macros and UserForms are interlinked. Neither of them can work individually. UserForms give for user only comfortable interface but the background's processes run clearly on the VBA bases "behind the scenes". UserForms do not do anything without macros and any other special functions. So it is clearly seen that without programming the user cannot do. 8D Reports are the copybook example of UserForm's advantageously using. It represents form with many types and kind of records with predetermined structures. Because user knows what and where should be filling in the form it is possible to created UserForm and some special macros which help him with it.

3.2 The real example of automated document

The ComboBox cannot work only for selection of one item from the drop-down list but the function can be sophisticated. For example if user selected one item from list the background macros can carry out the next. First load the data from database system, then recognize the kinds of loaded records in next step load data to the relevant boxes in the UserForm, show them to the user and write them automatically into the relevant forms and sheets in MS document.

From the described example is clear that this way of partially automated filling of documents will be far quickly than classic manual filling. Thanks to the 8D Report can be completed in a few quick steps. Course this way can be applied on all forms and documents in the company.

The real example of automated document (8D Report) in the automotive company was a huge success. The company has classic 8D Report where was necessary to fill records manually. Then was created a new type of 8D Report based on support of macro and UserForms. After that were made working day shots for work with old and new 8D Report. The result was amazing. If the problem solving was deal with the old 8D Report, the time demands was 10% from the total daily working time. If the problem was solved in the new automated form was the time demands only 4% from total daily working time. A time difference between both documents was approximately a half an hour. [3] Course work with new automated 8D Report was shorter. It clearly represents how effective is the possibility of automated documentation based on VBA and macros.

This decrease of needed time for problem solving is represents only at the one example and may seem to be small. But if the company is bigger may have much nonconformity per year. And then is the decrease of time very recognizable. Every time saving leads to a save many. Every saved minute has for the company financial benefit. And financial benefit is in this competitor market a competitive advantage.

4. Conclusions

Given that the work with documentation is job duties every working day in the company, is necessary to think about possibilities of decreasing needed time for working with documentation. Should be aimed to decrease this time to a minimum and use the saved time for activities which increase the product value added. Therefore the documentation should be slim down, simplified and optimized. The optimization is effectively possible based on the VBA and macros in the MS Word or Excel. Options that this tool provides are practically unlimited. User can automate not only the routine actions but created some specific complex application in the document too. Using these options will bring savings for companies. These are not only time savings but also financial savings and competitive advantage.

Acknowledgements

This paper was supported by the project SGS 031-2013.

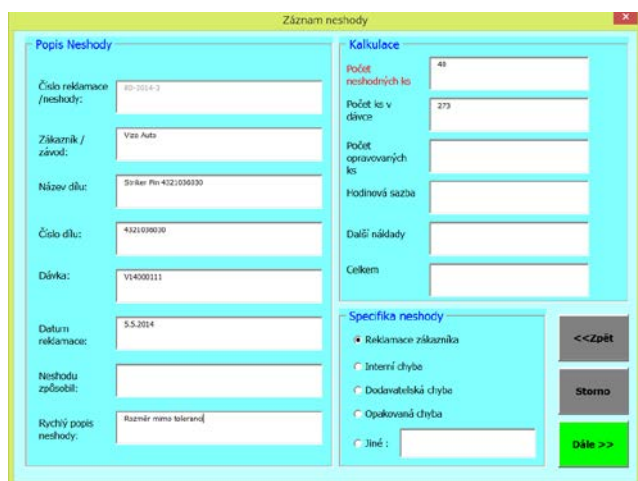


Figure 4: Example of using UserForm [3]

UserForm's window can contain ComboBoxes (box for selection items from drop-down list), TextBoxes (box from the writing of text), CheckBoxes, buttons, labels and any other tools.

Each of these elements can be assigned any function by VBA code. Then is possible for example selected predefined data from the ComboBox and these auto-inserting into the form and together to next sheets too. Data from the sheets can be then evaluated using VBA code and macros (auto-creating of graphs, tables, statistics, etc.). Data in the ComboBox can be obtained from the company's database system and thanks to increase efficiency.

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ANALYSIS OF ACCURACY OF PROBING SYSTEMS USED IN THE THREE AND FIVE AXIS COORDINATE MEASURING SYSTEMS

Piotr Gąska – Maciej Gruza – Wiktor Harmatys

Cracow University of Technology
ul. Warszawska 24
Kraków, 31-155, Poland
pjgaska@gmail.com – gruzam@interia.pl

Abstract: *The five axis measuring systems are a recent trend in coordinate measurements. In five axis measuring systems points coordinates may be measured only using the probe head movement. Such approach may significantly reduce the measurement duration, especially when circular profiles are measured. In this paper, authors compare the accuracy of classic three axis measuring system and five axis systems using recognized method of probing system testing.*

Keywords: *probing systems, five axis measuring systems*

1. Introduction

A probe head is a crucial element of each Coordinate Measuring System (CMS). It provides a connection between measuring system and the measured object [1]. Moreover, it's accuracy often determines accuracy of whole coordinate measurement so it is important to verify its functioning and identify possible errors. There are various methods of probe heads verification, which generally can be divided into: direct and indirect methods [2]. The first group consists of methods which are useful especially for probe heads manufacturers. These methods are often associated with the use of special research stations where probe heads are tested separately from the Coordinate Measuring Machine. Indirect methods are based on repeated measurements of appropriate standards: gauge blocks, ring standards and spherical standards. Their unquestionable advantages include: the simplicity of the test procedure and the fact that the all measurements are performed under typical working conditions of the probe head, that is with probing system working as a component of the Coordinate Measuring System. Especially the second advantage is significant because during measurements performed on any CMM certain dynamic phenomena occur due to the movement of elements of a large masses. However, in case of indirect methods it is impossible to separate the influences that arise from other sources than the probe head, especially the influences of machine kinematics. To minimize their impact, the standards of small dimensions should be used. Furthermore, they should be placed in the measuring volume of the CMM so the sum of kinematic error for a particular measurement task would be minimal. Research on the probe head's accuracy as well as the methods of their errors modelling, have been conducted at Laboratory of Coordinate Metrology for many years. The models developed at LCM are utilized for example in simulation methods of measurements uncertainty estimation so-called a Virtual Machines [3,4]. This article presents a study conducted in order to compare the accuracy and errors characteristic of three and five axes measuring systems. Firstly the possible errors of probe heads is briefly described. Next, the experiment is presented as well as the

obtained results. At the end the conclusions and direction for further works are showed.

2. Probe heads and errors associated with their functioning

Measurement of the point coordinates can be carried out by the contact of the tip ball with the measuring surface, or without contact, usually utilizing optical methods, therefore, also the probe heads used in CMS can be divided into contact and contactless. This paper concerns only contact probe heads, which are usually subdivided according to the operation principle into three main categories: rigid probe heads, touch-trigger probes heads and measuring probe heads [1,5,6]. In the case of the first group the measurement of point coordinates is performed by applying the measuring tip to the measured surface, by the operator, who also determines the moment at which machines driver read the indication from each axis scale. This solution is characterized by significant errors associated with manual method of measurement. Probe heads of this type are now rarely used in CMMs, whereas they are common in case of Articulated Arm Coordinate Measuring Machines (AACMM) and Laser Trackers (LT). The second from mentioned group is comprised of touch-trigger probe heads (Figure 1).

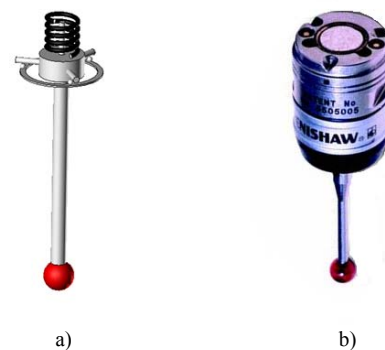


Figure 1 a) scheme of touch-trigger probe; b) TP 20 touch-trigger probe by Renishaw

They operation rely on the fact that the certain deflection of the stylus generates an impulse which is a signal for drive unit to read the current displacement in each of the machine axes. In most common solution, the stylus is combined with three arms, which are oriented relative to each other by 120 degrees, and ended spherically. The spring presses arms to a prisms on which they rely. The contact impulse is generated when one of the arms lose contact with the prism and the electrical circuit is broken. The usage of three arms distributed by 120 degrees is responsible for the triangular characteristic of the probe head. Another solution applied in touch-trigger heads, is usage of the additional three piezo elements. The contact of the tip ball with the measuring surface exerts pressure on the piezo element, what is an impulse of the contact occurrence, while deflection of one of arms is treated as a confirmation. This construction ensures a higher accuracy. The measuring heads, owe their name to the fact that they are equipped with a stylus displacement measuring systems. This group allows to achieve the highest accuracy, but is also the most expensive one. The coordinates of the contact point are determined on the basis of the indications obtained from the scales of the machine and the measured displacement of the stylus. Measurement of stylus displacement can be carried out for example: using inductive sensors which measure the displacement in the three axes or using measuring systems based on optical methods.

In the case of the portal CMMs, the probe heads are usually directed along the z-axis of the machine. Thereby, special styli configuration have to be used in some measuring task, for instance in form of star (five stylus oriented perpendicularly to each other). Another solution involves usage of so-called articulated probe heads. This type of probe heads usually have two perpendicular rotary axes used for probe reorientation. Such solution increases machine accessibility to the workpiece and significantly reduces measurement duration as it eliminates necessity of stylus configuration and preparation. Additionally, articulating heads enable to set stylus in a direction normal to the measured surface what affect the accuracy of the measurement. However, the change of probe head direction have to be performed before measuring task, and it remains fixed until the change would be defined by the operator.

A relatively new option on the metrological market are 5-axis probing systems. Their name refers to the fact that they can change stylus direction dynamically, and moreover, the contact with measuring surface is done only by the movable head. In such approach the negative phenomena associated with the movement of large masses can be eliminated.

The CMM can measure various geometrical features on the basis of measured points coordinates, thus only the measurement of point coordinates can be treated as a direct measurement in case of CMMs. Ideally, the coordinates indicated by the machine should be the same as the actual coordinates of the contact point. In reality, however, these coordinates differs and the difference between them can be regarded as a total error of the probe head, which is caused

by a number of factors [7]. The first group of influences is related with the interaction between the measured surface and the tip ball. This group consists of: measured surface shape deviations and roughness, tip ball shape deviations, stylus deformation under the measurement force, deformations of tip ball which occur during contact process. The second group is formed by components dependent on the probe head working principle such as: pretravel for touch-trigger probe heads, variable and non-linear characteristic of inductive transducers for measuring heads and errors resulting from the change of the direction of probe head operation. The total error of the probe head PE [7] can be regarded as the sum of the individual components and can be written as follows:

$$PE = e_{ps} + e_{ph}$$

where, e_{ps} – components associated with the influences of the measuring surfaces; e_{ph} – components related to the probe head functioning

The tip ball can approach the measuring point from any direction. According to [7] the function of probe head errors (FPE) in dependence on stylus deflection can be defined:

$$FPE = (\alpha, PE)$$

where, PE – total probe head error, α - the angle of probe deflection

It may be treated as two-dimensional characteristic of a probe head.

3. Experiment and results

The methodology described in this paper is explained in more details in [7]. The method is based on the repeated measurements of standard object. To obtain the two-dimensional probe head characteristic, the ring standard should be used. Its form deviation ought to be less than $0.2 * P_{FTU}$ defined according to [8]. Also the location of a ring in measuring volume of the machine should be chosen carefully, so the influences of machine's kinematics on the measurements would be minimized. Described method links the probing system errors with the approach direction. The total error PE in measured point is referenced to the best-fitted circle calculated using all measured points.

Measurements described in this paper were performed on the Zeiss WMM850S machine, located in the LCM at the Cracow University of Technology. The machine's measuring volume is 800\1200\700 mm. It is placed in the air-conditioned room, the temperature during experiment was at the level of $19,7^{\circ}\text{C} \pm 0,4^{\circ}\text{C}$.

The experiment consisted of three parts. In each phase the standard ring of diameter 20 mm was measured 10 times, but using different type of probe head or probing mode. During all measurements the standard was fixed in the same position and the measurement strategy remain the same (standard was measured in the same points). Also the stylus length and tip ball diameter weren't changed between measurements. The ring was measured in 64

points, which were evenly distributed over the measured surface. The measuring station is shown at Figure 2 .



Figure 2: Measuring station, PH20 probe head and standard ring

The first experiment phase was performed using PH10 probe head, with touch trigger TP20 probe. In second stage, 5-axis probe head PH20 probe was used, however it worked as a standard fixed probe head, in 3-axis mode. In last part of tests, standard ring was measured with PH20 probe head working in 5-axis mode. The obtained characteristics for each experiment part are presented in Figure 3 , Figure 4 and Figure 5. Error values are in mm.

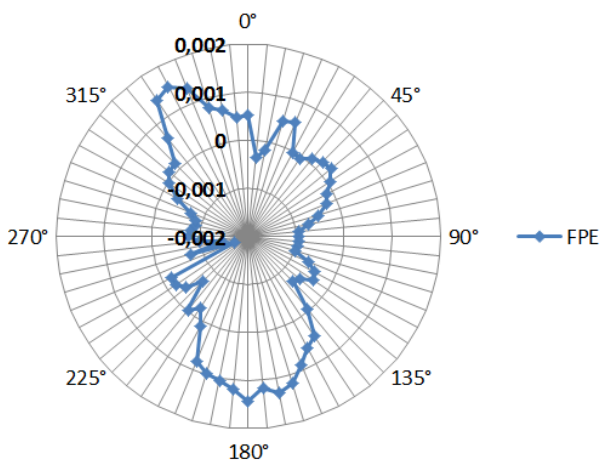


Figure 3: The obtained characteristic for PH10

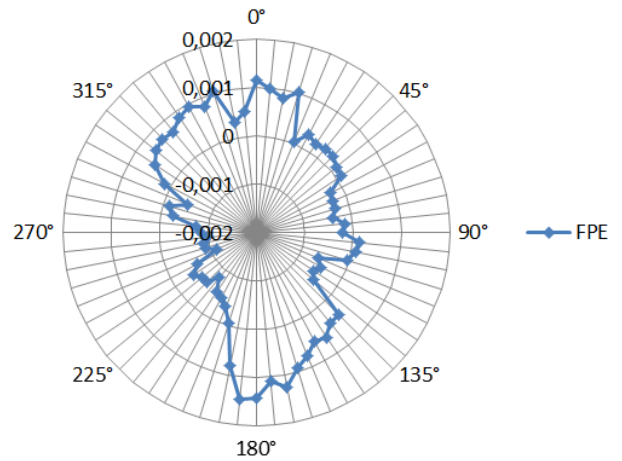


Figure 4: The obtained characteristic for PH20, 3-axis mode

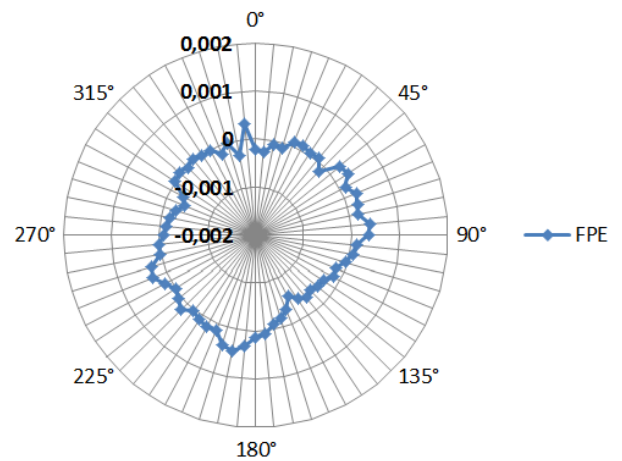


Figure 5: The obtained characteristic for PH20, 5-axis mode

4. Conclusions

Comparing obtained results it can be concluded that 5-axis measurements seems to have better metrological characteristic. The characteristic of 5 axis probing system has a circular form what means that in tested measuring volume the probe has no distinctly worse approach directions. The characteristics obtained for PH10 probe head and PH20 probe head working in 3-axis mode are similar as well as errors obtained for each of them. The approach direction in which probe generates the biggest errors can be easily indicated.

Results confirm the manufacturer statements that the 5-axis heads can improve accuracy of measurement [9]. However, additional studies should be taken on 5-axis measurements accuracy for other measuring tasks. Moreover, this type of probe heads must be checked in term of different angular orientation of probe. The final goal of such research would be a probe head errors map which would cover the entire measuring volume of 5-axis probing system. In order to carry out such studies a special standard need to be developed.

Additionally, 5-axis measurements offers one another advantage. The measuring sequence which consist of 10 measurements of standard ring were performed at least two times faster in case of 5-axis measurements. This quality as well as improved accuracy imply that this type of probe heads may be the future of coordinate metrology. In that case, it becomes even more important to develop a good methodology for such system accuracy assessment.

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ESTIMATION OF IMPACT OF SPHERICALLY MOUNTED REFLECTORS ANGULAR ORIENTATION ON LASER TRACKER MEASUREMENT RESULTS

Maciej Gruza - Piotr Gaska - Wiktor Harmatys

Cracow University of Technology

ul. Warszawska 24
Kraków, 31-155, Poland
gruzam@interia.pl

Abstract: The measurement uncertainty estimation is a challenging task, in case of Laser Trackers still largely unsolved. A lot of factors influence the measurements with laser tracking devices among others impacts connected with the retroreflector. The paper proposes a methodology for estimation of the angular orientation of retroreflector influence on Laser Tracker measurement accuracy. Studies were based on repeated measurements of retroreflectors in two states - fixed and with changes in reflector angular orientation. At the end of the paper the authors present the results and formulate direction for the future works.

Keywords: Laser Tracker, Spherically Mounted Refelctor

1. Introduction

The Dimensional Metrology still delineates new, challenging task for engineers and scientists. The constant development of technology and researches conducted in the best metrological laboratories allow to achieve higher accuracies. The increased requirements for manufacturing process force a development of measuring equipment. The modern measuring devices need to be accurate, but also should be characterized by high versatility. Coordinate Measuring Technique (CMT) fulfil mentioned conditions. Coordinate Measuring Machine which is the main tool of CMT allows measurement automation and offers accuracies up to tenths of a micron. However, the stationary Coordinate Measuring Machines have limited measuring volume, what indispose measurements of large elements such as ship propellers, or airplanes components. Nevertheless CMT offers also other systems which satisfy the demand for large scale measurements. One of these systems is Laser Tracker, a member of the laser tracking devices family. Laser Trackers allows precise measurements over the large distances, its measuring volume defines a sphere which radius can reach even 50 meters. Nonetheless estimation of measurement uncertainty for Laser Tracker is a difficult task due to the number of factors affecting the measurement accuracy. In this paper authors present a methodology for the determination of one of the components of the laser tracker measurement uncertainty and its impact on the measurement made using the Spherically Mounted Retroreflector.

2. Laser Tracker system

Acquisition of coordinates of measuring point in Laser Tracker systems, is carried out in a spherical coordinate system, otherwise than in the case in conventional CMMs where the coordinates of the point are gathered in the Cartesian coordinate system. In CMMs machine's elements perform movements in three mutually perpendicular axes which defines the x , y and z coordinates. In Laser Trackers coordinates are determined using distance between target and device and two angles

which describes the laser beam rotation (d , θ , φ). On their basis the coordinates can be transposed to the Cartesian coordinate system. Distance measurement is performed with a laser beam, which is oriented by the rotating head in the desired direction. The head is positioned at a right angle by two engines and the angle of rotation is measured by the rotary encoders that determine the angles θ and φ . The emitted laser beam has to be reflected back to the source through a special type of reflector which reflects the beam in parallel direction. Such devices are called retroreflectors and often are mounted in spherical housing (SMR - Spherically Mounted Reflectors) (Figure 1). The SMR can be treated as a tip ball known for stationary CMMs. During measurement they are put directly to the measured surface. The indicated coordinates describes position of a center of a sphere so they must be corrected by the value of sphere radius. The SMRs differ in construction, the most popular solutions are: cube corner reflector and cat's eye reflector. In the first case the three mirrors are used, which creates the pyramid with apex in center of SMR. Cat's eye is constructed from two hemispheres with a common center [1]. This solution is used less often, rather for CMMs or industrial robots accuracy assessment. During CMM calibration the reflector is mounted on the machine [2].

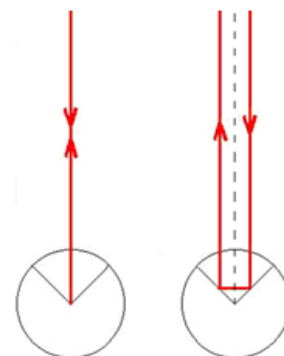


Figure 1: Working principle of SMR

The beam reflected from the retroreflector returns to the laser tracker. It is then split and sent to the interferometer and to the photodetector. When reflector moves, laser beam which returns to device also changes its position on sensor. A change in incidence of the laser on sensor[3], is a signal for the drive unit to rotate the mirror so that the beam return to previous position.

The length is measured by a laser interferometer by counting the interference fringes. It is an incremental method so it requires the initial distance to be set before measurement. Usually, Laser Tracker's manufacturers locate a specific place on instrument called a birdbath. The distance from the origin of the machine coordinate system to the birdbath is determined with very high accuracy during assembly process. Every time the connection between the device and the reflector is broken the initial distance have to be set again by placing the reflector in the birdbath. Such approach is inconvenient because during measurements over large distances, which is a typical task for Laser Tracker, it is extremely hard to perform whole measuring sequence without beam interruption. This is why the producers usually equip Laser Tracker with the Absolute Distance Meter. It is utilized for initial distance determination, thus it eliminates the need for putting the reflector on the base point. Absolute Distance Meter also allows usage of different types of probes. Stylus and retroreflector combination (SRC) are used for measuring tasks which cannot be performed using SMR, for example in measurements of dimensions related with holes. The operation of T-probe, which is an example of SRC used in Leica trackers, is based on the photogrammetry method. This system requires additional camera, which is attached to Laser Tracker, to track the position of diodes distributed on the device housing. Their position determines the stylus orientation in measuring volume.

Accuracy of the laser interferometer can be expressed by following equation: $MPE = 0.000025 + 0.0007 / 1000 * L$ [mm]. However, the accuracy of Laser Tracker due to complexity of a measuring process is much lower. Up to now, there are no international standards for Laser Trackers calibration. Studies on the factors which affect the machine functioning are conducted in the research laboratories around the world [4,5,6]. The main contributors to Laser Tracker measurement uncertainty are: errors connected with rotary encoders, dynamical influences of tracking mechanism and ambient conditions. The reduction of ambient conditions influence can be obtained using meteorological station.

3. Experiment and results

The authors performed research in order to determine the influence of SMR angular orientation on measurement accuracy. The methodology described in this paper is based on repeated measurements of retroreflectors in fixed angular orientation and with changes in orientation after each measurement. On the basis of obtained results the impact of the retroreflector orientation on the determination of points coordinate can be estimated. All tests were performed at the Laboratory of Coordinate Metrology, which is the part of Cracow University of

Technology. Leica Laser Tracker LTD-840 was used in the research, which accuracy is given by following equation: $0.025 + 0.045 / 1000 * L$ [mm]. The measurement station is presented on (Figure 2).



Figure 2: Measurement station with the 1,5 inch SMR holder

The measurements were carried out in a an air-conditioned room. The changes in the temperature, humidity and pressure were monitored during the measurements, but their variability was insignificant. All measurements were performed in the same day. Before measurements were done, both the surface of reflector housing and holder surfaces were carefully cleaned. All manipulations were performed in protective gloves. The distance from machine to the reflector was about 2000 [mm] during whole experiment. The studies was divided into two parts, one involved measurements of SMR of diameter of 1,5 inch, when in second part the SMR of diameter of 0,5 inch was tested. The two specially designed holders were used in order to stabilize them during experiment. The larger retroreflector was placed on three steel balls so it would be always supported by exactly three points. Due to the small size of the second retroreflector a holder with magnetic properties in the form of a ring was used (Figure 3).



Figure 3: The holder used in 0,5 inch SMR measurements

In the first part of the experiment the form deviations of both SMRs were checked. The measurements were performed using the Talycenta by Taylor-Hobson, which accuracy is better than 0,5 [μm]. The measurements for both reflectors were performed in three parallel planes on SMR surface. No roundness deviation did not exceed 1.5 [μm]. On the basis of the obtained results it was estimated that the errors caused by the movement of retro-reflector in each axis due to the cooperation of holder and SMR surfaces will be no greater than 0,5 [μm].

The experiment consisted of 50 measurements of SMR center coordinates in two states – when reflector remained in one position and with the changes in retroreflector angular orientation. During second phase of experiment reflector was rotated in such a way to faithfully reproduce the behavior of retroreflector during measurements performed in everyday practice. Gathered in such a way data are then subjected to statistical analysis. The standard deviation and range for each coordinate were calculated. Additionally also the uncertainty of each coordinate determination was estimated using the A method. All results are summarized in the following tables. In the tables 3 and 6 the differences between the experiment states are present.

Table 1 Results obtained for fixed 1,5 in SMR

Fixed position	x	y	z
Standard deviation	0,00597	0,00077	0,00363
Range	0,0267	0,0033	0,0157
Uncertainty	0,00084	0,00011	0,00051

Table 2 Results obtained for rotated 1,5 in SMR

Changes in orientation	x	y	z
Standard deviation	0,00709	0,00423	0,00844
Range	0,0341	0,0206	0,0409
Uncertainty	0,00100	0,00060	0,00119

Table 3 Differences between experiment stages for 1,5 in SMR

Differences between states	x	y	z
Standard deviation	0,00111	0,00345	0,00481
Range	0,0074	0,0173	0,0252

Table 4 Results obtained for fixed 0,5 in SMR

Fixed position	x	y	z
Standard deviation	0,0095	0,0013	0,0050
Range	0,045	0,007	0,030
Uncertainty	0,0013	0,0002	0,0007

Table 5 Results obtained for rotated 0,5 in SMR

Changes in orientation	x	y	z
Standard deviation	0,0090	0,0031	0,0176
Range	0,044	0,012	0,069
Uncertainty	0,0013	0,0004	0,0025

Table 6 Differences between experiment stages for 0,5 in SMR

Differences between states	x	y	z
Standard deviation	-0,00050	0,00189	0,01258
Range	-0,001	0,005	0,039

2. Conclusions

Analyzing obtained results it can be concluded that both standard deviations and range values increases when the reflector changes its orientation. In case of 1,5 inch SMR it can be seen that the biggest values for fixed state are in x axis then in z axis, and for the second state the z-axis showed the biggest variability. For smaller SMR the same character of results was observed. This may be a premise that the study was done properly and the observed dependence is universal in these types of systems. Also the order of gradients sizes is unchanged for both studies - the largest occur in z axis then in x axis. This dependence may be universal for SMRs. In a case of 0,5 inch retroreflector relatively large increase in the value of the parameters in the z-axis was obtained, however, taking into consideration the low measurement uncertainty and the relatively low parameters values in other two axes, these results seems to be correct. But still so large difference is striking. Negative values in the last table for the 0.5 in retroreflector, suggest that the measurement accuracy increases with changes in reflector orientation, what is rather unlikely. However, the negative value of the standard deviation of 0.5 [μm] is less than both uncertainties for these measurements, thus the results should be regarded rather as no deterioration in the accuracy.

Considering the Laser Tracker accuracy and the observed results, it seems that changes in the SMR orientation do

not drastically affect the accuracy of measurement. Measurement errors caused in this way can be classified as a one of components of random errors. Before further conclusions can be formulated, the authors need to conduct additional studies to confirm the results and standardize observations. Additional information may be obtained by comparing only the distances indicated by interferometer, and here the authors perceive the direction of future work

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MECHANICAL PROPERTIES AND SETTING TIME OF A MILLED BROWN COAL FLY ASH GEOPOLYMER BINDER

David Rieger - Lucie Kullová - Marcela Čekalová - Pavel Novotný - Michal Pola

University of West Bohemia, New technologies - Research Centre

Univerzitni 8
Pilsen, 306 14, Czech Republic
+420 377 634 807
davidpj@ntc.zcu.cz

Abstract: This paper is aimed for investigation of fly ash binder with suitable parameters for civil engineering needs. The fly ash, obtained from Czech brown coal power plant Prunerov II was used as the representative of one of the most abundant category of industrial byproducts. Because of poor reactivity of raw fly ashes, selected material was milled to suitable particle size for alkali-activated hardening process. This process of hardening is driven by dissolution of aluminosilicate content of fly ash and by subsequent condensation of inorganic polymeric network. The development of hardening process was measured by small amplitude oscillatory rheometry. The micro-structure and compressive strength development of hardened binders was investigated according to scanning electron microscopy observations and mechanical strength measurements respectively. Our investigations find out that fly ash treated by milling can be comparable to metakaolin geopolymers, according to setting time and mechanical strength even at room temperature curing. Moreover, achieved compressive strength of 75.1 MPa after 21 days is comparable to performances of high grades of Portland cement concretes.

Keywords: alkaline activation, geopolymer, fly ash, milling, binder

1. Introduction

The ashes are one of the main byproducts of human activities arising from burning of coal for production of electricity and heat in power and heating plants. Today, the worldwide production of coal burning ashes are estimated somewhere around 700 million tons per year [1-4]. The ash arising mainly from mineral content of burned coal and their nature is affected by type of combustion process, combustion temperature and rate of cooling. Principally, ashes can be divided to two categories, according to place of origin in combustion process. Bottom ash comprises approximately 20 – 25 % of total coal burning ashes and takes place as a solid product in fire chamber. Remaining part of solid products is fly ash, airborne particles molten by combustion process and risen by stream of combustion products. Because of their origin, fly ash particles have very fine nature with diameters in range of 0.2 – 1000 µm [1,5,6]. In past century, the environmental and health risks associated with this fine nature were recognized and today are mainly separated from combustion stream by electrostatic separators as a byproduct.

Because of spherical shape, content of silica and aluminum oxide and mainly amorphous composition, fly ash has potential to be used as valuable industrial material. In last decades, fly ash is increasingly used in civil industry as a partial replacement of clinker in ordinary Portland cement (OPC) for their latent hydraulic properties. Materials with this properties dissolves in alkaline conditions of clinker-water mixture and react with excess of calcium hydroxide to precipitation of C-S-A-H gel and so on participates in final structure of hardened concrete [7,8]. For civil industry needs, it was taken classification by American Society for Testing and Materials (ASTM) to two main categories. According to C 618, fly ash is divided to Class F with amount of latent hydraulic oxides ($\text{SiO}_2 + \text{Al}_2\text{O}_3 + \text{Fe}_2\text{O}_3$) equal or higher than 70% by mass, in

comparison to 50% content in Class C. But by many authors in related literature is this classification simplified only to second parameter of classification, where Class F do not contain more than 20% of CaO by mass. However, despite to long term investigation of OPC replacement by fly ash, it is still only 53% of produced fly ash reused worldwide, mainly for environmental recultivations. In Czech Republic, from overall production of 13 million tons of electric power industry byproducts are 59% reused for recultivations and only 11% in building industry [9]. It is because of replacement of OPC by fly ash can be only partial and in many cases have blended concrete inferior mechanical performance.

Another possibility for reuse of fly ash in mass scale is process called geopolymerization [10,11]. This process consists of alkaline activation of a variety of materials including thermally activated clays, coal fly ash and blast furnace slag to produce a solid material with mechanical and thermal properties potentially suitable for wide range of industrial applications, such as binders in civil engineering, fire resisting parts, foams, earths stabilizers, and many more [12,13]. Alkali activated binders were discovered by Purdon and Glukhovskiy in the 1940s and are studied up today [14,15]. Subsequently, Davidovits termed this type of materials as “geopolymers” and introduced pioneering alkali activated systems based on calcined clays [16,17]. From a general point of view, the alkaline activation of an aluminosilicate material as a fly ash or calcined clay take place by blending with a highly concentrated alkaline solution of an alkali metal hydroxides or silicates [18]. In this case, the alkali solution controlling the disaggregation processes of the solid phase via combination of partial dissolution of solid particles and cleavage of the Si-O-Si, Al-O-Al, Al-O-Si bonds [19]. The subsequent hardening of geopolymer binder takes place, by spontaneous gel precipitation and the polycondensation

mechanism [20,21] leads to solid phase formation and hardening of the binder. Unfortunately, in the case of fly ash alkaline activation, according to many authors, it is necessary to apply high temperatures and highly concentrated aggressive solutions for proper hardening [1,22-26].

In this paper, we are demonstrating possibility to use process called mechanical activation for improvement of fly ash reactivity in alkaline conditions. This process lies in high energy grinding of raw material to increase contact surface and to introduce of defects and mechanical stress in individual grains of binder [27-29]. This process led to better accessibility of reactive material and speeds up the hardening reaction of binder. The results indicate, that fly ash can be converted binding material with excellent binding properties, comparable with high performance concretes.

2. Materials

2.1 Raw fly ash

In this study, the fly ash from coal power plant Prunerov II of CEZ a. s. was used. The samples of fly ash were taken directly after electrostatic separation. Table 1 summarizes chemical composition determined by X-ray fluorescence (XRF) spectrometer Bruker AXS S4 Explorer calibrated for aluminosilicate materials. The loss on ignition was determined by thermogravimetric measurement on TA Instruments Q500. According to result of chemical analysis, this fly ash can be classified as Class F with low amount of sulphates. For determination of fineness, the measurement of specific surface area (BET - Brunauer, Emmett, Teller theory) was used and performed at a SEA Inverse Gas Chromatography instrument with n-octane as probing molecule. The results indicate average value of $0.4745 \text{ m}^2/\text{g}$. This result is in agreement with electron microscopy observations, performed at scanning electron microscope (SEM) JEOL JCM-5000. Figure 1 represents raw fly ash with typical spherical particles and highly porous aggregates.

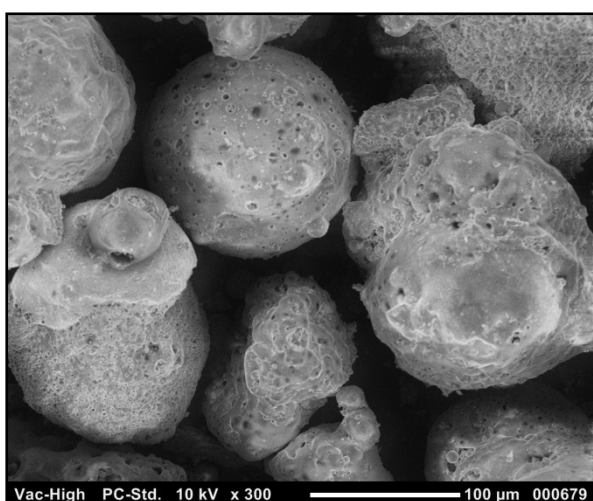


Figure 1: SEM image of raw fly ash

Table 1. Chemical composition of fly ash [mass %]

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	K ₂ O	Na ₂ O	SO ₃	Oth.	LOI	Total
53.00	29.22	8.37	2.43	1.67	1.11	0.63	0.29	1.59	1.63	100.00

2.2 Milling process

The milling process was performed in laboratory vibrational mill BVM-2 for period of 150 minutes. The amount of milled fly ash was 100 grams and the final fineness according to BET measurement reaches average value of $1.1954 \text{ m}^2/\text{g}$. Material after mechanical activation consists of very fine particles, how can be seen in Figure 2. SEM analysis reveal that particles are of irregular shape with diameter smaller than 30 mm, however considerable part of particles is in submicrometer region. This material is more suitable for hardening process by alkaline activation.

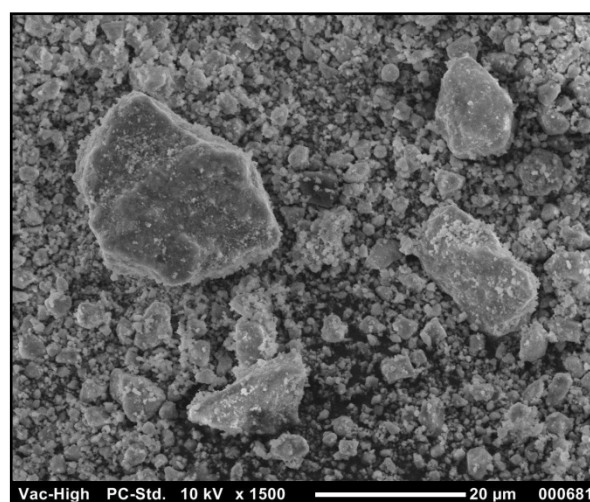


Figure 2: SEM image of milled fly ash

2.3 Alkaline activator and filling material

As an alkaline activator of hardening reaction, commercially available potassium silicate solution, with silicate module 1.61 and content of water soluble solids 35.03 %, was used. As filler for compressive strength investigations, the calcined chamotte with trademark Chamotte NP special with a granularity range of 0–0.1 and 0–0.5 mm was used. These materials were supplied by Ceske lupkove zavody a.s. and was used in proportion 1:2.

3. Procedures and results

3.1 Hardening kinetics

The setting time and reaction kinetics were determined by time-resolved oscillatory rheometric measurements with small amplitude on a strain controlled rheometer Ares G2 from TA Instruments in plane-plane geometry according to the literature [30,31] and according to our procedure described earlier [32]. The procedure is as follows.

Milled fly ash in accurate amount of 50 g was poured into 40 g of potassium silicate solution and the mixture was then mixed in laboratory vacuum mixer for 5 minutes and immediately transferred into the rheometer.

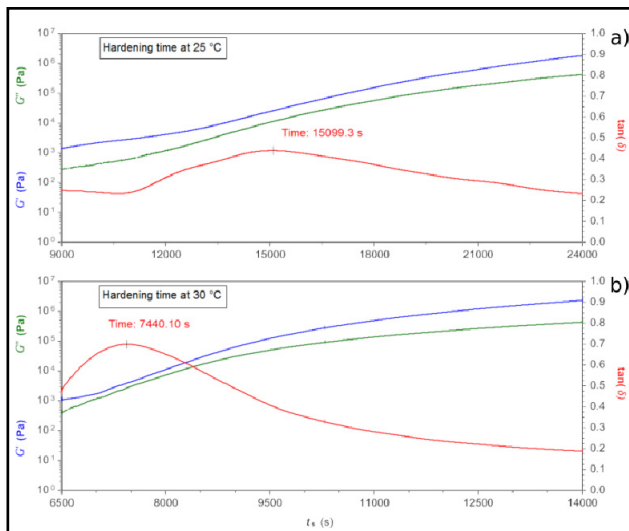


Figure 3: Results of hardening process measurements
a) isotherm 25 °C, b) isotherm 30 °C

The measurement was performed in plane-plane geometry, so that the mixture in an amount of approximately 500 ml was placed into the middle of plane plates and the gap was set to a working distance lower than 1 mm. Isothermal heating was initiated after 12 minutes for a period of time necessary for mixture hardening. The conditions of measurement were as follows. Radial velocity 10 rad/sec and strain 0.01% were applied to ensure a minimal influence on the hardening process. Subsequently, the maximum of loss tangent was traced, according to literature [30,31]. The point of maximum value can be considered as transition of inner structure from pseudoliquid solution to semi-solid inorganic polymeric network. Figure 3 shows time dependences of particular rheometric quantities for the alkaline activated fly ash binder. Result indicates that reached setting time is comparable with metakaolin and calcined shale binders. Moreover, application of elevated temperatures was not necessary, as is usually needed by fly ash binders. It is also evident, that hardening process strongly depends on temperature.

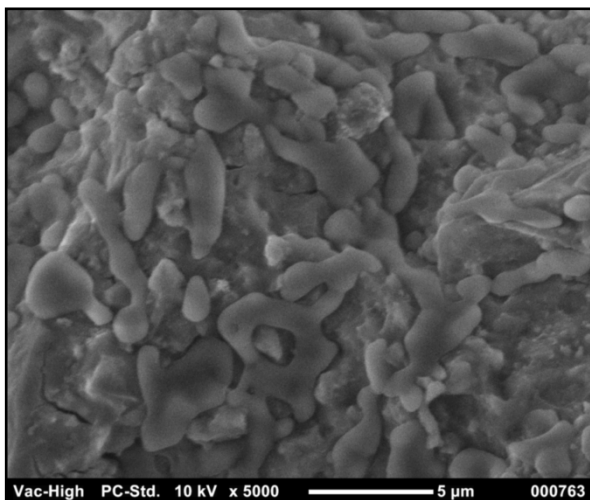


Figure 4: SEM image of hardened binder microstructure after 3 days

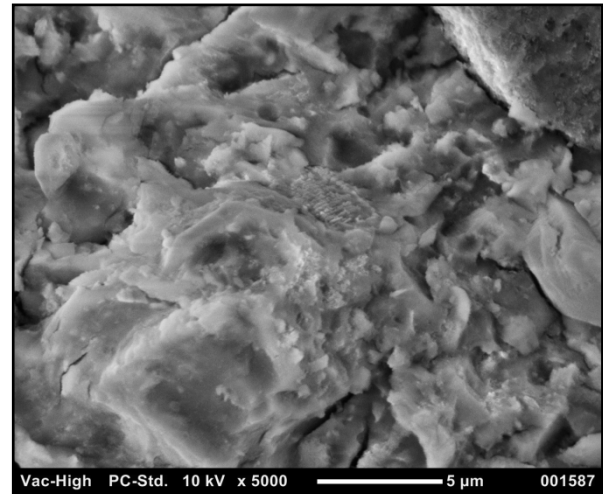


Figure 5: SEM image of hardened binder microstructure after 21 days

3.2 Compressive strength

For compressive strength investigations, individual samples were prepared by mixing of 10 weight parts of milled fly ash with 8 parts of potassium silicate solution in weight proportions and then 30 weight parts of filler were admixed. After that, the mixing was performed in a household stainless steel planetary mixer for a period of 10 minutes. Subsequently, the mixtures were cast and vibrated in molds with dimensions of 20×20×20 mm for compressive strength determinations. Samples were unmolded after 48 hours and cured at ambient temperature in polypropylene bags to prevent humidity loss. Tests of mechanical properties were performed after selected periods of time on LABTEST 6.100 SP1.

Results indicate that mechanical strength suitable for civil engineering was reached after 3 days with value of 31.3 ± 1.2 MPa. After 21 days, compressive strength reached average value of 75.1 ± 5.0 MPa. This value is comparable to high grades of OPC and geopolymer binders doped by elements of alkali earth metals [33]. Moreover, this binder does not need any organic surfactants, how it is common for high grades of OPC.

These results are in agreement with SEM observations. In Figure 4, the magnified structure of binder after 3 days is shown and partly dissolved particles of fly ash are observable with ongoing transformation to geopolymer gel as a binding phase. After 21 days as can be seen in Figure 5 is transformation almost complete and homogenous structure of dense geopolymeric binding gel is clearly observable. This structure is leading to such high mechanical strength.

4. Conclusions

This study demonstrates, that fly ash can be used as suitable binder for demanding civil engineering needs and with proper treatment can be comparable to high grade cement binders. Moreover, setting time of presented binder is shorter than geopolymer binders. This behavior is caused mainly by high surface area of milled fly ash powder and by low porosity of particles as well. This properties leads to low demand of admixture water, rapid dissolution of fly ash particles and to fast construction of geopolymeric binding structure.

Acknowledgements

The result was developed within the CENTEM project, reg. no. CZ.1.05/2.1.00/03.0088, cofunded by the ERDF as part of the Ministry of Education, Youth and Sports OP RDI programme and, in the follow-up sustainability stage, supported through CENTEM PLUS (LO1402) by financial means from the Ministry of Education, Youth and Sports under the National Sustainability Programme I. The authors wish to thank RNDr. Petr Franče and Ing. Tomáš Kovářik Ph.D. for valuable discussions in aluminosilicate topics.

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Jasek, Roman
Smiraus, Michal

QUERY ANSWERING UNDER EVOLVING ONTOLOGIES WITH MAPPING REDEFINITION

Michal Smirauš - Roman Jasek

Thomas Bata University in Zlin, FAI

Nad Stranemi 4511

Zlin, 760 05, Czech Republic

+420 606 814 200

smirauš@fai.utb.cz - jasek@fai.utb.cz

Abstract: *Data integration provides the ability to manipulate data transparently across multiple data sources. An important problem when dealing with ontologies is the fact that they are living artifacts and subjects to change. When ontologies evolve, the changes should somehow be rendered and used by the pre-existing data integration systems. In most of these systems, when ontologies change their relations with the data sources i.e. the mappings, are recreated manually, a process which is known to be error-prone and time-consuming. In this paper, the theoretical solution is provided to allow query answering under evolving ontologies with mapping redefinition.*

Keywords: *ontology, semantic, data integration*

1. Introduction

Ontologies are becoming more and more important in data integration. It is relevant to a number of applications including enterprise information integration, medical information management, geographical information systems, and E-Commerce applications.

The development of new techniques and the emergence of new high throughput tools have led to a new information revolution. The nature and the amount of information now available open directions of research that were once in the realm of science fiction. During this information revolution the data gathering capabilities have greatly surpassed the data analysis techniques, making the task to fully analyze the data at the speed at which it is collected a challenge. The amount, diversity, and heterogeneity of that information have led to the adoption of data integration systems in order to manage it and further process it. However, the integration of these data sources raises several semantic heterogeneity problems.

2. Ontologies

Ontology is a formal, explicit specification of a shared conceptualization [1]. In this definition, conceptualization refers to an abstract model of some domain knowledge in the world that identifies that domain's relevant concepts. "Shared" indicates that ontology captures consensual knowledge, that is, it is accepted by a group. "Explicit" means that the type of concepts in ontology and the constraints on these concepts are explicitly defined.

Finally, "formal" means that the ontology should be machine understandable. Typical "real-world" ontologies include taxonomies on the Web (e.g., Yahoo! categories), catalogs for on-line shopping (e.g., Amazon.com's product catalog), and domain-specific standard terminology (e.g., UMLS and Gene Ontology). As an online lexicon database, WordNet is widely used for discovery of semantic relationships between concepts.

Existing ontology languages include:

XML Schema – semantic markup language for Web data.
The database-compatible data types supported by XML

Schema provide a way to specify a hierarchical model. [3] However, there are no explicit constructs for defining classes and properties in XML Schema, therefore ambiguities may arise when mapping an XML-based data model to a semantic model.

RDF and RDFS – data model developed by the W3C for describing Web resources. [2] The main aim is to describe vocabularies of RDF data in terms of primitives such as *rdfs:Class*, *rdfs:Property*, *rdfs:domain*, and *rdfs:range*. In other words, RDFS is used to define the semantic relationships between properties and resources.

DAML+OIL – full-fledged Web-based ontology language developed on top of RDFS. [3] It features an XML-based syntax and a layered architecture. It provides modeling primitives commonly used in frame-based approaches to ontology engineering, and formal semantics support found in description logic approaches. It also integrates XML Schema data types for semantic interoperability in XML.

OWL – semantic markup language for publishing and sharing ontologies on the Web. It is developed as a vocabulary extension of RDF and is derived from DAML+OIL. Other ontology languages include SHOE (Simple HTML Ontology Extensions), XOL (Ontology Exchange Language), and UML (Unified Modeling Language). [4] Among all these ontology languages, we are most interested in XML Schema and RDFS for their particular roles in data integration and the Semantic Web [5].

3. Semantic data integration

Semantic data integration is the process of using a conceptual representation of the data and of their relationships to eliminate possible heterogeneities. At the heart of semantic data integration is the concept of ontology, which is an explicit specification of a shared conceptualization. Ontologies were developed by the Artificial Intelligence community to facilitate knowledge sharing and reuse [6]. Carrying semantics for particular domains, ontologies are largely used for representing domain knowledge. A common use of ontologies is data standardization and conceptualization via a formal machine-understandable ontology language.

For example, the global schema in a data integration system may be an ontology, which then acts as a mediator for reconciliation the heterogeneities between different sources. As an example of the use of ontologies on peer-to-peer data integration, we can produce for each source schema a local ontology, which is made accessible to other peers so as to support semantic mappings between different local ontologies.

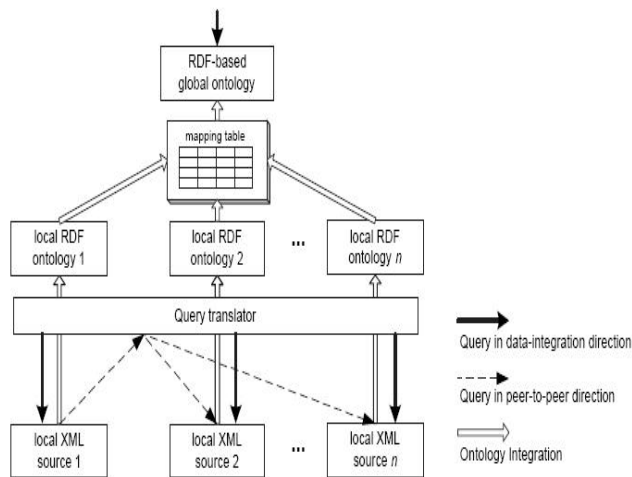


Figure 1: Semantic Data Integration and Interoperation

By accepting ontology on Fig. 1. as a point of common reference, naming conflicts are eliminated and semantic conflicts are reduced. During the last years, ontologies have been used in database integration [3], obtaining promising results, for example in the fields of biomedicine and bioinformatics. When using ontologies to integrate data, one is required to produce mappings, to link similar concepts or relationships from the ontologies to the sources (or other ontologies) by way of equivalence – according to some metric. The key in bringing legacy data with formal semantic meaning has been widely recognized to be the inclusion of mediation between traditional databases and ontologies [5, 9]. During the last years, ontologies have been used in database integration, obtaining promising results, for example in the fields of biomedicine and bioinformatics. In various areas data sources can be heterogeneous in syntax, schema, or semantics, thus making data interoperation a difficult task [6]. Syntactic heterogeneity is caused by the use of different models or languages. Schematic heterogeneity results from structural differences. Semantic heterogeneity is caused by different meanings or interpretations of data in various contexts. To achieve data interoperability, the issues posed by data heterogeneity need to be eliminated. Due to the rapid scientific development, ontologies and schemata need to change. When ontologies evolve, the changes should somehow be rendered and used by the pre-existing data integration systems, which is a problem that most of the integration systems available today seem to ignore.

4. Modeling ontology evolution

For modeling ontology evolution we use a language of changes that describes how an ontology version was

derived from another ontology version. In its simplest form, a language of changes consists of only two low-level operations, Add(x) and Delete(x), which determine individual constructs (e.g., triples) that were added or deleted [7]. Such a language is called a low-level language of changes. However, a significant number of recent works [6, 8, 10] imply that high-level change operations should be employed instead, which describe more complex updates, as for instance the insertion of an entire subsumption hierarchy (they group individual additions and deletions). Consider the example RDF/S ontology shown on the left of Fig 2. This ontology is used as a point of common reference, describing persons and their contact points. We also have two relational databases DB1 and DB2 mapped to that version of the ontology. Assume now that the ontology designer decides to move the domain of the “has_cont_point” property from the class “Actor” to the class “Person”, and to delete the literal “gender”. Moreover, the “street” and the “city” properties are merged to the “address” property as you can see on the right side of Fig 2. Then, DB3 is mapped to the new version of the ontology leading to two data integration systems that work independently. In such a setting we would like to issue queries formulated using any ontology version available. Moreover, we would like to retrieve answers from all underlying databases.

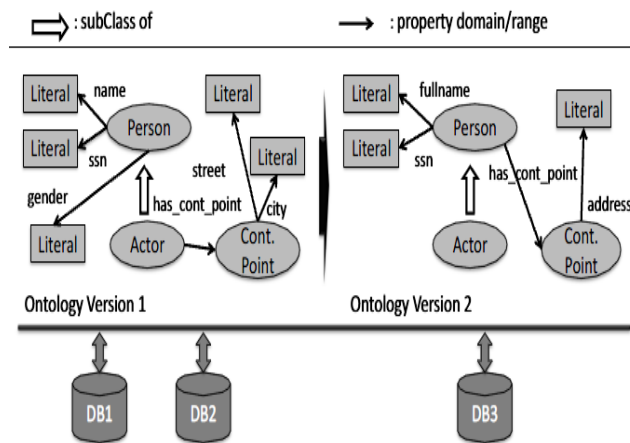


Figure 2: Example of an evolving ontology

Furthermore, several research works tried to deal with similar problems. For XML databases, for example, there have been several approaches that try to preserve mapping information under changes [11] or propose guidelines for XML schema evolution in order to maintain the mapping information [12]. Moreover, augmented schemata were introduced in [3] to enable query answering over multiple schemata in a data warehouse, whereas other approaches change the underlying database systems to store versioning and temporal information such as [6].

However, our system differs from all the above in terms of both goals and techniques. To the best of our knowledge no system today is capable of retrieving information mapped with different ontology versions.

5. Ontologies for data integration

Ontologies have been extensively used in data integration systems because they provide an explicit and machine-understandable conceptualization of a domain.

1) *In fact Ontologies have been practical used in one of the three following ways.*

a) *Single ontology approach:* All source schemas are directly related to a shared global ontology that provides a uniform interface to the user [9]. However, this approach requires that all sources have nearly the same view on a domain, with the same level of granularity. A typical example of a system using this approach is SIMS [3].

b) *Multiple ontology approach:* Each data source is described by its own (local) ontology separately. Instead of using a common ontology, local ontologies are mapped to each other. For this purpose, an additional representation formalism is necessary for defining the inter-ontology mappings. The OBSERVER video surveillance system is an example of this approach.

c) *Hybrid ontology approach.* A combination of the two preceding approaches is used. First, a local ontology is built for each source schema, which, however, is not mapped to other local ontologies, but to a global shared ontology. New sources can be easily added with no need for modifying existing mappings.

2) *Data integration across heterogenous data sources and data aggregation should, ideally, allow for:*

a) Data to be searched, queried, extracted, integrated and shared in a scientifically and semantically consistent manner across heterogeneous sources, both public and proprietary, ranging from chemical structures and omics to clinical trials data;

b) Discovery and invocation of scientific tools that are shared by the community, rather than repeatedly developed by each and every organisation that needs to analyse their data;

c) Both the sharing of tools, and their integration as modules in a generic framework, applied to relevant dynamic datasets. We refer to this process as “discovery driven scientific workflows” which ideally would also execute fast and in an unsupervised manner.

We conceive an Evolving Data Integration system as a collection of data integration systems, each one of them using a different ontology version as global schema. Therefore, we extend the traditional formalism from [10] and define an Evolving Data Integration system as a tuple of the form $((O_1, S_1, M_1), \dots, (O_m, S_m, M_m))$ where O_i is a version of the ontology used as global schema, S_i is a set of local sources and M_i is the mapping between S_i and O_i ($1 \leq i \leq m$).

Considering O_i we restrict ourselves to RDF/S knowledge bases, as most of the Semantic Web Schemas (85,45%) are expressed in RDF/S [12]. The most relevant approaches that could be employed for resolving the problem of data integration with evolving ontologies is mapping composition, inversion mapping adaptation and mapping adaptation as you can see on Fig. 3 [9]

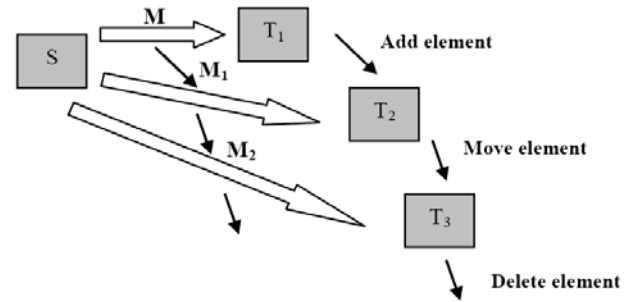


Figure 3: Adapting Schema Mapping Redefining

In mapping adaptation [6] the main idea is that schemata often evolve in small, primitive steps; after each step the schema mappings can be incrementally adapted by applying local modifications. However, this approach is integration system dependent, and is not specified in which way the list of changes might be discovered when two schema versions are directly provided. But even when such a list of changes can be obtained, applying the incremental algorithm for each change and for each mapping in this potentially long list will be highly inefficient.

Another problem is that multiple lists of changes (by introducing redundant additions/deletions for example) may have the same effect of evolving the old schema into a new one [11]. Finally, there is no guarantee that after repeatedly applying the algorithm, the semantics of the resulting mappings will be the desired ones.

This happens because complex evolution might happen, that cannot be modeled with simple additions and deletions, and dependencies might be lost. In order to tackle these problems we use a more expressive language of changes that leads to unique sequence of changes between two ontology versions with reduced size compared to the long list of low-level operators. In addition the initial semantics of the provided mappings are maintained since we do not change the mappings but instead we rewrite the queries.

Moreover the properties like composability and inversibility can be exploited for improving efficiency and change operation is defined as a change operation u over O , is any tuple (δ_a, δ_d) where $\delta_a \cap O = \emptyset$ and $\delta_d \subseteq O$. A change operation u from O_1 to O_2 is a change operation over O_1 such that $\delta_a \subseteq O_2 \setminus O_1$ and $\delta_d \subseteq O_1 \setminus O_2$.

Obviously, δ_a and δ_d are sets of triples end especially the triples in δ_d are triples coming from the ontology O . For simplicity we will denote $\delta_a(u)$ ($\delta_d(u)$) the *added* (*deleted*) triples of a change u . From the definition, it follows that $\delta_a(u) \cap \delta_d(u) = \emptyset$ and $\delta_a(u) \cap \delta_d(u) \neq \emptyset$ if $O_1 \neq O_2$.

For the change operations proposed in [12] and the corresponding detection algorithm, it has been proved that the sequence of changes between two ontology versions is *unique*. Moreover, it is shown that for any two changes u_1, u_2 in such a sequence it holds that $\delta_a(u_1) \cap \delta_a(u_2) = \emptyset$ and $\delta_d(u_1) \cap \delta_d(u_2) = \emptyset$. These nice properties and their consequences are among the reasons that led us to adopt that specific language for describing changes among ontologies. Hereafter, whenever we refer to a change

operation, we mean a change operation from those proposed in [12]. Now we need to define their application semantics. The application of a change u over O , denoted by $u(O)$, is defined as: $u(O) = (O \cap \delta_a(u)) \setminus \delta_d(u)$.

Two key observations here are that the application of out change operations is not conditioned by the current state of the ontology and that we don't handle inconsistency, (i.e., $(O \cap \delta_a(u)) \setminus \delta_d(u)$ is always assumed to be consistent). In the next example the change log between O_2 and O_1 , consists of the following change operations:

u1: *Rename_Property*(*fullname, name*)

u2: *Split_Property*(*address, {street, city}*)

u3: *Specialize_Domain*(*has_cont_point, Person, Actor*)

u4: *Add_Property*(*gender, $\emptyset, \emptyset, \emptyset, \emptyset, Person, xsd:String, \emptyset, \emptyset$*)

The definition of the change operations that are used in this paper can be found on [12]. It is obvious, that applying those change operations on O_2 , results O_1 .

Finally, since a change operation is actually a mapping function that maps O_1 to O_2 , a question is whether there exists the inverse function, the inverse change operation that maps the O_2 to the O_1 ontology version. By automatically constructing the inverse of a sequence of change operations (from O_1 to O_2), we will be able to rewrite queries expressed using O_2 to O_1 and vice versa.

Ontology representation formalisms involve the notion of validity, meaning that certain combinations of ontology axioms are not valid.

This is not true for databases, in which any set of tuples that corresponds to the schema is valid (barring the use of integrity constraints, which are, in essence, logical formulas). The notion of validity also affects the change process, forcing us to introduce adequate side-effects in each change operation, in a way that would allow us to maintain validity in the face of such changes.

Therefore, maintaining the correct mappings is more difficult in ontologies (where side-effects must also be considered) than in databases.

For similar reasons, the notion of inference, which exists in ontological formalisms but not in relational databases, affects the process of maintaining the mappings. This issue has two facets: one is related to the different semantics (foundational or coherence [13]) that could be employed during change and its effects on the update results, and, consequently, on the mappings; the second is related to the fact that inferred knowledge could also give rise to inferred mappings, which should similarly be maintained.

6. Conclusions

In this paper, we argue that dynamic ontologies are very common, so data integration systems should be aware and ready to deal with that. We reviewed existing approaches for handling schema and ontology evolution and assessed their applicability in an ontology-based data integration system. To that direction a theoretical approach that allows query answering under evolving ontologies with mapping redefinition is presented. To conclude, an ideal solution should try to exploit the initial mappings, the changes of the ontology and the query expressed using a specific version of the ontology to try to get answers from all

databases mapped. As future work, several challenges need to be resolved as it might not be possible to extract information mapped to a class, using a later ontology version in which the specific class is deleted or moved. An interesting topic would be also to extend this approach for OWL ontologies and to expand this approach to handle the full expressiveness of the SPARQL language. It becomes obvious that ontology evolution in data integration is an important topic and several challenging issues remain to be investigated in near future.

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Barányiová, Irena
Klem, Karel
Kullova, Lucie
Loukotova, Lenka
Mohan, Dodda Jagan
Rieger, David
Vohlidal, Jiri

SYNTHESIS AND CHARACTERIZATION OF POLYIMIDES AND CO-POLYIMIDES DERIVED FROM ALIPHATIC / CYCLIC / AROMATIC DIAMINES AND DIANHYDRIDES

^{1,2}Lenka Loukotova - ¹Dodda Jagan Mohan - ¹Lucie Kullova - ¹David Rieger - ²Jiri Vohlidal

¹University of West Bohemia, New technologies - Research Centre

Univerzitni 8
Pilsen, 306 14, Czech Republic
+420 377 634 816

²Charles University in Prague, Faculty of Science, Department of Physical and Macromolecular Chemistry

Hlavova 2030
Prague, 128 43, Czech Republic
loukoto@ntc.zcu.cz - jagan@ntc.zcu.cz

Abstract: Polyimide (PI) and co-polyimide (cPI) membranes prepared by curing the films of homopolymeric and copolymeric polyamic acid (PAA) intermediates are characterized as to their thermal stability and morphology using the FT-IR, TGA, DSC and SEM methods. The TGA profiles showed a decrease of the initial decomposition temperature (IDT) from about 500 °C to about 370 °C when going from PIs and cPIs with aromatic to linear aliphatic amine units. DSC scans clearly displayed glass transition temperatures (T_g) for all membranes in the range from 154 to 320 °C. On the other hand, the aliphatic diamine units improve solubility and thus also processing of PAAs which also influences properties of resulting membranes. Here we present high-temperature resistant membranes that are easy to prepare at relatively low costs and thus might be utilized in a wide range of high-temperature technological applications.

Keywords: polyimide membrane, co-polyimide membranes, TGA, DSC, SEM

1. Introduction

Polyimides (PIs) are well-known high performance polymers with outstanding combination of mechanical, thermal, chemical and electrical properties [1]. They are widely used in microelectronics [2], aviation [3], liquid crystal displays [4] and as separation membranes [5]. PIs are usually prepared by the two-step polyamic acid (PAA) route [6], at which PAA prepared in the first step is subsequently imidized (thermally or chemically) to PI. The major advantage of this route is a good processability of the intermediate PAAs, due to which it can be shaped into a required form, such as a film, membrane or plate, or used as a matrix for various polymer composites [7].

Most of PIs are insoluble due to their rigid backbones and many efforts have been made to improve their solubility by introducing flexible linkages [8], bulky side groups [9] or assymetrical moieties [10] into their chain. Obviously, these approaches should maintain the balance between the solubility and the thermal stability of PIs.

Recently, Gong et al. reported the synthesis of sulfonated polyimides (SPIs) covalently cross-linked with octa(aminophenyl)silsesquioxane (OAPS), which show improved mechanical and chemical stability and the high proton conductivity comparable to that of Nafion[®] [11]. Wiston Ho et al. prepared mechanically resistant SPI membranes displaying at temperatures above 140 °C higher conductivity than Nafion[®] [12]. Previously, we have reported different types of promising membranes such as aromatic-cycloaliphatic polyamide thin film composite membranes [13], poly(amide imide)s [14] or polyvinyl alcohol composite films [15] for inorganic solution separations and other applications.

In the present paper, we report the synthesis of PAAs from aliphatic, cyclic and aromatic diamines and aromatic

dianhydrides, transformation of these new PAAs into PI and cPI membranes and a comparison of the thermal stability and morphology of membranes formed from different PAAs. The resulting membranes are characterized by FT-IR, SEM, TGA and DSC methods.

2. Experimental

2.1. Materials

3-Aminophenyl sulfone (3APS), benzophenone-3,3',4,4'-tetracarboxylic dianhydride (BTDA), cyclohexane-1,3-bis(methylamine) (CHBMA), DADPM and pyromellitic dianhydride (PMDA) were purchased from Sigma Aldrich (USA). Hexane-1,6-diamine (DAH), propane-1,3-diamine (DAP), *N,N*-dimethylformamide (DMF) and dimethyl sulfoxide (DMSO) were purchased from Merck (Germany). The other reagents and solvents were of the analytical grade and all the chemicals were used as received.

2.2 Preparation of P¹ membrane

DAP (1.48 g; 20 mmol) was dissolved in 50 mL of DMF in a three neck flask, equipped with N₂ inlet, thermometer and stirrer. BTDA (6.44 g; 20 mmol) was slowly added to the diamine solution and the reaction mixture was cooled to 0 °C. The solution was stirred for 1 h and subsequently at room temperature for the following 23 h. The reaction mixture was then poured into deionized water, the precipitated polyamic acid (P^{AA}1) was filtered off, washed with methanol and dried in a vacuum oven at 80 °C for 24 h (yield 94 %). The dry P^{AA}1 was then dissolved in DMF giving a viscous solution that was poured into an automatic film applicator for casting membranes. The P^{AA}1 films were thermally imidized to give P¹ membranes

by gradual curing at temperature of 80 °C, 200 °C and 240 °C, for 2 hours at each.

A similar protocol was used for the synthesis of membranes P² – P⁵ (Table 1) and the scheme of synthesis of P¹ – P⁵ is shown in Figure 1.

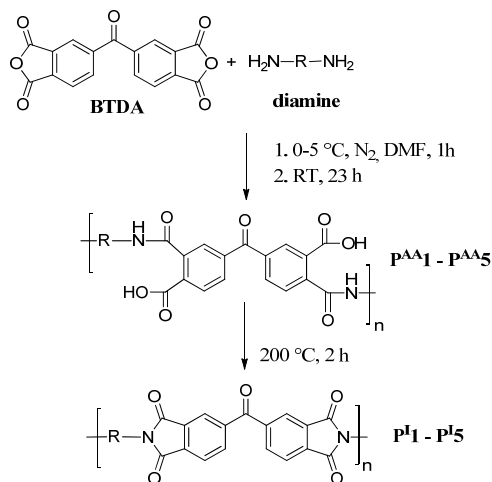


Figure 1: Preparation of P¹ – P⁵

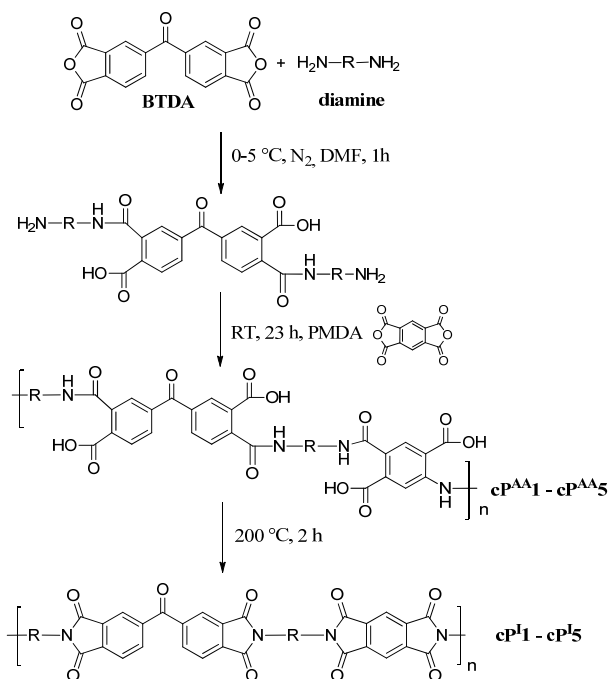


Figure 2: Preparation of cP¹ – cP⁵

2.3 Preparation of cP¹ membrane

DAP (1.48 g; 20 mmol) was dissolved in 50 mL of DMF and BTDA (3.22 g; 10 mmol) was slowly added to this solution under nitrogen atmosphere. The reaction mixture was cooled to 0 °C and stirred for 1 h, then PMDA (2.18 g, 10 mmol) was added and the stirring was continued for the next 23 h at room temperature. The reaction mixture was poured into deionized water, filtered off and washed with methanol and the obtained polyamic acid (cP^{AA1}) was dried in a vacuum oven at 80 °C for 24 h (yield 89 %). The

cP¹ membrane was prepared using the same protocol as described above for P¹. The scheme of synthesis of membranes cP¹ – cP⁵ (for yields see Table 1) is shown in Figure 2.

Table 1 Structure of starting diamines and their labels

R	Figure 1	Figure 2
	P ¹ (P ^{AA1}) – 94 %*	cP ¹ (cP ^{AA1}) – 76 %*
	P ² (P ^{AA2}) – 90 %*	cP ² (cP ^{AA2}) – 82 %*
	P ³ (P ^{AA3}) – 97 %*	cP ³ (cP ^{AA3}) – 89 %*
	P ⁴ (P ^{AA4}) – 93 %*	cP ⁴ (cP ^{AA4}) – 82 %*
	P ⁵ (P ^{AA5}) – 97 %*	cP ⁵ (cP ^{AA5}) – 90 %*

* the isolated relative yield

2.4 Measurement

FT-IR spectra of PIs and cPIs thin films were recorded on a NICOLET iS5 spectrometer.

The TGA records were obtained on a TGA Q500 instrument (TA Instrument) under nitrogen atmosphere, using about 5 mg of each sample, temperature ranged from 25 °C to 800 °C at a rate of 10 °C min⁻¹. The DSC were measured on a DSC Q200 instrument (TA Instrument) using about 5 mg of sample and two heating cycles were recorded at the scanning rate of 10 °C min⁻¹ in a controlled nitrogen flow; the first heating cycle was carried out from 40 to 250 °C, then cooled to 40 °C and the second heating cycle was recorded up to 500 °C.

The SEM images were recorded on a JEOL NEOSCOPE JCM-5000 microscope.

3. Result and discussion

3.1 Polymer characterization

The FT-IR spectra of PIs and cPIs (Figure 3) showed characteristic bands of imide groups: medium intensity band about 1775 cm⁻¹ (asymmetrical C=O stretching), strong band at about 1700 – 1715 cm⁻¹ (symmetrical C=O stretching) and strong bands at 1360 – 1395 cm⁻¹ (C–N stretching) and in the region from 1300 to 1050 cm⁻¹ (C–N stretching and C–H deformation modes). In addition, the spectra of polymers P², P³, cP², cP³ showed weak bands around 2925 and 2850 cm⁻¹ (asymmetrical and symmetrical stretching modes of –CH₂– groups presented in the DAH and CHBMA units). P⁴, P⁵, cP⁴, cP⁵ showed extra bands at 1615 – 1590 and 1510 – 1580 cm⁻¹ due to aromatic C=C stretching modes. Similarly, for P⁵ and cP⁵ additional band was seen around 1300 cm⁻¹ corresponding to the sulfone stretching mode in 3APS. The bands at 3300 – 3500 cm⁻¹ characteristic of the N–H

stretching mode of amide groups are missing in the spectra of all cured PIs and cPIs, which indicates complete imidization of PAAs precursor polymers. However, the imide stretching bands have slightly shifted towards lower wavenumbers for the membranes with aliphatic and cyclic diamine units. These frequency shift could be caused by intermolecular interactions of neighbouring polyimide chains [16].

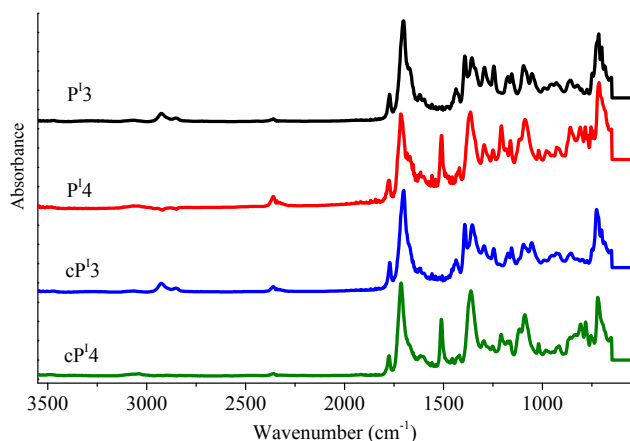


Figure 2: FT-IR spectra of P¹³, P¹⁴, cP¹³ and cP¹⁴

As far as the solubility of PAAs is concerned they are well soluble in polar aprotic solvents such as DMF, DMAc and DMSO at room temperature. Exceptions are P^{AA4} and cP^{AA4} that are soluble in these solvents only at higher temperatures.

3.2 Thermal analysis

The thermal analysis data for PIs and cPIs are summarized in Table 2 and examples of TGA weight loss curves for selected samples are shown in Figure 3. As can be seen, the structure of diamine units significantly influences the thermal stability of PI as well as cPI membranes. A single stage decomposition above 350 °C was observed for all membranes. The IDT values ranged from 373 to 503 °C. As expected, the membranes containing DADPM units showed exceptionally higher thermal stability, the IDTs were 503 °C / 491 °C (P¹⁴ / cP¹⁴) and their char yields were higher than 60 %. On the other hand, the DAH-units containing membranes (P¹² / cP¹²) exhibited the lowest thermal stability (373 °C / 412 °C).

The membranes with aromatic structure start to decompose at higher temperatures (> 450 °C), which is most caused by the presence of aromatic groups in their backbones. These membranes are obviously thermally more stable than membranes comprising aliphatic or cyclic units. Allen and Ishida [17] have reported that thermal stability increased and char yield systematically decreased for aliphatic diamine-based polybenzoxazines with different phenolic substitutions. However in our case, the thermal stability (> 400 °C) and the char yield (~50 %) for aliphatic DAP containing membranes (P¹¹ / cP¹¹) was much higher compared to DAH containing membranes (P¹² / cP¹²).

Table 2 Thermal properties of PIs and cPIs

Code	IDT ^a (°C)	CY ^b (%)	T _g ^c (°C)	Code	IDT ^a (°C)	CY ^b (%)	T _g ^c (°C)
P ¹¹	431	49	244	cP ¹¹	429	51	260
P ¹²	373	29	154	cP ¹²	412	27	156
P ¹³	430	15	217	cP ¹³	424	20	223
P ¹⁴	503	65	275	cP ¹⁴	491	62	320
P ¹⁵	473	58	256	cP ¹⁵	512	55	270

^a Initial decomposition temperature

^b Char yield at 800 °C

^c Glass transition temperature (DSC)

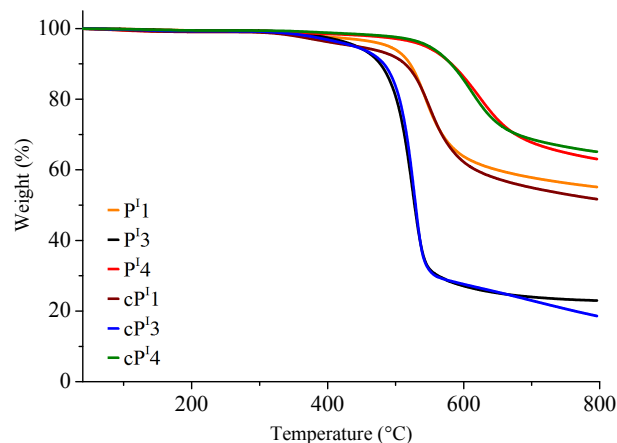


Figure 3: TGA spectra of selected PIs and cPIs

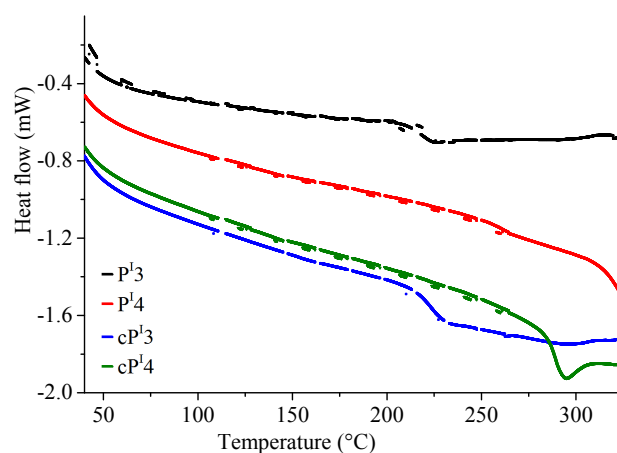


Figure 4: DSC spectra of selected PIs and cPIs

The thermal stability was also examined by the DSC method. The T_g values determined from the inflection points of DSC curves are summarized in Table 2 and the DSC records of selected PIs and cPIs are shown in Figure 4. All membranes showed a clear glass transition in the second heating scan and their T_g values ranged from 154 to 275 °C for PIs and from 156 to 320 °C for cPIs. The influence of diamine structures on the polymer properties is clearly demonstrated by the great difference in the T_g values. The lowest T_g values were observed for P¹² and cP¹² (154 and 156 °C, respectively), whereas the highest values were observed for P¹⁴ / cP¹⁴ (275 / 320 °C). Thus the DSC data provided similar behavior trends as observed

by TGA. Above 400 °C the DSC curve decreased rapidly for P¹₂ / cP¹₂ and P¹₃ / cP¹₃ because of chemical degradation of these polymers. This rapid decrease was not observed in the case of other polymers. Thermal analyses clearly show that the structure of diamine (aliphatic / cyclic / aromatic) plays a key role in designing the properties of the resulting PI and cPI membranes.

3.3 SEM

The surface morphology of the prepared membranes was investigated using scanning electron microscopy (SEM). As shown in Figure 5, SEM images revealed a dense and non-porous structure of prepared membranes. The membranes P¹₄ (Figure 5b) and cP¹₄ (Figure 5d) showed existence of microstructure lines which might be caused by aromatic character of starting diamines.

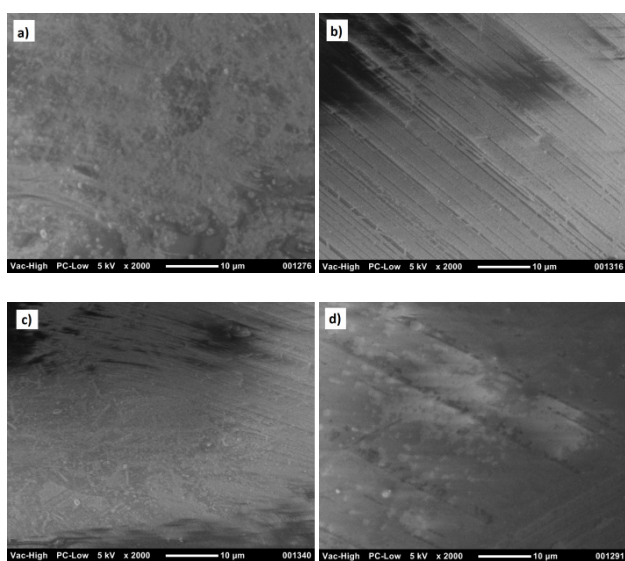


Figure 5: SEM images of P¹₁ (a), P¹₄ (b), cP¹₁ (c), cP¹₄ (d)

6. Conclusions

The PIs and cPIs membranes derived from various diamine and dianhydride monomers were successfully prepared using the route via corresponding PAA intermediates. The PAAs are well soluble in polar aprotic solvents at room temperature which is the key condition for easy membrane fabrication.

The thermal stability of the prepared membranes was investigated by TGA and DSC methods. Both the techniques showed that the structure of diamine (aliphatic / cyclic / aromatic) has an essential influence on resulting properties of polyimide and copolyimide membranes. As expected, DADPM containing membrane showed exceptionally higher thermal stability ($IDT = 503$ °C, $T_g = 320$ °C) compared to others. SEM images show dense and non-porous structure of prepared membranes, while SEM images of P¹₄ and cP¹₄ also show microstructure surface lines which might be caused by more intense interactions of amine units with aromatic character (DADPM).

These attractive features make PI membranes a potential candidate for high temperature applications.

Acknowledgements

The result was developed within the CENTEM project, reg. no. CZ.1.05/2.1.00/03.0088, cofunded by the ERDF as part of the Ministry of Education, Youth and Sports OP RDI programme and, in the follow-up sustainability stage, supported through CENTEM PLUS (LO1402) by financial means from the Ministry of Education, Youth and Sports under the National Sustainability Programme I and by Charles University in Prague, project GA UK No 202415.

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THE EFFECT OF USING PLANT GROWTH REGULATORS IN WINTER WHEAT UNDER WATER STRESS

Irena Barányiová – Karel Klem

Mendel University

Zemědělská 1

Brno, 613 00, Czech Republic

+420773871812

irenka2308@azet.sk - klem.k@czechglobe.cz

Abstract: The field trial aimed to evaluate the effect of different growth regulators in winter wheat under growth stress was conducted in 2013/2014. Within this experiment following growth regulators and fungicide with growth regulation effect were used: Retacel extra R68 (chlormequat chloride 720 g/l), Moddus (trinexapac-ethyl 250 g/l), Cerone (ethephon 480 g/l), Amistar (strobilurin 250 g/l). The experiment was based on a field experimental station in Žabčice with variety of winter wheat Matylda. This area (Žabčice) is located in a warm area with prevailing continental climate, with average annual rainfall of 482 mm and an average annual temperature of 9.3°C. The field experiment testing various growth regulators in spring winter wheat was founded in 2013/2014. The aim of the experiment was to determine the impact of these regulators on the growth, development and yield of winter wheat when simulating the drought stress using experimental rain-out shelters. Results of field experiments can contribute to mitigating the impact of drought on yield formation and quality of winter wheat production in the realization of biological potential of wheat genotypes.

Keywords: growth regulators, cereals, winter wheat, drought, water stress

1. Introduction

Drought stress in winter wheat is evidently more significant in Central Europe than in other regions, it is also supposed that according to the model of climate prediction periods of drought are going to be more often [1]. Drought is one of the most common environmental stresses that affect growth and development of plants. Drought continues to be an important challenge to agricultural researchers and plant breeders. It is assumed that by the year 2025, around 1.8 billion people will face absolute water shortage and 65% of the world's population will live under water-stressed environments. Tolerance to water stress is a complicated parameter in which crops' performance can be influenced by several characteristics [2]. Drought stress can also influence plants in terms of protein changes, antioxidant production, osmotic adjustment, hormone composition, root depth and extension, opening and closing of stomata, cuticle thickness, inhibition of photosynthesis, decrease in chlorophyll content, reduction in transpiration, and growth inhibition [3–4] to stand with some osmotic changes in their organs. Scarcity of water is a severe environmental constraint to plant productivity. Drought-induced loss in crop yield probably exceeds losses from all other causes, since both the severity and duration of the stress are critical. Drought stress reduces leaf size, stem extension and root proliferation, disturbs plant water relations and reduces water-use efficiency. Plant drought tolerance can be managed by adopting strategies such as mass screening and breeding, marker-assisted selection and exogenous application of hormones and osmoprotectants to seed or growing plants, as well as engineering for drought resistance [5]. Partial elimination of environmental stress can be reached by application of growth regulators.

Growth regulators can improve water use efficiency by closing stomata. They also have effect on increase of ratio roots: above ground biomass and can also influence the

accumulation of antioxidants that protect plants during stress conditions. For agricultural purposes the growth regulators are such substances which have effect on physiological processes in metabolism of plants and thereby they positively influence the yield and the quality of production. The application of growth regulators is the important factor in the intensification of cereal cultivation, and currently it is also a necessary measurement. Therefore, the proper use of plant growth regulators forms the integral part of the intensive cultivation technology relating to modelling vegetation, harvest, and then the economy of growing [6]. The primary objective is to use plant growth regulators to prevent lodging of vegetation causing in strong cases the damaging previous inputs such as decreasing harvest and its quality and increasing the costs for harvesting. The application of growth regulators can affect the straightening of productive tillers and prolongation of the activity of leaf surface. Growth regulators can improve the efficiency of water use in the case of closing of stomata. It also causes the increase in the root proportion. The above ground biomass may affect the accumulation of antioxidants protecting the plants during stress conditions.

The aim of the experiment was to evaluate positive and negative impacts of growth regulators on physiology and winter wheat yield in conditions of drought, to choose suitable types of regulators and the time of applying in order to improve tolerance to drought.

2. Material and methods

The experimental station is situated in Southern Moravia (the Czech Republic) in Žabčice. Moderate soils are dominant type in this region. The location is considered to be one of the hottest areas in the Czech Republic [18]. Various options of treatment by growth regulators in winter wheat were evaluated there. The experiment was established in 2013/2014, variety Matylda seeded on 15th

October in 2013. Seed quantity was 4 MGS. Measuring of physiological parameters (water use efficiency, CO₂ assimilation rate and the chlorophyll content in leaves) was done in the middle of drought stress (May 26th, 2014), and at the end of drought stress effect. N fertilization using LAD 27 fertilizer at the dose of 160 kg N/ha and DAM 390 (solution of water, Ammonium nitrate and urea) fertilizer at the dose of 30 kg N/ha. The crop was treated using the herbicide COUGAR FORTE + fungicide HUTTON FORTE. After wheat ripening evaluation of yield (Fig. 3) and yield structure has been done. As an additional parameter for evaluation of primary phase of photosynthesis measuring of chlorophyll fluorescence by the apparatus FluorPen has been done.



Figure 1: Sheds over the experimental area of winter wheat

3. Results

The effect of drought was also reflected in the decrease of chlorophyll content in individual leaves within vertical profile. This decrease was mitigated mainly by application of azoxystrobin. In the case of applications of trinexapac-ethyl the effect of drought on the chlorophyll content was reduced in upper leaves but enhanced in bottom leaves. Yield results showed a positive effect of all applications of growth regulators, with the highest impact of the trinexapac-ethyl, etephon and azoxystrobin. All three treatments also reduced the negative impact of drought on yield.

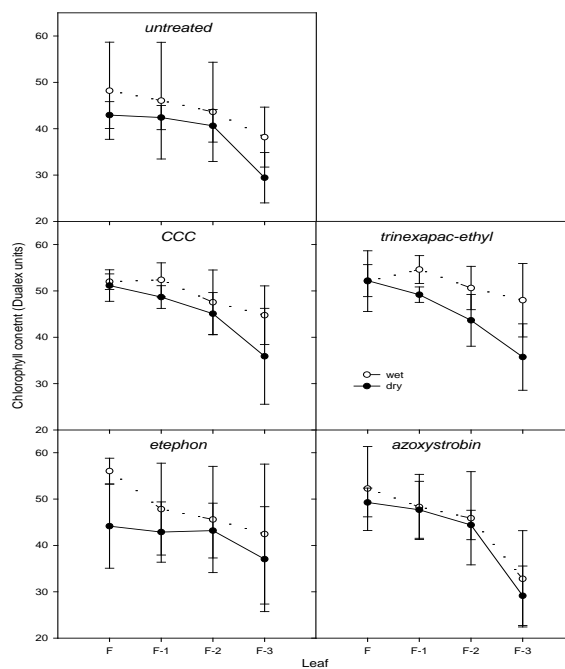


Figure 2: Chlorophyll content in leaves in order from flag leaf (F) to the fourth leaf from the top (F-3)

Regulators CCC and trinexapac reduce decrease of chlorophyll caused by drought at upper leaves but on the other hand they increase it at older lower leaves.

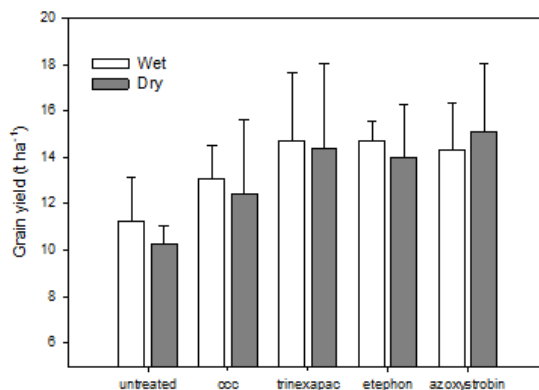


Figure 3: Effect of drought and growth regulators application on grain yield

The biggest reduction of drought stress influence (shed) on yield was evident at strobilurin and partially at trinexapac as well.

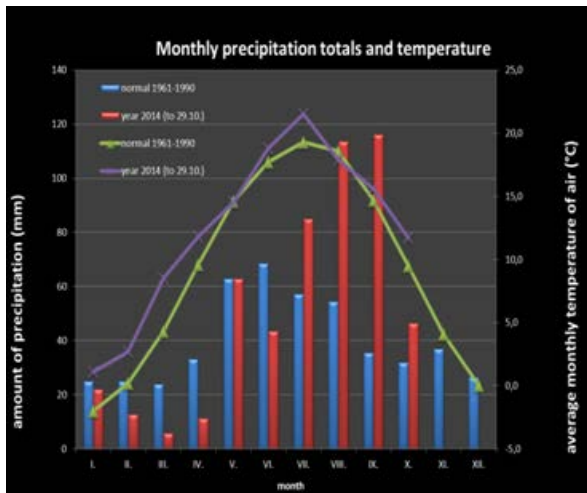


Figure 4: Monthly precipitation totals and temperature

4. Conclusions

The use of growth regulators is accompanied with a number of positive effects, especially in the conditions of water deficit. The use of growth regulators is highly dependent on the weather conditions. In 2013/2014, there was dry vegetation period at experimental location Žabčice corresponding to the experimental results. By applying growth regulators we can reach a partial elimination of environmental stress effect. Growth regulators can improve water use efficiency. • Due to drought activity there is decrease of chlorophyll content in leaves. Regulators CCC and trinexapac reduce decrease of chlorophyll caused by drought at upper leaves but on the other hand they increase it at older lower leaves. Fungicide azoxystrobin reduces decrease of chlorophyll caused by drought at all the leaves. It is evident from the measurements that all the regulators increased the yield and which it itself proves the positive effect during the drought because it was a very dry year and the canopy did not lodge. Furthermore, the biggest reduction of drought stress effect on yield was evident in strobilurin and partially at trinexapac-ethyl application as well.

Acknowledgements

This study presents results of a project of the internal grant agency of the Faculty of Agronomy, Mendel University in Brno, n° IP 23/2015 “Effect of growth regulators on water use efficiency and drought stress tolerance in selected varieties of winter wheat”.

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Session: Earth Sciences, Biology

Index of Author(s)

Jurevičius, Arūnas
Lajdová, Dana
Slavinskienė, Gintarė
Tomáška, Lubomír

SPECIATION OF HEAVY METALS IN LANDFILL LEACHATE- POLLUTED GROUNDWATER: HOMOGENEOUS SANDY AQUIFER

Gintarė Slavinskienė – Arūnas Jurevičius

Nature Research Centre
Akademijos St. 2
Vilnius, 08412, Lithuania
+370 5 272 92 57
gintare@geo.lt – arunas@geo.lt

Abstract: *The study based on thermodynamic computer programme PHREEQC presents changes in migration forms of heavy metals in groundwater calculated due to changing groundwater pollution under the hydrogeological conditions of a landfill (sandy aquifer). Under neutral medium conditions, with a decrease in pollution of shallow groundwater and in content of organic matter, the amounts of heavy metals in ionic form are found to considerably increase. The zone polluted most intensively shows the highest percentage of carbonates in migration form. Formation of organochlorines causes formation of cadmium chloride migration forms in the most intense polluted zone. The saturation index values calculated show that crystallisation plays the main role in heavy metal attenuation process in glaciofluvial alluvial aquifers.*

Keywords: *heavy metals, landfill, sandy aquifer, migration forms, thermodynamic modelling*

1. Introduction

Landfills represent one of the oldest ways for waste disposal in the world. Long time it was thought that a leachate in natural environment undergoes full purification, therefore it has no impact on nature elements. Therefore, the sites for landfills had been chosen in various land depressions or gravel pits. However, at the 1950s due to rising interest in environmental protection, the hazards caused by landfills started to become a target for scientific researches [3].

In Lithuania, investigation of municipal waste landfills started soon after Lithuania regained its independence, i.e. from 1990. There are about 800 landfills of different size registered, which are formed mainly without taking into account the technogenic vulnerability of intensive exchange zone of groundwater. Composition of municipal waste in Lithuania resembles that of other states of the European Union: 10% paper/cardboard, 9% glass, 4% metals, 13% plastic, 25% biological waste, and other municipal wastes make 25%. Biodegradable wastes make 49% [16].

The impact of landfills on their environment depends on geological setup, composition of deposits, hydrogeological conditions, environment morphology and technology of landfill site design. The pollution caused by leachate from a landfill depends on waste composition, landfill age, its design and climatic conditions [7, 13]. The landfill leachate can be characterised as a water based solution composed of such pollutant groups as: dissolved organic matter, inorganic macrocomponents, heavy metals – Cd, Cu, Pb, Zn, Ni, and Cr – as well as oil hydrocarbons [9]. Special attention, due to hazards on the environment and human health, is paid to the assessment of heavy metals in the underground hydrosphere. During the last decade, much attention has been paid to the analysis of metal associations with colloid particles, their distribution in the fractions of different size [4, 14]. Heavy metals comprise a group of chemical elements of a rather high density

(usually more than 5 g/ml) and their atomic number being higher than 20 [6]. Metals in a hydrochemical medium do not degrade. Such processes, as alteration of migration forms, formation of other chemical compounds, sorption, desorption, dispersion causes the potential of metals to migrate in the landfill [1]. Heavy metals enter the groundwater because minerals and rocks are solving. Their contents in natural non-polluted water are low and do not exceed environmental permissible standards [9]. The basic source of heavy metals is anthropogenic pollution. Metals in the groundwater of landfill area are most often met in the case if industrial wastes are disposed together with municipal wastes [12]. To generalise, it can be said that behaviour of heavy metals during leaching process is mainly controlled by the processes of sorption, crystallisation and complexation. These processes take place all at the same time [8, 13].

So, the goal of the present study is to assess the attenuation processes of groundwater, with regard to heavy metals, to determine the regularities in distribution of migration forms of heavy metals in a shallow groundwater of the landfill area composed of glaciofluvial, alluvial sandy deposits of homogeneous structure.

2. Materials and methods

2.1 Description of landfill site

The landfill (name - Smukučiai) under study is in the southwestern part of Lithuania (55°05'45''N, 22°42'40''E) and covers the area of 3.5 ha; it lies above the permeable beds without a protective screen (Fig.2). Its exploration started in 1958 and had been closed in 2009. Thus the age of the landfill is 51 years. Monitoring observations, with some breaks, as in many other Lithuanian landfills, began in 1994. The volume of wastes in it reaches about 195 thousand m³, with average thickness of the waste bed being about 5 m. Municipal, industrial, medical, agricultural and construction waste had been accumulated

in the landfill. The leachate formed during the entire period of its operation had not been collected and treated. There is no real threat from the landfill to surface water and operated groundwater. This is a typical site of concentrated (point) pollution. The site had been selected taking into account peculiarities in hydrogeological conditions, amount of hydrochemical data and level of polluting components.

The monitoring network formed in the landfill consists of 6 wells for observation of hydrochemical situation in the shallow groundwater aquifer (fIIIbI, aIV). The wells reach depths of 3,5–8,0 m from the land surface (Fig.1). The 8-year hydrochemical monitoring data have been used in the study.

2.2 Hydrogeological conditions

The landfill under study lies on the site that is open for migration of pollutants due to its hydrogeological conditions. Sandy deposits prevail in the aeration zone that is about 2-m thick in average (Fig.1). The aeration (unsaturated) zone thickness, lithology and filtration character of the deposits cause the vertical percolation rate and time of water recharge as deep as the shallow aquifer [6,10]. Under open hydrogeological conditions, pollutant migration time is from several days to 2 years. Sorption of the pollutants in the sandy deposits is rather low; therefore, under these hydrogeological conditions they are quickly washed away to the aquifer, thus, polluting it. Lithological structure of the shallow aquifer under the landfill studied is homogeneous with smooth water-permeable layers prevailing; therefore the scheme of recharge of shallow groundwater and migration of pollutants is simple. Shallow groundwater in the area of the landfill is accumulated in different sand, silt and partly technogeneous deposits (Fig.1). According to the lithology of the water-bearing deposits, the filtration character of shallow groundwater is good and conditions for spreading of pollutants are favourable.

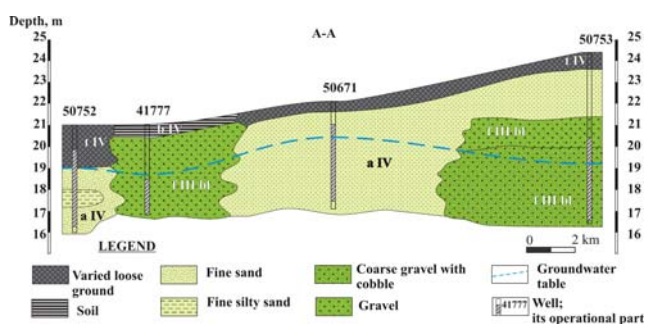


Figure 1: Hydrogeological cross section

2.3 Principles used to distinguish pollution zones

The main factor in formation of chemical composition of groundwater in the area of a landfill is the leachate that is formed as rainwater and other liquids percolate through the waste bed in the landfill [10]. The leachate under gravitation moves towards water table to flow farther with groundwater stream. Thus, differently polluted hydrochemical zones are formed in the hydrogeological

medium in direction of groundwater migration, i.e., spontaneous water-cleaning process takes place. It is controlled by such physico-chemical processes as dilution, ion exchange, precipitation, sorption, redox reaction and degradation [7, 8]. The effect of these processes depends on such factors as leachate velocity, degree of saturation of unsaturated zones, organic and inorganic matter in soil, clay type, soil fabric and soil stratigraphy [3]. Thus, the change in chemical composition of polluted groundwater is not a chaotic process. The pollutants form strictly defined number of geochemical situations expressed by Eh-pH indices. The conditions are formed, which geochemically prevent entering of pollutants into groundwater. This buffering capacity can be provided by homogeneous and heterogeneous hydrogeochemical systems [12]. The hydrochemical pollution zones have been distinguished in the present study relying upon multiannual analysis of chemical components, variations in contents of chemical components during the percolation (recharge) and hydrodynamical parameters, as well as assessing the peculiarities in hydrogeological conditions.

2.4 Determination of speciation of heavy metals

Contents of heavy metals in polluted groundwater most often is given as Total Dissolved Metals (TDM). The groundwater being polluted, however, contains numerous complex compounds of heavy metals such as colloid metals, organic and inorganic metal complexes [2, 8, 9]. Determination of migration forms of chemical elements enables to assess their influence on homogeneous and heterogeneous geochemical processes. Such determinations can be performed by experimental (filtration (screen, ultra) and ion-exchange techniques are used most often) and mathematical modelling methods [5]. Computer thermodynamical mathematical modelling methods are most popular in the analyses of equilibrium conditions in the polluted hydrogeological medium. They fully reflect physical geochemical regularities of processes taking place in hydrogeochemical systems. These computer models are based on solving equilibrium equations for all potential ion pairs in the actual sample (complexation and solubility) and on mass balance equation for all ions in the solution [5]. The thermodynamical computer programme PHREEQC version 3 has been used in the study; it is written in the C programming language that is designed to perform a wide variety of low-temperature aqueous geochemical calculations [1]. This programme has enabled to assess saturation index (SI) and calculate percentage distributions of heavy metal migration forms in different groundwater pollution zones.

3. Results and discussion

3.1 Hydrogeochemical character of landfill environs

Based on the above-mentioned methods, two point pollution zones have been distinguished in groundwater polluted with landfill leachate: intensive pollution zone and lower pollution zone (Fig.2). For each of the zones, statistical analysis of chemical components has been

performed, and their average values have been applied in thermodynamical computer calculations.

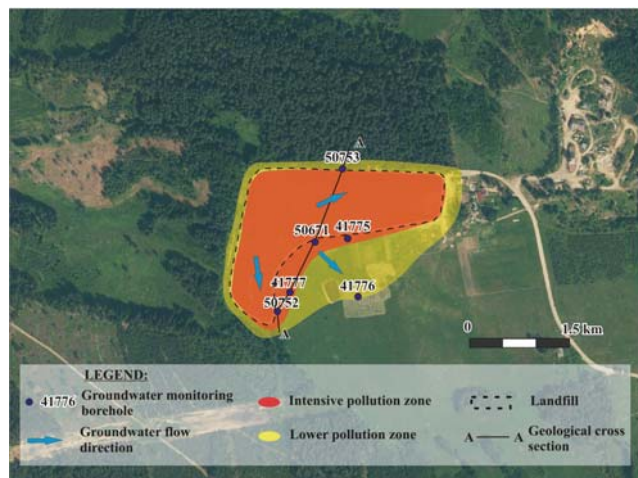


Figure 2: Pollution zones of groundwater in homogeneous sandy aquifer

Neutral medium with pH of 7,09-7,39 have been found prevailing in both groundwater pollution zones, where reduction potential ranges from 33 to 295 mV in the intensive pollution zone and from 85 to 399 in the decreasing pollution zone. This shows better oxidative conditions in the less polluted zone. High levels of such chemical indices as total dissolved solids (TDS), chlorides and organic matter indicate indirect effect of landfill leachate on water quality in the intensively polluted zone. The latter one is notable for TDS content ~ 14,6, chlorides ~124, and ammonium ion concentrations being several thousand times higher than those in the less polluted zone. Intense oxidation of ammonium and decrease in dichromate and permanganate COD indices in the less polluted zone indicate presence of an oxidative barrier. Thus the zones distinguished are characteristic with different oxidation-reduction medium affecting the influence of physico-chemical processes, variation and formation of migration forms. The intensively polluted zone is found to contain high amounts of organic matter (C_{org} 80,2 mg/l) causing favourable conditions for complex compounds of metals to be formed, and hence, increase in metal mobility. According to COD_{Cr}/COD_{Mn} ratio in the intensively polluted zone, the content of poorly degradable organic matter is 2,5 times higher than that of easily degradable organic matter; while this ratio in the less polluted zone is 4,6. Due to nitrate reduction in the intensively polluted zone, the organic matter breaks down into carbonic acid and water; thus, enhancing solution of calcareous deposits and increase in calcium and magnesium ions as well as groundwater hardness. The total hardness of groundwater in this zone and CO_2 volume released during the degradation of organic matter is, correspondingly, about 3,5 and 4 times higher than those in the less polluted zone.

3.2 Variations in heavy metal migration forms

The both groundwater pollution zones are determined to contain heavy metals, which do not exceed environmental requirements and are close to the natural background (Tab. 1). If compared to the studies of other authors, the concentrations in the landfill analysed are lower and the differences can be explained by dependence on landfill age: the leachate from methanogenic landfill usually contains low concentrations of heavy metals [11, 15]. The difference in heavy metal content in both zones is insignificant, except for nickel and copper (Tab.1).

Table 1 Heavy metal contents (mg/l) in groundwater

	Cr	Zn	Cd	Ni	Pb	Cu
1*	0,0043	0,0424	0,0003	0,0156	0,0042	0,0100
2*	0,0045	0,0332	0,0003	0,0073	0,0020	0,0064
3*	0,0030	0,0240	0,0006	0,0020	0,0060	0,0090
4*	0,0090	0,0240	0,0002	0,0080	0,0030	0,0360
5*	0,0760	0,6700	0,0680	0,1300	0,0700	0,0700
6*	0- 0,188	0,085- 5,31	0,0002- 0,0066	0,028- 0,084	0- 0,016	0,002- 0,034
7*	0,1	1	0,006	0,1	0,075	2

Note to table 1: 1*- intensive polluted zone; 2*- lower polluted zone; 3, 4*- background of fluvio-glacial, alluvial sediments; 5, 6* - leachate-polluted groundwater concentration from literature [5, 13]; 7* - maximum permissible levels in the less vulnerable areas

Changes in migration forms of heavy metals Cd, Cu, Ni, Pb, Zn, and Cr due to varying groundwater pollution are given in Table 2.

Cadmium. As the groundwater pollution increases by 40%, ion forms of cadmium decrease. Levels of carbonate and sulphate forms, however, increase, correspondingly by ~8 and ~2% than those in the less polluted zone. Cadmium chloride forms make a significant percentage in the highly polluted zone because of organochlorine compounds. The chloride forms in the less polluted zone make only <1%.

Copper. Carbonate forms of copper make the major percentages in both pollution zones. With pollution of shallow groundwater increasing, copper makes a significant percentage of its complexes with ammonium. Such complexes in moderately polluted zone are less than 1%. With pollution increasing, there are significantly less ionic forms of copper (~16,7%). Hydroxyl and sulphate compounds are more often met in the less polluted zone, but the differences are small, and total amount of migration forms reach about 0,1-2,6%.

Nickel. Carbonate and ionic migration forms of nickel make the top percentages in both pollution zones. With pollution of groundwater increasing, the carbonate forms of nickel grow by 27%, while the ionic nickel forms decrease by 46%. About 9% of all nickel forms are the complexes with ammonium. There are almost no such complexes in the less polluted zone. Amounts of sulphate compound forms (~2%) remain actually stable even under varying pollution of groundwater. Chloride forms of nickel in both zones make <1%.

Lead. Carbonate migration forms prevail in both pollution zones, and their percentages remain actually stable. With pollution of groundwater increasing, the amounts of ionic lead forms decrease by approx. 19%. The hydroxyl and sulphate complexes of lead are formed in more or less polluted zone, but their percentage is not significant.

Zinc. The ionic form of zinc prevails in both pollution zones and is found by 35% more in less polluted water. With pollution of shallow groundwater increasing, formation of carbonate compounds increases noticeably. Sulphate and chloride compounds of zinc are detected more in the intensively polluted zone, but total amount of these compounds is not significant – 0,6-5%.

Table 2 Heavy metal significant migration forms in the intensively polluted groundwater (row 1) and less polluted (row 2) zones (% from total amount of metal)

Cd	Cd^{2+}	$CdCl^+$	$CdCO_3$	$CdSO_4$	$CdHCO_3^+$
1	53,92	29,00	9,23	4,94	1,14
2	95,13	0,62	1,52	2,29	0,29
Cu	$CuCO_3$	$CuNH_3^{+2}$	$Cu(CO_3)_2^{-2}$	Cu^{+2}	$CuHCO_3^+$
1	77,47	9,59	9,56	1,75	1,03
2	76,46	0,01	0,27	18,54	1,55
Ni	$NiHCO_3^+$	Ni^{+2}	$NiCO_3$	$NiNH_3^{+2}$	$NiSO_4$
1	40,94	35,76	10,02	9,31	2,95
2	13,49	82,74	2,16	0,003	1,81
Pb	$PbCO_3$	$PbHCO_3^+$	$Pb(CO_3)_2^{-2}$	Pb^{+2}	$PbOH^+$
1	65,83	20,13	8,71	2,92	0,98
2	47,71	22,25	0,18	22,65	5,64
Zn	Zn^{+2}	$ZnCO_3$	$ZnHCO_3^+$	$ZnSO_4$	$ZnCl^+$
1	54,36	23,49	15,98	4,88	0,66
2	90,08	3,63	3,77	2,14	0,01
Cr	$Cr(OH)_2^+$	$Cr(OH)^{+2}$	$Cr(OH)_3$	$CrOHSO_4$	CrO_2^-
1	69,12	25,68	4,50	0,47	0,06
2	66,19	30,68	2,83	0,16	0,02

Chromium. Chromium in both polluted zones occurs mainly in hydroxyl form and its percentages practically remain stable, with groundwater pollution varying. The ionic forms of chromium reach about 0,05% in both pollution zones.

4. Conclusion

In neutral medium, with the decrease in pollution of groundwater and content of organic matter, the ionic forms of heavy metals increase significantly: Cd 40%; Cu 16,7%; Ni 46%; Pb 19%; Zn 35%. Intensively polluted zone is notable for the top percentages of carbonate forms for nickel, copper and lead. Formation of organochlorine compounds determines formation of chloride migration forms of cadmium in the intensively polluted zone (29% from the total amount of the element). About 9% of all forms of nickel and copper in the intensively polluted zone are soluble and mobile complexes with ammonium. This determines higher concentrations of these metals if compared to those in less polluted groundwater (~ 2 times higher). While contents of other heavy metals practically do not vary under varying pollution of groundwater in sandy deposits. The effect of geochemical barriers (sulphate and carbonate) is manifested in both polluted zones. As a result the mobility of metals decreases and crystallisation takes place with precipitation of metals

from their carbonate, sulphate and hydroxyl forms. All this explains low contents of heavy metals in the landfill leachate-polluted groundwater. Thus, one can say that the influence of metals on total pollution of groundwater is insignificant.

Sorptive capacity of sandy deposits is low, therefore, it is the crystallisation that plays the main role in attenuation process of water from heavy metals in glaciofluvial and alluvial aquifers composed of various grained sand deposits.

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IDENTIFICATION OF PROTEINS DETERMINING MITOCHONDRIAL MORPHOLOGY IN THE FISSION YEAST BY MEANS OF SYSTEMATIC SCREENING

Dana Lajdová - Lubomír Tomáška

Department of Genetics, Faculty of Natural Sciences, Comenius University

Prírodovedecká fakulta Univerzity Komenského, Mlynská dolina

Bratislava, 84215, Slovakia

+421 (02) 602 96 536

lajdova@nic.fns.uniba.sk - tomaska@fns.uniba.sk

Abstract: Mitochondria of most eukaryotic organisms share similar morphology, even in evolutionary distant species. Morphology of a mitochondrion is dynamic and varies in different cell cycle stages and dietary conditions. Mitochondria are usually spread through the cytoplasm in an interconnected reticulum undergoing constant fusion and fission. The most prominent proteins responsible for maintenance of mitochondrial morphology share functional homology throughout the phylogeny tree, but the area where these proteins differ most is mitochondrial mobility. Vertebrate mitochondria are transported along microtubules by molecular motors, while baker's yeast uses actin cables. Mitochondria are usually connected to the cytoskeleton via adaptor proteins with varying degree of conservation. *Schizosaccharomyces pombe* uses a compromise between yeast and vertebrate transport systems, with its mitochondria transported along microtubules, but without the aid of molecular motors. Some of the proteins acting as adaptors between mitochondria and microtubules have already been identified, but the complete mechanism has not been elucidated. Here we present preliminary results of a systematic screening of a library of *S. pombe* deletion mutants for defects in mitochondrial morphology. Mitochondrial morphology was evaluated a vital staining with DiOC₆ and fluorescence microscopy. After screening 20% of deletion strains, 5% of strains repeatedly showed aberrant mitochondrial morphology. These strains were used for a Gene ontology bioinformatics analysis that revealed an overrepresentation of proteins engaged in microtubule metabolism.

Keywords: mitochondrial morphology, fission yeast, microtubules, *Schizosaccharomyces pombe*

1. Introduction

Mitochondria are essential organelles of eukaryotic cells responsible (among others) for respiration and ATP synthesis. Morphology of these organelles is closely bound to their function, as the respiratory protein complexes reside in specialized domains of inner mitochondrial membrane (IMM) called cristae. In cells deficient in proper cristae formation, essential metabolic processes, e.g. respiration, are compromised [1].

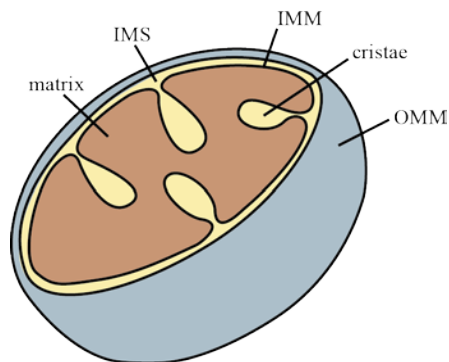


Figure 1: Schematic representation of a cross-section of a mitochondrion. On the surface of the organelle is the outer mitochondrial membrane (OMM). Inner mitochondrial membrane (IMM) creates large invaginations into the mitochondrial matrix, called cristae. The space between OMM and IMM is called intermembrane space (IMS).

The outer mitochondrial membrane (OMM) adjoins to the rest of IMM in regions containing mitochondrial protein

and metabolite transport systems. Mitochondrial DNA is tightly packed into a structure called mitochondrial nucleoid (mt-nucleoid) connected to IMM, usually close to the neck of a crista [2]. OMM determines the tubular shape of the organelle; its exterior is covered with proteins responsible for metabolite and protein transport, and proteins interacting with other components of the cytoplasm. The surface of IMM is much larger and its most important components are proteins of respiratory complexes.

Mitochondria in a dividing cell usually form an interconnected reticulum of tubules undergoing dynamic fission and fusion events. These processes are important for maintenance of functional mitochondria, as each fraction of the organelle is under constant damage control. Irreparably damaged mitochondria are isolated from the rest of the reticulum and decomposed by mitophagy [3]. The main regulators of both fusion and fission are various dynamin-related GTPases (DRPs) that use energy released by GTP hydrolysis to either mechanically sever a tubule, or to bring OMMs (and consequently IMM) of neighboring mitochondria to close proximity, enabling them to fuse [4].

While the functional domains of DRPs are conserved throughout the phylogeny tree from yeast to vertebrates, other proteins involved in mitochondrial dynamics are more variable. Baker's yeast *Saccharomyces cerevisiae* transports mitochondria along actin cables, using myosins to laterally attach the organelle to the filament and move it to the daughter cell [5]. Mitochondria in vertebrate cell are attached to a different class of cytoskeleton called microtubules (MTs) through dyneins and kinesins, using

these molecular motors to drive the movement [6]. This divergence and the fact that *S. cerevisiae* is not a strictly aerobic organism, limit the study of mitochondrial dynamics in *S. cerevisiae* in terms of application for higher eukaryotes. Another commonly used yeast species is fission yeast *S. pombe* that allows for the same easy handling as the baker's yeast, but is strictly aerobic and presents a better model for studying mitochondrial movement.

Mitochondria of *S. pombe* are attached to MT [7] just like mitochondria of vertebrate cells, but little is known about the mediators of the attachment. Contrary to vertebrate cells, molecular motors such as dyneins and kinesins do not play a major role in *S. pombe* mitochondrial distribution [8]. Mitochondria seem to be attached to the cytoskeleton directly, using only the MT polymerization as the driving force [9]. Several proteins that could act as adaptors during specific cell cycle stages have been identified [10 - 12], but the complete mechanism has not been elucidated.

2. Results







Taking advantage of having access to a BIONEER library of deletion strains [13], we applied a systematic approach to identifying proteins involved in maintenance of mitochondrial morphology.

2.1 Mitochondrial phenotype categories

To assess mitochondrial morphology, we dyed fission yeast strains with a cationic fluorescent dye DiOC₆ which enters the cell and emits green light upon binding free electrons. Since there is a proton gradient across IMM, DiOC₆ preferentially enters the mitochondrion and we can see the outline of the organelle in a fluorescence microscope. Wild type interphase cells have long tubular mitochondria, usually spanning the length of the cell. When mitochondrial fusion is compromised, mitochondria form short fragments of unequal size. In contrast, defected fragmentation generates a very thick reticulum. In strains lacking proteins involved in determination of the IMM architecture, cristae are lost and mitochondria swell to several times the diameter of a wild type mitochondrion and resemble cisternae of irregular shape. Aggregation of organelles on the opposing poles of the cell is usually caused by defects in mitochondrial transport. Note that we cannot visualize mitochondria by cationic dyes in strains with low membrane potential.

To avoid bias, mitochondrial phenotype was evaluated without knowledge of identity of the strains. Strains with aberrant morphology and strains whose morphology could not be interpreted properly were subjected to second round of screening. Summary of preliminary results after screening 651 out of 3308 strains is in the Table 1, with relative amounts of strains in phenotypical categories according to their mitochondrial morphology. After the second round of testing, we identified 32 strains that showed either aberrant mitochondrial morphology or their membrane potential was too low to distinguish mitochondrial reticulum from the background.

Table 1: Relative amounts of strains in mitochondrial phenotype categories after screening ~20% of the library. Mitochondria were stained with DiOC₆, scale bar 10 μm.

Phenotype category	No. of strains	Strains in category [%]	Representative figure
Wild type	619	95.1	
Fragmented	8	1.2	
Swollen	10	1.5	
Polar aggregation	3	0.5	
Overfused	6	0.9	
Low membrane potential	5	0.8	

2.2 Gene Ontology

After screening approximately 20% of the library for strains with aberrant mitochondrial morphology, we conducted a preliminary Gene ontology (GO) analysis of the 32 candidate proteins with BiNGO software [14]. We searched for a biological process or a molecular function that would be present in the group of potentially interesting proteins.

Besides canonical proteins involved in nucleotide metabolism or ion transport, we discovered proteins



associated with mitochondrial cytoskeleton (GO number 15630). Our version of the deletion library contains a total number of 163 strains falling into this category, which we decided to analyze further.




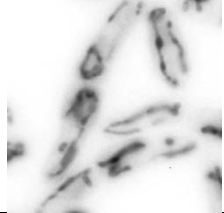



2.3 Microtubule-associated proteins

In order to determine the contribution of microtubule cytoskeleton to the biogenesis mitochondrial morphology, we analyzed the 163 strains with deletions of genes coding microtubule-associated proteins. When evaluating mitochondrial morphology in the preliminary screening, our focus was on the basic morphological categories that would not be sufficient in this round of testing. New categories had to be established that would take mitochondrial organization into account.

Wild type cells have mitochondria usually parallel with either axis of the cell, with longer tubules spanning the length of the cell and shorter tubules concentrated on the poles. 81% of the tested strains fell to this category. The largest group of the strains with aberrant mitochondrial morphology had mitochondria with varying degree of disorganization, from solitary tubules of random orientation to tubules scattered in the cytoplasm with no visible pattern. Some of the strains had a fragmented reticulum, but with a normal pattern of organization of the tubules. Five strains had mitochondria of standard length that had slight or more pronounced curvatures. In two cases, mitochondria were wound around a structure in the middle of the cell that would most probably represent the nucleus. One strain had abnormally long mitochondria, which also corresponded to the elongation of the whole cell.

Table 2: Relative amounts of strains in mitochondrial phenotype categories after screening 163 strains with deletions of genes coding MT-associated proteins. Mitochondria were stained with DiOC₆, scale bar 10 μm.

Phenotype category	No. of strains	Strains in category [%]	Representative figure
Wild type	132	80.98	
non linear	5	3.07	

Phenotype category	No. of strains	Strains in category [%]	Representative figure
overfused	1	0.61	
aggregated	3	1.84	
fragmented	7	4.29	
long tubules	1	0.61	
disorganized	10	6.13	
bent around nucleus	2	1.23	
swollen	2	1.23	

3. Materials and Methods

The BIONEER set of haploid *S. pombe* deletion strains (version M-3030H) used in the screening contains 3308 strains, with whole open reading frames replaced by a KanMX cassette carrying a geneticin resistance gene. The parent strain was ED668 (*h⁺ ade6-M216 ura4-D18 leu1-32*). Strains were cultivated in a complex YES medium

(0.5% w/v yeast extract, 3% w/v glucose and 225 mg/l adenine, uracil and leucine) in 96-well microtitration plates at 30°C. DiOC₆ was added straight to overnight cultures in the final concentration of 175 nM 5-10 min prior to mounting on microscopy slides.

4. Discussion

Mitochondrial morphology is very dynamic and transient, with many deviations even in wild type cells. For example, mitochondria in interphase usually form networks, but they fragment easily in varying and stressful conditions. By fragmenting mitochondria, cells raise their chances in keeping at least some mitochondria intact and readily degrade the rest. It is therefore very important to keep growing conditions stable and controlled while assessing mitochondrial morphology to avoid artifacts and false positive results. To make sure our results were credible, we verified mitochondrial morphology in candidate strains several months or weeks apart and from different cultures. Among the first 32 candidate strains were mutants with deletions in subunits *g* and *e* of the mitochondrial F₁F₀ ATPase and a predicted homolog of a conserved VDAC anion channel, involvement of which is well documented in other species [15, 16]. The fact that we were able to identify these in a blind test implies that the rest of the proteins identified in our systematic screening could be involved in mitochondrial morphogenesis as well.

The second part of our research focuses on the contribution of MT-associated proteins to the maintenance of mitochondrial morphology. By screening and directly comparing all strains with deletions of genes coding these proteins, we are able to qualitatively evaluate the impact of these deletions. We found that 19% of the strains had aberrant mitochondria morphology, but not with the same penetrance. It implies that mitochondria maintain their basic morphology and organization by the main regulators most of the time (e. g. Mto2 or α -2 tubulin), and by proteins specific for certain cell cycle stages or environmental conditions (Nse5 or Gfh1).

5. Conclusions

Mitochondria are essential organelles and maintenance of mitochondrial morphology is vital for respiration and other cell functions. It is therefore necessary to know all factors responsible for this process. We were able to optimize large-scale screening of a library of deletion mutants of a strictly aerobic yeast *S. pombe* for aberrant mitochondrial morphology. After screening 20% of the library, among proteins whose deletion leads to changes in morphology and organization, were proteins associated with the MT cytoskeleton. We are hoping that by further detailed analysis of those, are we going to be able to describe new players participating in the mitochondrial biogenesis and organization. We also believe that our findings will help clarify these mechanisms in higher eukaryotes, which might lead to a better understanding of some mitochondria-related diseases such as muscle dystrophies or male sterility.

Acknowledgements

This study was supported by the Slovak grant agencies VEGA (1/0311/12) and APVV (APVV-0035-11) and a Comenius University grant (UK/527/2014).

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Jenča Jr., Andrej
Popović, Ružena
Purenović-Ivanović, Tijana
Riznić, Marcel
Samouilidou, Evdokia

OSTEORADIONECROSIS OF THE JAWS AFTER MALIGNITY TREATMENT IN HEAD AND NECK AREA

Marcel Riznič - Andrej Jenča Jr.

Faculty of Medicine, University of Pavol Jozef Šafárik

Tr. SNP 1

Košice, 04001, Slovak Republic

00421908027585

riznicster@gmail.com – andrej.jenca@gmail.com

Abstract: Osteoradionecrosis of the jaws represents a more and more difficult complication in the head and neck area oncology. Its occurrence in the last period has increased and negatively influences the treatment and after care of the oncological disease. Osteoradionecrosis is defined by the presence of exposed bone in irradiated area, which fails to heal within a period of three months. Necrotic bone defects of jaws are usually caused by local trauma or inflammation. Local trauma in oral cavity usually means extraction of tooth, inappropriate denture or irritation of mucosa over anatomical ridge. Inflammation comes from tooth caries or periodontal disease. Extensive debridement and local flap closure seems to be unsuccessful because of hypovascularity of soft and hard tissues. In serious cases radical resection of necrotic bone and immediate free flap reconstruction is considered as the best or only solution. General health or local reasons do not allow this type of reconstruction in every patient. Usually conservative approach with minimal surgical intervention and antibiotics cover is recommended. In spite of this, the best way to avoid further complications is prevention. Patients in our study were divided into three categories: patients with newly diagnosed cancer waiting for treatment, patients after radiotherapy without signs of osteonecrosis and patients with fully developed osteoradionecrosis of jaws. Each category required a different approach. In group with no radiotherapy deep caries tooth were extracted, mild caries tooth were filled with temporal filling and dental hygiene with instructions and motivation was performed. Second group required antibiotics prophylaxis during any surgical procedure. Patients with fully developed osteonecrosis were given antibiotics intravenously and a small surgical procedure was done.

Keywords: osteoradionecrosis, radiotherapy, antibiotics, oncological disease

1. Introduction

Osteoradionecrosis of jaws (ORNJ) is a serious secondary injury, characterized by bone tissue necrosis and failure to heal in 3–6 months [1]. ORNJ affects the mandible more often than the upper jaw. It is caused by a different blood supply. Another factor is the dosage method of radiotherapy in head and neck area. Dosage higher than 60 greys is considered dangerous in many clinical reviews. The largest amount of ORNJ is found after the radiation of tonsil carcinoma and retromolar region. There are three theories of ORNJ formation. The first theory was developed in 1938. The reason of the ORNJ manifestation is the penetration of the infection from the oral cavity to the changed exposed bone after radiation. This theory explains highly probable formation after the tooth extraction, however does not explain spontaneous formation after radiation [2].

The next theory recognises that it primarily does not have to be an infection, but a group of following irradiation changes of the tissue and humeral metabolism. It uses expressions such as hypoxia, hypovascularity and hypocellularity in the radiated bone [3]. The last theory dealing with ORNJ stresses the immunological processes in the bone stimulated by its local radiation, that lead to fibrotic and atrophic changes with a subsequent bone resorption [4].

2. Material and methods

The methodology of the treatment was derived from the overall patient's status, extensity of the necrotized area and level of discomfort in the oral cavity and oral hygiene.

Every patient was covered intravenously with antibiotics in combination of amoxiciline with clavulanic acid and metronidazole. In analgesic therapy we mostly used pyrazolone derivatives such as metamizol, opioids pentazocine, and adjuvant care secured by myorelaxans, anticonvulsants, antiemetic and local anaesthetic.

2.1 Patients with newly diagnosed cancer (waiting for radiotherapy)

Patients with newly diagnosed cancer of head and neck were examined in the maxillofacial clinic before the beginning of the radiation therapy. The overall status of the oral cavity, oral hygiene standard of the patient, tooth allocation indicated for restoration with temporal fillings and teeth for extractions were evaluated. In this stage the fabrication of any prosthetic denture and dental implants were contraindicated, due to periosteal lesions and mucosal decubits that could easily occur after radiation in oral cavity. We mainly focused on the sanitation of the caries lesions, extractions, dental hygiene and detection of oral abnormalities that caused complications in the oncological therapy.

2.2 Patients after radiotherapy without signs of osteoradionecrosis development

Occasionally, pain in the jaw bone or tooth loosening may be the only symptom with no evidence of other clinical or radiological abnormalities [5]. Patients who underwent radiation of the head and neck and no ORNJ was developed were instructed of the seriousness of this diagnosis, treated only conservatively and regularly

observed. It is very important to follow strict oral hygiene habits and eliminate smoking and alcohol.

2.3 Patients with fully developed osteoradionecrosis of the jaws

Patients with fully developed ORNJ underwent procedures during the antibiotics cover, if their status allowed it. In case of smaller local oral findings, necrectomy and mucoperiosteal flap closure enriched with platelet rich plasma concentrate were performed [Fig.1]. If local defects were wider, the surgical treatment was restricted to considerate necrectomy and sequestrectomy. Removal of only symptomatic bony sequester with minimal disturbance of overlying soft tissue, might be appropriate [6]. In special cases (e.g. pathological fracture of mandible) the mandulectomy was indicated. The next treatment possibility is the hyperbaric oxygen therapy [Fig.2] its benefit is however denied by many authors. On the other hand there are many other results suggesting the suitability of this treatment, in addition to surgical interventions [7].

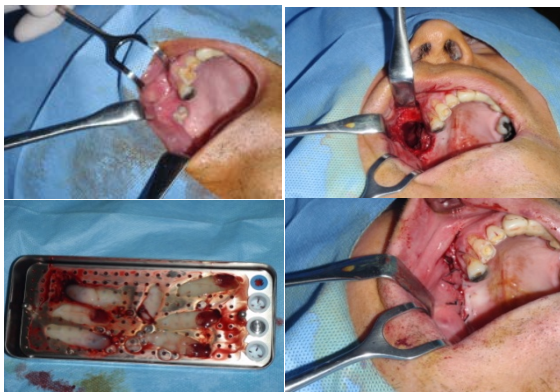


Figure 1: Closure of osteoradionecrosis defect in upper jaw with mucoperiosteal flap enriched with PRP concentrate



Figure 2: Result of the hyperbaric oxygen therapy

3. Results

The success of the surgical therapy depends on the primary oncologic diagnosis, associated complications such as pathological fracture of mandible and failure of the healing processes in the oral cavity, insufficient health status, other comorbidities and excessive medicament treatment. Based on the upper mentioned the therapy mainly consists of a conservative treatment along with topical and systematic antibiotics.

4. Conclusion

The osteoradionecrosis treatment is difficult and long-lasting. In spite of this, no effective therapy for osteoradionecrosis has been established, an empirical conservative therapy is recommended in the guidelines. Key to success is prevention or treatment in initial phase. It depends on cooperation between the oncologist, dentist and maxillofacial surgeon.

Acknowledgements

Treatment in the oral cavity is very problematic and long winded and leaves the patient with an exposed bone lesion which complicates food intake and oral hygiene care. The revelation of complications and setting a diagnosis in the shortest possible time is the most important to succeed in the therapy.

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EFFECTS OF EXERCISE ON OBESITY

Tijana Purenović-Ivanović

University of Niš, Faculty of Sport and Physical Education

St. Čarojevića 10a

Niš, 18000, Serbia

+38164/145-34-62

tijanapurenovic@gmail.com

Abstract: *The modern lifestyle (i.e., sedentary life, high-fat foods, overeating) is the main reason that obesity has already become the commonplace phenomenon. This epidemic of obesity has attracted the attention of many researchers in the world, in terms of finding the most effective non-pharmacological and non-surgical weight loss programs. The aim of this research was to analyze researches reporting outcomes of structured exercise programs in the treatment of obesity in healthy and sedentary adults (aged 18+). This review of the English-language literature (published in the period from January 1st 1998 to January 1st 2008) was performed in February 2009, via PubMed, Cochrane library and JAMA network using the following key words: effects, exercise, obesity, adults. The research included 22 studies (1915 participants) selected in accordance with established and appropriate criteria. Numerical data (Mean, SD, N) of the selected studies were extracted and afterwards analyzed using the Comprehensive Meta Analysis 2. The systematic review revealed that this type of studies were mostly done in the USA with female population, and with the sample of no more than 50 participants (45.45%); 54.55% of the studies reported a sample dropout; the most of the studies have compared the effects of aerobic and resistance exercise; 59.09% of the selected studies had a diet as an integral part of the intervention program. Meta-analysis showed the superiority of intervention programs with diet and the greatest size effects of studies performed on female population (OR=6.609, p<0.001). In conclusion, positive and wanted results of the treatment of obesity can be expected after three months of healthy-low-fat diet (1200 – 1500 kcal/day) combined with 30 minutes of aerobic and resistance exercise (continuous or intermittent exercise) on daily basis.*

Keywords: *physical activity, weight reduction, adults, meta-analysis*

1. Introduction

Human population is in the midst of an epidemic of obesity, because according to World Health Organization [1] in 2008 1.4 billion adults, 20 and older, were overweight. Of these overweight adults, over 200 million men and nearly 300 million women were obese, worldwide. Overweight and obesity are defined for the public on the basis of body mass index (BMI), which is determined by dividing weight in kilograms by height in square meters (kg/m^2). Healthy and desirable BMI values are in range of 19 to 24.99 kg/m^2 ; BMI values greater than 25 kg/m^2 indicate overweight (from 25 to 29.99 kg/m^2 - preobese), and BMI values greater than 30 kg/m^2 indicate obesity (from 30 to 34.99 kg/m^2 – obese class I, from 35 to 39.99 kg/m^2 – obese class II, $\text{BMI} \geq 40 \text{ kg/m}^2$ - obese class III) [2].

Obesity has been recognized as one of our most serious public health challenges, and strategies for prevention and treatment of obesity are a high public health priority [3]. Understanding and addressing obesity begins with an understanding of energy balance. Namely, the development of obesity, by definition, can only be the result of an energy imbalance, i.e., energy intake exceeds energy expenditure, over some period of time. Similarly, weight loss can occur only when energy expenditure is elevated above energy intake for a period of time. Finally, when energy intake is matched to energy expenditure, body weight remains constant.

A wide variety of treatments for obesity are available, including dietary management, physical activity, behaviour modification, pharmacological treatment and surgery. Physical activity is defined as any bodily

movement produced by skeletal muscles that result in energy expenditure, and exercise is a subset of physical activity that is planned, structured, and repetitive and has as a final or an intermediate objective the improvement or maintenance of physical fitness (set of attributes that are either health- or skill-related) [4]. Increased energy expenditure is an intrinsic feature of physical activity and exercise, and this is the main reason why exercise is the first step in the process of obesity prevention and treatment due to the fact that this is non-pharmacological and non-surgical means of weight reduction. Variables such as the daily duration of the activity, weekly frequency and intensity, ultimately determine the energy expenditure and potential weight loss.

The mechanisms by which exercise improves the weight reduction are backed up by physiological and psychological factors [5], and most of the effects of exercise are unique and cannot be compensated by other means. However, weight reduction by increasing the level of physical activity, without energy intake restriction, is modest [6-8], and on the other hand the importance of the role of physical exercise in the prevention and treatment of obesity is underlined [9-13]. Given that diet and exercise are frequently used methods for shaping both women and men, the purpose of this paper is not only an affirmation of one special program for weight loss, but determining how these most widely used intervention programs are generally effective in the treatment of obesity. The problem of this research is the meta-analysis of scientific research papers which examined the effects of exercise (with or without diet) on obesity among healthy adults.

2. Methods

2.1 Literature search

The literature search was performed in February 2009 using the following databases: PubMed, the Cochrane Library and JAMA network. The following key words were used: ‘effects’, ‘exercise’, ‘obesity’ and ‘adults’. The search was limited to the studies on human population published in English from 1998 to 2008. References used in the collected studies were reviewed with the purpose of finding additional material, that is, scientific papers dealing with the same research area.

2.2 Study selection, inclusion criteria and data extraction

Potentially relevant articles (based on title, key words and abstract) are identified and retrieved for more detailed evaluation. The first requirement for acceptance of a longitudinal study into the meta-analysis, was that one of the primary study goal had to be a weight reduction. The reason for this criteria was to eliminate studies where weight loss was an unexpected result of the intervention rather than a primary focus of the intervention. The second requirement for study acceptance was that the intervention had to be exercise (or exercise plus diet). Other criteria for study acceptance were that the subject sample had to be overweight, i.e. preobese persons ($25 \text{ kg/m}^2 < \text{BMI} < 29.99 \text{ kg/m}^2$), or obese ($\text{BMI} \geq 30 \text{ kg/m}^2$), aged 18-70 and that a numerical value was given for weight change during the program (Mean±SD). A data extraction from the selected studies was conducted by the author. In addition to the gender of the participants and the type of the intervention program, all extracted data are numerical.

2.3 Statistical analysis

Statistical analysis of extracted data was performed using the software for meta-analysis, i.e., Comprehensive Meta Analysis 2 (CMA 2). The fixed-effects model was used to determine the Odds Ratio (OR) with confidence intervals (CI) of 95%.

3. Results

An initial search identified 100 potentially relevant studies, of which 35 studies were eliminated based on their abstract. After detailed review of those 65 studies, 22 of them were singled out since they met inclusion criteria and thus were subjected to further analysis (Fig. 1).

3.1 Demographic characteristics

16 studies were done by the authors from the United States, there were two articles of authors from Finland, and the remaining four studies were done by authors from Australia, Canada, the Netherlands and Turkey. When speaking about the participants, the researches have encompassed only healthy and sedentary people, and the most of the studies (13 out of 22) have examined the effects of exercise on obesity only among female population [5, 8, 13-23]. Mixed-gender sample was found in six studies [24-32], and only three studies have done this type of research among male population [33-35]. This

situation might be explained by the fact that women are more prone to weight gain than men, they pay more attention to the physical appearance, and therefore most of the authors were working on finding the most efficient and healthiest solution for shaping them. The number of participants has quite varied from research to research (from 15 to 557 participants), and the sample dropout was reported to be the main problem in 15 out of 22 studies (average dropout rate is 28.16% and the reasons are: non-compliance, lack of will or free time, illness, injury, pregnancy, transport issues, etc).

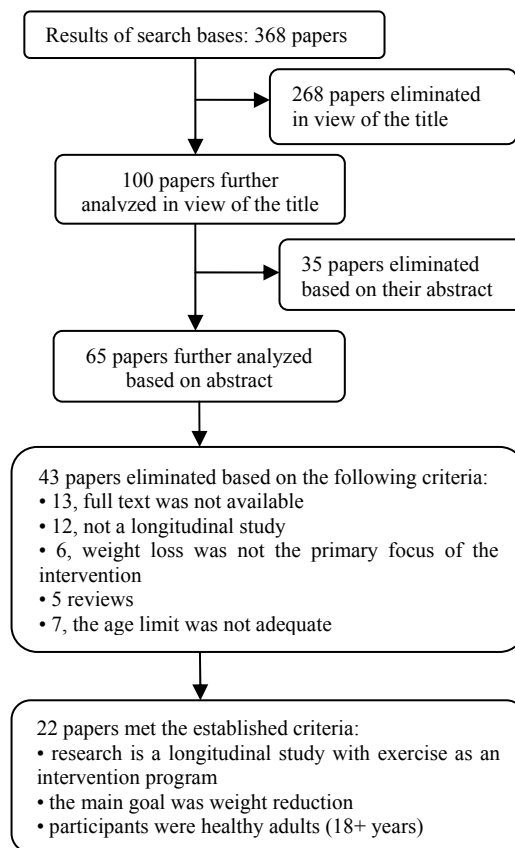


Figure 1: Flow diagram of data retrieval procedure

3.2 Intervention programs

Regarding the duration of the intervention programs it ranges from 12 to 77 weeks, and most of the studies have had a 16 weeks long experimental program [8, 17, 23, 25, 35]. Mostly, authors were trying to compare the effects of different type of exercise, with or without dieting: aerobic vs. resistance exercise [8, 13, 16, 34, 36], intermittent vs. continuous exercise [18, 19], high amount vs. low amount exercise [28, 29], vigorous vs. moderate intensity exercise [17, 18, 20, 21, 29, 35].

3.2.1 Diet

Dietary restriction represents the most conventional ‘treatment’ for overweight and obesity. Regarding the involvement of diet in the intervention program, as many as 13 studies have taken it into account. Most of the studies have applied nutrition diet in the amount ≥ 1200

kcal/day [16-18, 21-23, 32, 35], and only five studies [8, 30, 31, 33, 36] used a low-calorie diet (≤ 1000 kcal/day).

3.2.2 Diet vs. exercise (with or without diet)

Seven studies have compared the effects of the diet in relation to the exercise effects, but also differences in the effects of the diet with respect to the effects of a combination of diet and exercise [8, 16, 22, 23, 30-32]. In the study of Layman et al. [23] intervention by exercise only did not affect changes in weight. Best results were found in programs with a high protein diet and programs with a combination of diet and exercise. However, research of Janssen et al. [8] has shown that diet and exercise in combination are associated with an increase in weight reduction, compared with the programs with diet only. However, this study also showed statistically significant body weight reduction among participants who were applying a high-protein diet, with or without exercise. Therefore, the main effect here is the effect of diet to the total body weight reduction, without the effects of exercise. Sarsan et al. [13] point out the advantage of exercise treatment because of its impact on improving muscle strength, which cannot be said for the diet treatment only.

3.2.3 Aerobic vs. resistance exercise

The authors of five studies [8, 13, 16, 34, 36] have tried to answer the question which type of exercise (aerobic or resistance exercise) would be the most effective and useful to obese people. Borg et al. [34] suggested possible reasons for achieving the better results with aerobic exercise, in relation to the resistance exercise. Aerobic activities such as hiking, cycling, climbing stairs, are activities that can be easily implemented anywhere and anytime, whereas resistance training often requires commuting, which might decrease adherence. Also, considering that energy consumption per unit of time is higher in hiking as a form of aerobic activity, the authors recommend the same as rational vision for reducing and/or maintaining body weight. Bryner et al. [36] found that after 12 weeks of very-low-calorie diet, body weight had been reduced significantly in the group that was involved in light aerobic activity, compared to the group involved in the program of resistance exercise. This relationship between the obtained results, the authors attributed to the higher amount of exercise in aerobic activities.

3.3 Meta-analysis

The extracted numerical data of the selected studies (PRE Mean, PRE SD, PRE N, POST Mean, POST SD, POST N) were processed by software for meta-analysis (CMA 2) to determine the size effect of each study separately and the total effect of all selected studies (22 studies, 1915 participants). Obtained results are presented in Figure 2, and after examination one can conclude positive effect results of selected studies, except Borg et al. [34], the study in which there was no body weight reduction before or at the end of applied intervention program. It can be noticed greater relative weight of the studies with a larger sample size: e.g., the greatest relative weight (RW=32.08)

has the research of Wilmore et al. [26] with a sample of 557 participants, and the least important (RW=0.77) is research of Pasman et al. [33] with only 15 subjects. The overall effect of the studies was OR=2.602 (2.306 – 2.936) and it was at statistically significant level ($p < 0.01$).

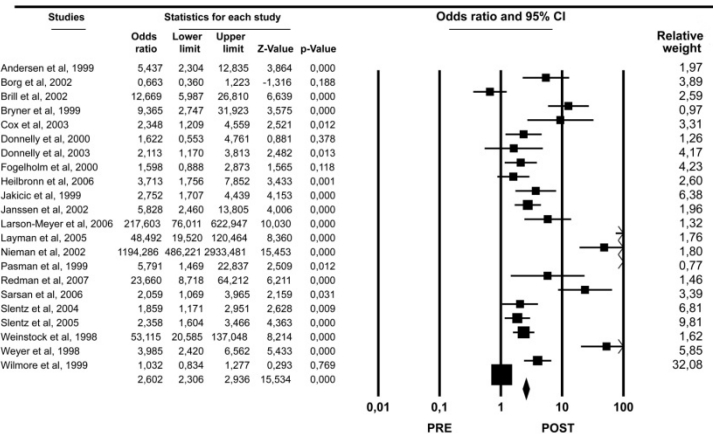


Figure 2: Results of meta-analysis

4. Discussion and conclusion

Obesity is important and major public health problem associated with many chronic health conditions, including heart disease, hypertension, diabetes, cancer, etc. Recommendations for the treatment of obese or overweight adults are focused on energy balance and lifestyle modifications designed to reduce daily energy intake and increase the level of physical activity. By respecting these recommendations, many authors have tried to find the most efficient and the most appropriate way to reduce body weight in obese people and at the same time to improve their health and thus the quality of their life. To reach the right solutions, many researchers have compared various types and intensities of exercise, with and/or without reducing energy intake. The review of the available literature exposed the fact that there is a dilemma regarding the choice of the type of exercise: aerobic vs. resistance exercise. Both types produce significant results in terms of body weight reduction, but there are some changes that we cannot see, and they do concern the body composition. Namely, aerobic activities include work in the optimal zone, the zone which is best for ‘melting’ the pounds, but there are not enough high loads that would maintain or even increase muscle mass. This is a feature peculiar to resistance exercise and only such exercise program can be proper for body weight reduction, but not at the expense of muscle mass, given that this kind of exercise prevent muscle atrophy and loss of fat-free mass.

There were a lot of studies with diet intervention programs only, as well as diet combined with exercise programs. It’s well known fact that low-calorie diet is not enough if we want great results. However, although exercise does not lead to improved metabolic profile as diet does, we cannot contradict the role of exercise in health improvement. Moreover, it is clear that exercise can increase the aerobic capacity, which has an important cardiovascular and

metabolic role, and means that an increased level of physical activity is indirectly proportional to the diseases caused by obesity. Meta-analysis showed the superiority of the effects of diet and combination of diet and exercise on obesity during the treatment period, and these programs have reduced the body weight seven to nine times more compared to exercise programs only. Although it is common to expect a body weight reduction in response to exercise there were statistically significant effects of exercise programs (either aerobic or resistance) only if the restriction of energy intake was an integral part of the intervention.

Based on the foregoing the bottom line is that for a relatively short period of time (three months) one can expect useful and obvious effects only from a diet intervention (1200 – 1500 kcal/day) or from a program that represents a combination of exercise and diet. Exercise program can be a mixture of aerobic activities and resistance exercise, minimum 30 minutes every day of continuous or intermittent exercise (10 minutes three times a day).

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IDENTIFICATION THE CROSS CULTURAL DIFFERENCES OF BASIC MOTOR ABILITIES STATUS IN HOME AND FOREIGN COUNTRY PHYSICAL EDUCATION FEMALE STUDENTS

¹Ružena Popović - ²Evdokia Samouilidou

¹University of Niš, Faculty of Sport and Physical Education

²Ministry of Education, Athens, Greece

Niš, 18 000, Serbia

+381-18-510-900

telephone number

ruzena@fsfv.ni.ac.rs - esamou@gmail.com

Abstract: *The Physical Education study is very complex, which requires an adequate set of some segments of anthropological status. Efficiency in adopting of the Physical Education Study Curriculum significantly depends of the relevant optimal combination of those segments of anthropological status, which of them is motor status and morphological characteristics, the most important. The main aim of this research is the estimation of the status of the basic and specific motor characteristics and comparison of those segments of anthropological status on the sample of the home country (former YU; n=50) and foreign country (Greece; n=30) Physical Education (PE) female students at the University of Nis (N=80), in former YU Republic of Serbia. For the estimation of motor segment characteristics, three sets of variables were applied. Parallel analysis of the research results was conducted using univariate analysis of variance (t-test) multivariate analysis of variance, and discriminative analysis. The research results point out that in the three batteries of tests, and in majority of the applied variables the two examined sub-samples of PE female students do not differ statistically significant. Differences in cultural and social environments were considered in the interpretation of results, as well as some determinants of health behaviors as part of the design and implementation of population based health and physical education programs.*

Keywords: *PE-Female students, Home & Foreign, Comparison, Motor Abilities Status*

1. Introduction

The Physical Education study is very complex. Except abilities, which are necessary for any kind of studies, such as psychological characteristics (cognitive abilities and personality features) it requires an adequate set of morphological characteristics, good level of functional and motor abilities, as well as an appropriate level of musical abilities.

A successful adopting of the Physical Education Curriculum, which is very heterogeneous, significantly depends of the relevant optimal combination of the above mentioned segments of anthropological status.

The basic aim of this paper is cross-cultural comparison of the motor segment of anthropological status among home (former YU) and foreign country (Greece) Physical Education female students.

For this purpose there were determined particular goals for the estimation of specific characteristics of motor segments of anthropological status of Physical Education female students at University of Nis in Serbia.

It was formulated logical hypothesis which implicit no significant differences between specific defined sub-samples of participants (Home & Foreign Country Female Students) in the whole area of anthropological status, as well as in the above mentioned motor segments.

2. Methods

2.1 Samples and variables

This research was carried out with 80 participants in Total, divided in two sub-samples and defined as home country Physical Education (PE) female students (N=50), residing in former Yugoslavia, and foreign country PE female students (N=30), residing in Greece, and studying at

University of Nis (in Serbia). The total of examine was limited and depends on number of female students on disposal in limited duration of research project.

On the base of samples characteristics the strictly generalization of this study results is possible only for the hypothetic population defined as Physical Education female students of Yugoslav and foreign citizenship, studying at University of Nis and in Serbia.

2.2 Motor abilities segment

For the assessment of motor abilities three different test batteries were applied, as follows:

- Battery of 6 tests for the basic motor abilities estimation (after Kos & Štepička, 1980)
- Battery of 18 tests for the basic motor abilities estimation (after Metikoš et al, 1989).
- Set of four Criterion Variables for the Estimation of PE - Study Success

UOOb – General Education Curriculum Subjects;

UOST – General Professional Curriculum Subjects;

UUST – Study Specific Professional Curriculum Majors;

USRV – Average of the Total Study Success

For the estimation of basic motor abilities a set of 18 tests has been applied for the evaluation of flexibility, coordination, balance, explosive strength, agility, speed frequency of movement and isometric strength.

Flexibility: (1) MBSP - sagittal split (cm), (2) MCSP - frontal split (cm), (3) MDPK- deep forward bend on the bench (cm), (4) MZKL- deep back band (cm), (5) MISK- inward and outward rotation of the shoulders (cm)

Coordination: (6) MVPR- rope skipping (frq. per 20 s), (7) MPZD- forward bend-rotation-touch (frq. per 20 s)

Balance: (8) MSUK-balance with the open eyes-stand on one lag along the balance bench (0.1 s), (9) MSOK-balance with the open eyes-stand on lags across the balance bench (0.1 s), (10) MSKP-balance with the closed eyes-stand on one lag across the balance bench (0.1 s), (11) MSUZ-balance with the closed eyes- stand on lags along the balance bench (0.1 s)

Speed Frequency of the Movement: (12) MVPO - speed frequency of lower extremities (frq. per 15 s), (13) MTPN - leg tapping (frq. per 20 s), (14) MTPR - hand tapping (frq. per 20 s)

Explosive strength: (15) MSDM - standing long jump (cm), (16) MABA - standing high jump - Abalak (cm)

Isometric Strength with Balance control: (17) MUSD-stand on right foot fingertips (unlimited time/s), (18) MUSL - stand on left foot fingertips (unlimited time/s)

2.2 Data processing

All of the applied instruments were adequate evaluated (in previous studies) and on the base of that fact it can be supposed that almost all have satisfactory metrical characteristics.

The collected research results (data) are processed with SPSS statistic program for the computer procedure. Specific characteristics of motor segments of anthropological status of Physical Education female students, both home and foreign country were evaluated with the basic descriptive statistics methods.

The cross-cultural comparison of specific motor segments of Physical Education Female Students (former Yugoslav and Greece group) was calculated with Univariate analysis of variance (ANOVA) Multivariate analysis of variance (MANOVA) and Discriminative analysis of variance (DISCRA).

3. Results and Interpretation

3.1 Status of Motor Abilities

Motor abilities represents one of the significant aspect of choice or selection because sports achievement is aware motion activity directed on solving tasks limited by sports rules. The sport achievement demands the perfect adopting of complexity of motion operations.

Motion abilities or elementary physical characteristics have been determined not only by human motor, but also by other factors like constitutional and psychological factors that takes part in movement regulation. Motor abilities have been manifested in complex interaction with other abilities. The optimal integration of CNS functional structures is necessary for sport achievement. For successful programming of training work it is necessary to know the status of general physical preparation of students. The level of general physical preparation can be the best established by battery of tests that measure elementary physical characteristics (basic motor abilities). The base of every special (technical) motor performance is the basic motor abilities' preparation. Because of that, the diagnostic of the basic motor abilities' development is of the primary importance for the selection as well as for the evaluation of the students' progress and performance.

The research results have been processed by basic descriptive and comparative statistic's methods (t-test) and multivariate analysis of variance (MANOVA)) and presented in tables separate for different Physical Education Students sub-samples. YU-Group (Table 1), GR-group (Table 2). ANOVA, MANOVA, and DISCRA differences of within applied variables are presented in Table 3.

Table 1. Basic statistics of motor variables in YU- PEF

VAR.	MEAN	STD.	MIN	MAX	CV%	CI	
MBSP	173.130	9.873	154.00	192.00	5.70	168.86	175.60
MCSP	11.783	10.492	.00	37.00	89.05	7.24	14.40
MZKL	14.870	14.707	.00	46.00	98.91	8.51	18.54
MDPK	62.565	4.953	51.00	70.00	7.92	60.42	63.80
MISK	34.565	13.754	13.00	57.00	39.79	28.62	38.00
MVPO	52.913	5.443	43.00	60.00	10.29	50.56	54.27
MVPR	55.826	8.856	43.00	73.00	15.86	52.00	58.04
MSDM	182.435	16.301	152.00	214.00	8.94	175.38	186.51
MABA	70.000	8.180	52.00	85.00	11.69	66.46	72.04
MPZD	18.609	1.777	15.00	23.00	9.55	17.84	19.05
MTPN	38.783	2.969	33.00	44.00	7.66	37.50	39.52
MTPR	46.217	4.472	38.00	55.00	9.68	44.28	47.33
MSUZ	9.609	2.675	6.00	15.00	27.84	8.45	10.28
MSOK	10.565	7.446	4.00	37.00	70.47	7.34	12.42
MSKP	6.609	2.210	3.00	13.00	33.45	5.65	7.16
MSUK	154.609	90.365	43.00	425.00	58.45	115.52	177.18
MUSD	40.435	21.483	10.00	75.00	53.13	31.14	45.80
MUSL	40.130	27.934	10.00	95.00	69.61	28.05	47.11

Legend: (as for Table 1-2-3): **Flexibility (1-5):** MBSP - sagital split; MCSP - frontal split; MDPK - deep forward bend on the bench; MZKL - deep back band; MISK - inward and outward rotation of the shoulders; **Coordination (6-7):** MVPR - rope skipping; MPZD - forward bend-rotation-touch; **Balance (8-11):** MSUK - balance with the open eyes-stand on one lag along the balance bench; MSOK - balance with the open eyes-stand on legs across the balance bench; MSKP - balance with the closed eyes-stand on one lag across the balance bench; MSUZ - balance with the closed eyes - stand on lags along the balance bench; **Speed Frequency of Movement (12-14):** MVPO - speed frequency of lower extremities; MTPN - leg tapping; MTPR - hand tapping; **Explosive strength (15-16):** MSDM - standing long jump; MABA - standing high jump - Abalak; **Isometric Strength with Balance control (17-18):** MUSD - stand on right foot fingertips; MUSL - stand on left foot fingertips; MEAN – Average value; STD – standard deviation; CV% - Coefficient of Variation; (CI) - Confidence Interval

Table 2. Basic statistics of motor variables in GR- PHF

VAR.	MEAN	STD	MIN	MAX	CV%	CI	
MBSP	171.90	6.768	160.00	188.00	3.94	168.91	173.60
MCSP	15.54	7.583	4.00	32.00	48.78	12.18	17.44
MZKL	22.36	12.647	5.00	46.00	56.55	16.75	25.53
MDPK	60.54	3.801	54.00	70.00	6.28	58.86	61.50
MISK	36.86	12.881	11.00	57.00	34.94	31.15	40.09
MVPO	48.90	6.301	40.00	64.00	12.88	46.11	50.49
MVPR	51.40	7.676	41.00	69.00	14.93	48.00	53.33
MSDM	179.86	17.233	150.00	213.00	9.58	172.22	184.18
MABA	66.77	8.440	46.00	79.00	12.64	63.03	68.89
MPZD	17.68	1.585	14.00	20.00	8.97	16.98	18.08
MTPN	35.95	3.605	27.00	45.00	10.03	34.36	36.86
MTPR	40.95	5.214	25.00	52.00	12.73	38.64	42.26
MSUZ	7.63	2.150	4.00	13.00	28.16	6.68	8.17
MSOK	8.77	5.300	3.00	26.00	60.41	6.42	10.10
MSKP	5.90	1.444	4.00	10.00	24.45	5.27	6.27
MSUK	98.27	81.682	14.00	295.00	83.12	62.05	118.73
MUSD	32.36	26.827	3.00	120.00	82.89	20.47	39.08
MUSL	29.45	22.861	2.00	80.00	77.62	19.32	35.18

Table 3. ANOVA, MANOVA and DISCRA Differences Among Variables and Groups

VAR.	n	F	p	CO. DISC.
MBSP		2.544	.086	.01
MCSP		1.953	.150	.10
MZKL		3.277	.044	.06
MDPK		8.438	.001	.47
MISK		.178	.837	.10
MVPO		3.297	.043	.17
MVPR		1.954	.150	.17
MSDM		.465	.630	.11
MABA		2.405	.098	.11
MPZD		1.575	.215	.01
MTPN		7.316	.001	.01
MTPR		9.710	.000	.04
MSUZ		5.119	.009	.14
MSOK		.611	.546	.10
MSKP		.951	.391	.06
MSUK		4.701	.012	.08
MUSD		3.198	.047	.04
MUSL		3.393	.040	.02
MANOVA	18	1.879	.008	

3.2 Variables for the Evaluation of the PE Study Success (Set of Criterion Variables)

Table 4. Basic statistics of Criterion variables in GR-YU-Physical Education Female Students

TEST		ME AN	ST D	MI N	MA X	CV %	CI	
MSKL	G R	22.8	17.8	4	79	78.2	15.9	27.7
	Y U	27.8	11.2	8	48	40.4	23.6	30.9
MLES	G R	39.0	11.5	15	70	29.5	34.5	42.1
	Y U	45.7	10.9	17	63	23.9	41.5	48.7
MSUC	G R	50.6	5.1	40.4	63.7	10.1	48.6	52.0
	Y U	51.3	5.9	41.3	68	11.6	49	52.9
M410	G R	12.6	7.0	11.3	14	5.5	12.4	12.8
	Y U	12.6	6.5	11.5	14	5.2	12.3	12.7
MDPK	G R	50.0	6.6	39	59	13.3	47.4	51.8
	Y U	49.5	8.4	29	66	17.0	46.3	51.8
MSDM	G R	185.4	13.7	153	212	74.0	180.1	189.2
	Y U	195.8	12.7	165	220	65.1	191	199.3

Legend: (Table 4 - Table 5): MSKL – Push -Ups; MLES – Sit-Ups; MSUC – Stand-Squat-Stand; M410 – Shuttle-Ran; MDPK – Deep forward bend on the bench; MSDM – Standing broad jump (CI) Confidence Interval

Table 5. ANOVA (between variables) and MANOVA (between groups) differences

TEST	n	F	p
MSKL		1.632	.207
MLES		5.033	.029
MSUC		.210	.649

M410		.087	.769
MDPK		.057	.812
MSDM		8.800	.004
MANOVA	6	2.706	.024

Applied set of *critierion variables* was processed with basic and comparative statistics procedures. It was established significant differences in favor of YU-PE female students. In the both analyzed sub-samples the lowest mean values were estimated in set of variables of general educational subjects (UOOB), than the values get higher in the group of general professional subjects (UOST) and average of the whole study period efficiency (UUST). The highest values are estimated at the group of specific professional subjects (USRV).

Table 6. Basic Statistics and t-test Differences within Variables of Study Success

MARKS	YU	GR	MEAN		t	p
UOOB	I	II	6.842	6.430	3.120	.003
UOST	I	II	7.330	6.664	4.426	.000
UUST	I	II	7.818	6.925	6.353	.000
USRV	I	II	7.493	6.759	5.817	.000

Legend:

UOOB – Success in General Education Curriculum Subjects; UOST - Success in General Professional Curriculum Subjects; Study Success in Sports Specific Curriculum Majors; USRV – Total Study Success, MEAN - Mean Value, t - Student-test, p – Probability

4. Conclusion

- The research results of cross-cultural analysis of home vs. foreign country PE Female students points out on significant differences in some variables of observed motor segments as a part of anthropological status.
- The Physical Education studies, which are characterized by the intense physical activities probably, have the influence on the improving of the organism adaptation potentials and on the unifying of the potential cultural differences.
- The authors suggest that in the following researches of similar problems, with aim of different groups of cultural origin comparison should be carried out exclusively during the entrance examination for the Physical Education studies, in order to confirm the research results of this study.
- Two examined sub samples of Physical Education female students statistically differ in a significant way, according to the applied multivariate analysis of variance.
- Other elements points out on the fact that it is possible to consider those differences as the quality level of basic and specific motor abilities, situation-motor efficiency, as well as personality maturity during the Physical Education study process.
- It is necessary to stress the fact that it is estimated great disproportions in sub-samples homogeneity

Acknowledgements

This study is part of the Project 13T23, entitled as: “THE SPECIFIC ANTHROPOLOGICAL CHARACTERISTICS

OF THE PHYSICAL EDUCATION STUDENTS" elaborated at the Faculty of Philosophy, University of Niš, with collaboration of the Faculty of Physical Culture, University of Belgrade (Project Coordinator), and with prof. Ružena Popović, PhD as the Project Leader, and granted by Ministry of Education and Science in Republic of Serbia (in former Yugoslavia).

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Session: Physics, Mathematics

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Byrtusová, Andrea
Jelšovská, Katarína
Polorecká, Mária

APPLYING THE METHODS OF QUEUING THEORY FOR A SIMULATED RESCUE OF PASSENGERS

Andrea Byrtusová - Mária Polorecká

Faculty of Security Engineering, University of Žilina

1. mája 32
010 26 Žilina, Slovakia
+421 41 513 6661

Andrea.Byrtusova@fbi.uniza.sk - Maria.Polorecka@fbi.uniza.sk

Abstract: The article describes the queuing theory, which is one of the branches of applied mathematics. Methods of queuing theory are used in simulations rescue passengers in emergency events. Simulation is used to estimate forces to cope with the rescue of all passengers. The model for the application of queuing theory was a bus accident in which we can expect more passengers and thus affecting a greater number of rescue personnel.

Keywords: Queuing Theory, Emergency event, Simulated rescue

1. Introduction

Media informs us about a lot of transport accidents every day. Unfortunately, the number of transport accidents increases by increasing the amount of different vehicles in the traffic – the tram, the trolley, the bus, the train and the others. Since these vehicles are carrying a larger number of people, the accident consequences are usually worse and require more intervening staff called Integrated Rescue System (IRS).

Following tragic events such as the bus accident at Nažidla (Czech Republic, 2003), the tram crash in Ostrava (Czech Republic, 2008), the express train accident at Studenka (Czech Republic, 2008) or the bus and train accident at Polomka (Slovak Republic, 2009), bus accident in road tunnel at canton of Valais (Switzerland, 2012) have increased the need for exercise of IRS intervention in emergency situations. These practice exercises are expensive and it is not possible to organize them for all members of the IRS at regular intervals.

The solution to this problem is to use multiple types of mathematical models and simulations. These models can use variable input parameters and various mathematical functions. One possibility for simulation which requires rescue personnel on mastering emergency events, having the character of a mass accident, is modeled by using queuing theory.

Table 1 Sample of bus accidents

Term	Place	Event description	Impacts
April 2007	Aksaray, Turkey	School bus - truck collision	32 dead
June 2007	Halle, Germany	Bus - truck crash	13 dead, 31 injured
July 2007	Grenoble, France	Bus fell into a scarp	27 dead, 20 injured
August 2007	Kangal, Turkey	Minibus - truck crash	19 dead
November 2007	Portugal	Bus - car collision	15 dead, 23 injured
June 2008	Nurdagi, Turkey	Minibus - train collision at a level crossing	11 dead
September 2008	Gospić, Croatia	Bus crashed into the bridge pillar	14 dead, 30 injured
November	Hannover,	Bus fire	20 dead,

2008	Germany		12 injured
July 2009	Rostov na Donu, Russia	Bus - tanker crash	21 dead
August 2009	Iasi, Romania	Minibus - train collision at the level crossing	13 dead
July 2010	Albania	Bus fell into a scarp	14 dead, 12 injured
September 2010	Germany	Bus accident	12 dead, 30 injured
December 2011	Salat, Turkey	Truck - small bus crash	25 dead
March 2012	Switzerland	Bus crashed into the tunnel wall	28 dead
July 2014	Řevničova na Rakovnicku, Czech republic	Bus - car crash	1 dead, 15 injured
January 2015	Slovakia	Bus accident	2 dead, 17 injured

2. The queuing theory

The queuing theory is a branch of applied mathematics. This theory is based mainly on statistics and probability theory. It belongs to a branch of operations research, mathematical modeling and optimization.

Queuing theory studies the activity of systems in which requirements execute a sequence of operations occurring repeatedly. The origin and the time of occurrence of these operations are usually accidental.

Queuing theory methods are divided into:

- analytical - the result is a general function that allows us to study the internal connections
- simulation - the system is multiple replaced by the simulation model with the same probabilistic characteristics and behavior

The aim of queuing theory is the design and the optimization of system or queuing system network, the analysis of existing systems, the design of their optimization.

We get the following characteristics by using the analytical and the simulation methods: the average queue length, the time which customers waiting in the queue lose, the average time of customers staying in the system, extent of lines utilization, etc.

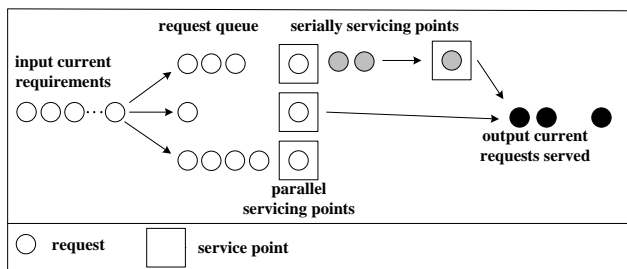


Figure 1: System of the queuing theory (Source: Gros, 2003)

Queuing system is schematically shown in the Figure 1. Customers come to the system repeatedly in time. They could be accepted into the service system and queued or they could be rejected because of servicers' full capacity. The system contains of one or more parallel service lines. There are serviced certain amount of customers. The way of queuing and customer selection for service can be different.

The basic unit of queuing system is operating system. It is composed of customer-line-servicing:

- the customer is an entity that requires processing of its requests,
- the service line is a place, a person, or a facility where the orders are processed,
- the servicing is an action leading to satisfying orders.

3. Queuing model for rescuing passengers from the bus

Precondition to the model: it is given by *s* service channels, requirements source is closed, ie. limited and *m* requirements are in the source, requirements enter with exponential distribution, requirements are infinitely patient. The operation discipline is FIFO, single-phase operation requirements by parallel service channels.

The system description: Requirements (customers) enter to the system and create the queue. Requirements are placed in the way that all places of servicing are filled and each request waits until it gets to the top of the queue and then it enters to the casual vacancy of servicing (Figure 2).

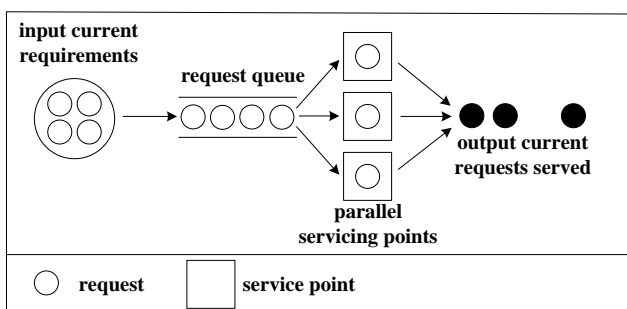


Figure 2: Model closed system of the queuing theory

Situation: There was a bus accident on the highway. The reason was the failure of car to adapt the state of the road, which was covered by ice. The bus slid off the road into a scarp in a high speed, where it stopped in the billboard beam and wedged into it. IRS forces came in the place of

accident. They rescued and treated the wounded and worked on destruction of an emergency event.

3.1 The entry data determination

A model: 15 passengers were in the bus at the time of the accident. After while, bus passengers were extricated by firefighters. A firefighter is able to get to and help each one passenger in three minutes, which is an average time of this action. Average extrication time of one passenger is 2 minutes. Extrication time and the time while firefighters get to passengers is exponential. Passengers are served in FIFO queue (ie. first in, first out).

$$\lambda = \frac{60}{3} = 20 \text{ [customers per hour]}$$

where, λ = intensity of input requirements,

$$\mu = \frac{60}{2} = 30 \text{ [customers per hour]}$$

where, μ = intensity of servicing,

$$m = 15$$

where, *m* = number of requirements,

$$s = 7$$

where, *s* = number of service channels

$$\rho = \frac{\lambda}{\mu} = \frac{20}{30} = \frac{2}{3}$$

where, ρ = traffic intensity

3.2. The probability value determination

We derived following relations for determination the probability from system of differential equations by using substitution.

$$p_n = \frac{m!}{n!(m-n)!} \rho^n p_0$$

for $1 \leq n < s$,

$$p_n = \frac{m!}{s!s^{n-s}(m-n)!} \rho^n p_0$$

for $s \leq n \leq m$.

We determinate the probability value from the condition:

$$\sum_{n=0}^m p_n = 1.$$

The calculations are shown in Table 2.

Table 2 The probability determination

<i>n</i>	$\frac{p_n}{p_0}$	<i>p_n</i>	<i>np_n</i>	<i>n</i> -	$(n-s)p_n$	<i>s</i> - <i>n</i>	$(s-n)p_n$
0	1,000	0,000	-	-	-	7	0,003
1	10,000	0,004	0,004	-	-	6	0,026
2	46,667	0,020	0,040	-	-	5	0,100
3	134,815	0,058	0,173	-	-	4	0,231
4	269,630	0,115	0,461	-	-	3	0,346
5	395,457	0,169	0,845	-	-	2	0,338
6	439,396	0,188	1,127	-	-	1	0,188
7	376,626	0,161	1,127	0	-	0	-
8	286,953	0,123	0,981	1	0,123	-	-
9	191,302	0,082	0,736	2	0,164	-	-
10	109,315	0,047	0,467	3	0,140	-	-

11	52,055	0,022	0,245	4	0,089	-	-
12	19,830	0,009	0,102	5	0,042	-	-
13	5,666	0,002	0,032	6	0,015	-	-
14	1,079	0,001	0,007	7	0,003	-	-
15	0,103	0,000	0,001	8	0,000	-	-
Σ	2339,893	1,000	6,346	-	0,576	-	1,230

We calculate the probability value p_0 by using calculations from Table 2:

$$\sum_{n=0}^{15} \frac{p_n}{P_0} = \frac{1}{P_0} \sum_{n=0}^{15} p_n = 2339,893$$

$$p_0 = \frac{1}{2339,893} = 0,00427.$$

3.3 Calculation the individual characteristics of the model

Now, we can calculate the individual characteristics of the model:

$$E(n) = \sum_{n=0}^m np_n = \sum_{n=0}^{15} np_n = 6,3455 \quad [\text{requirements}]$$

where, $E(n)$ = average number of requirements in the system.

$$E(n_f) = \sum_{n=s+1}^m (n-s)p_n = \sum_{n=8}^{15} (n-s)p_n = 0,5758 \quad [\text{requirements}]$$

where, $E(n_f)$ = average number of requirements in the queue.

$$E(t_s) = \frac{E(n)}{[m - E(n)]\lambda} = \frac{6,3455}{(15 - 6,3455) \cdot 20} = 0,0367 \quad [\text{hour}]$$

where, $E(t_s)$ = average time which requirement (customer) spends in the system.

$$E(t_f) = \frac{E(n_f)}{[m - E(n)]\lambda} = \frac{0,5758}{(15 - 6,3455) \cdot 20} = 0,0033 \quad [\text{hour}]$$

where, $E(t_f)$ = average time which requirement (customer) spends in the queue.

$$P(\tau = 0) = \sum_{n=0}^{s-1} p_n = \sum_{n=0}^6 p_n = 0,5542$$

where, $P(\tau = 0)$ = the probability that requirement (customer) will not wait in a queue.

	Performance Measure	Result
1	System: M/M/7/15	From Formula
2	Customer arrival rate (lambda) per hour =	20,0000
3	Service rate per server (mu) per hour =	30,0000
4	Overall system effective arrival rate per hour =	173,0907
5	Overall system effective service rate per hour =	173,0907
6	Overall system utilization =	82,4242 %
7	Average number of customers in the system (L) =	6,3455
8	Average number of customers in the queue (Lq) =	0,5758
9	Average number of customers in the queue for a busy system (Lb) =	1,2918
10	Average time customer spends in the system (W) =	0,0367 hours
11	Average time customer spends in the queue (Wq) =	0,0033 hours
12	Average time customer spends in the queue for a busy system (Wb) =	0,0075 hours
13	The probability that all servers are idle (P0) =	0,0427 %
14	The probability an arriving customer waits (Pw) or system is busy (Pb) =	44,5716 %
15	Average number of customers being balked per hour =	0
16	Total cost of busy server per hour =	\$0
17	Total cost of idle server per hour =	\$0
18	Total cost of customer waiting per hour =	\$0
19	Total cost of customer being served per hour =	\$0
20	Total cost of customer being balked per hour =	\$0
21	Total queue space cost per hour =	\$0
22	Total system cost per hour =	\$0

Figure 3: Verification of calculations by using WinQSB

The calculations show:

On average, there are 6.35 customers (passengers) in the queuing system.

On average, there are 0.58 queued customers (passengers) that are waiting for servicing.

A customer (a passenger) spends 132.12 seconds in the system on average.

A customer (a passenger) spends 11.88 seconds in the queue on average.

Probability that a customer (a passenger) will not wait in a queue is 55.4%.

We can simulate various situations based on the input data. Individual situations differ in the number of firefighters (1, 7, 9, 11, 13) exiting passengers from a crashed bus. We can see how it changes the value of the selected models based on calculations using mathematical formulas and outputs from the software program WinQSB (Table 3).

Table 3 The probability determination

Characteristics of the model	Number of servicing (number of firefighters)				
	1	7	9	11	13
Average number of customers in the system	13,5	6,3455	6,0354	6,0015	6
Average number of customers in the queue	12,5	0,5758	0,0591	0,0026	0
Average time which customer spends in the system	1620 s	132,1 s	121,3 s	119,8 s	119,8 s
Average time which customer spends in the queue	1500 s	11,88 s	1,08 s	0 s	0 s
The probability that customer will not wait in a queue	0 %	55,4 %	89,8 %	99,1 %	99,9 %

6. Conclusions

There are average values of inputs and services which entered into the system, so the outputs from the model are merely orientational.

The main indicator in this model is the time spent in the queue and in the queuing system. It is obvious from the Table 3, that small number of intervening firefighters increases the period spent in the queue and in the entire system (I presented an extreme situation for visualisation - one firefighter rescues all passengers). In a real situation passengers would wait for a long time and their health condition could complicate during waiting period.

By increasing number of intervening firefighters, the time spent in the queue and in the system decreases. In the same time the probability that passengers will not wait increases as well. According to the results of models I would call into action 9-11 firefighters to rescue passengers in this situation. It should be enough because the outputs of models would not change too much and larger number of intervening firefighters could interfere with each other.

It is very difficult to estimate how many rescue personnel will be needed in a particular emergency event in practice. That is a reason why more rescue personnel are sent to a large-scale accidents and after assessing the situation in the terrain, some of them are sent back to the base.

Acknowledgements

This work was supported by grant VEGA 1/0175/14.

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DETERMINE THE PROBABILITY OF FORMATION OF COMBINED RISK

Mária Polorecká – Andrea Byrtusová – Katarína Jelšovská

Faculty of Security Engineering, University of Žilina

1. Mája 32
Žilina, 010 26, Slovak republic
+421 513 6761

Maria.Polorecka@fbi.uniza.sk – Andrea.Byrtusova@fbi.uniza.sk – Katarina.Jelsovska@math.slu.cz

Abstract: Article aims to find and then apply the appropriate method to determine the probability of formation of combined risk. Authors build on their previous work, where they started typology, interactions and the definition of combined risk. Article presents the application of Bayesian network on the issue of assessing the probability of the combined risks.

Keywords: Combined Risk, Natech, Probability, Bayesian Network.

1. Introduction

With the issue of the combined risks deals nowadays increasingly concerned institutions and organizations, especially Joint Research Centre (JRC), which is now part of the European Union and also Organization for Economic Co-operation and Development (OECD). There are several types of combined risks, but present paper is focused on natural hazards triggering technological disaster. The reason for our choice is the fact that this type of combined risks is very common risks in most countries, as evidenced by the many situations around the world.

2. Starting Points for Combined Risk Research

As a result of our previous work: defining the term “combined risk” is slightly more complex as it is a combination at least two individual risks, and this combination is not delineated. Different kinds and types of individual risks may enter into mutual interactions, which have different dependencies, and mechanisms and they are conditioned by many factors and the origin of individual risk also. Therefore, prior to the definition of combined risk, the determination of the basic environment is necessary, i.e., risk conditions (origin of the risk), time course of risk, and relation of individual risks involved into this combination and their effect on a subject [1].

In order to be able to define the combined risk is, however, necessary to consider the risk in a wider aspect. For the purposes of this article, to define risk in terms of the environment in which they arise will be sufficient. This environment determines the nature of the risk and its possible participation in the combined risk. Origin of the risk is a basic characteristic of the risk. According to many authors and literary sources the origin of the risk may come from many environments. Where is represented by only one type, we do not consider this as a combined risk (combined risk is not for example flood and subsequent landslides).

Definition of combined risk: combined risk is characterized by interactive link between risks originating from at least two different environments. Environment is seen as a whole which is not closed and which is characterized by communication (flow of energy and information) with other environments. Interactive connection is a relation, what can be characterized as

mutual synergy or mutual triggering of individual risks. It is immaterial whether it is a relation of probabilities or relation of the consequences of primary individual risks involved in the combination [2].

From our previous paper follows typology of combined risks – natural and technological:

- A) Initiation of technological accident by a natural disaster
- B) Initiation of a natural disaster by a technological accident
- C) Domino effect – technological accident triggers another technological accident
- D) Concatenation of natural emergencies
- E) Synergy of technological accidents and environmental conditions
- F) Synergy of natural disasters and technological conditions
- G) Accumulation – parallel action of natural and technological events.

This work will be aimed at one of these – initiation of a technological accident by a natural disaster.

The process of interaction is described in Figure 1. This case is common in practice when by the outbreak of natural disasters technological equipment is subsequently threatened and disturbed, which leads to an occurrence of accidents. There are many cases in history, for example releases of hazardous substances and oil tanker fires caused by the earthquake, releases of hazardous substances from factories during the floods, damage to critical infrastructure assets due to storms, possibly to snow disasters, or landslides. This is called natechs. [3]



Figure 1: Initiation of a technological accident by a natural disaster (authors)

In this paper we are concerned with natechs in the form of the impact of floods on the occurrence of accidents.

The aim of this paper is to find an appropriate method to calculate the probability of the natechs, which would give

the count to be applied within the different case, so as to be applicable not only to one specific example, and that it is also straightforward and accurate. Suitable method appears to be the method of Bayesian network. For good illustrative example, it prepares the Bayesian network, which is a plot of the problem. Then of items Bayesian network determines the conditional probability and finally of the possible cases that can occur to form a probability. Our first step was to analyze the Boolean algebra and Boolean lattice. Boolean lattice, however, not be suitable for this case. So we were looking further until we found a Bayesian network, which chat structure is similar to the Boolean lattice, but they are more useful since statistical matters between partially dependent phenomena require total probability distribution. The structure of Bayesian network is an appropriate tool to build such a probability distribution, which is why we decided to calculate the probability of the combined risk consisting of natural disaster and technological accidents by Bayesian network. But first of all, a brief description of the theory of probability will be done.

2.1 Probability Theory

Probability of an event A is the number P(A) associated with the event A, which has the property that the relative frequency of the phenomenon h(A) event A with an increasing number of approaches attempted execution number P(A) [4].

Let S denote the set of all elementary events. Each observable phenomenon is represented by a subset of set S. Denote the A as the set of all observable phenomena, i.e. that $A \rightarrow P(S)$, where P(S) is the set of all subsets of the set S.

Then define the probability as a function $P: A \rightarrow < 0,1 >$

such that the following applies [4]:

- (1) $P(S) = 1,$
- (2) $a, b \in A, a \cap b = 0 \Rightarrow P(a \cup b) = P(a) + P(b),$
- (3) $i, j \in N, a_i \in A, a_i$ are disjoint in pairs, i.e. $i \neq j \Rightarrow a_i \cap a_j = 0,$

$$P(\bigcup_i a_i) = \sum_i P(a_i)$$

Conditional probability

Random event is always set to certain conditions. In the absence of the occurrence of the event A subject to any other conditions, the probability of P(A) event A referred to as unconditional probability. If event A may occur only occurred if the event B, whose probability is $P(B) > 0,$ then talk about the conditional probability of the event A and denoted by $P(A|B).$ When $P(B) > 0$ the probability of an event A that is contingent on the occurrence of the event B expressed as [4]:

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{|A \cap B|}{|B|}$$

Events A and B called mutually independent, where the following applies [4]: $P(A \cap B) = P(A)P(B)$

3. Bayesian Networks: a Sketch

A Bayesian network is a probabilistic graphical model that represents a set of random variables and their conditional dependences via a directed acyclic graph. Formally, Bayesian networks are directed acyclic graphs whose nodes represent random variables in the Bayesian sense: they may be observable quantities, latent variables, unknown parameters or hypotheses. Edges represent conditional dependencies; nodes that are not connected represent variables that are conditionally independent of each other. Each node is associated with a probability function that takes, as input; a particular set of values for the nodes parent variables, and gives (as output) the probability (or probability distribution, if applicable) of the variable represented by a node.

A directed acyclic graph is a directed graph with no directed cycles. That is, it is formed by a collection of vertices and directed edges, each edge connecting one vertex to another, such that there is no way to start at some vertex v and follow a sequence of edges that eventually loops back to v again [5].

Because directed acyclic graphs are also used to represent system of events of potential events and the casual relationships between them, it makes them suitable method to predict the development of natechs. For present purposes, it is necessary to explain some of the basic vocabulary of Bayesian networks. A Bayesian network's elements are [6]:

- Croup of vertices – parents and descendants is one jargon – and group of directed arcs,
 - Table of prior probabilities P(Z) associated to the top-level parent vertex Z,
 - Table of conditional probabilities P(Y/X) attached to the vertex Y whose parent is X, which are the probability distributions over the states of Y given the states X.
- Relationships can be seen in Figure 2.

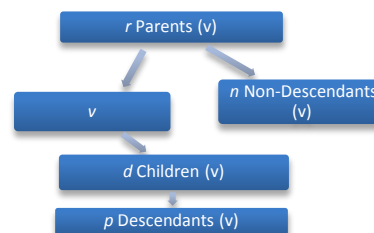


Figure 2: Directed acyclic graph G (authors)

The design of the overall probability distribution $p(v_1, \dots, v_n)$ random variables v_1, \dots, v_n corresponding to all vertices v_1, \dots, v_n oriented acyclic graph G works as follows:

Assume that for a directed acyclic graph G:

- (1) All the conditional probabilities $p(v|Parents(v))$ are independent from variables of Non-Descendants (v).

(2) Conditional probability tables are given

$p(v|Parents(v))$ For each vertex in the graph G . The above is called Bayesian networks. Then there exists a uniquely determined overall probability distribution $p(v_1, \dots, v_n)$ satisfying assumptions and is given by the expression:

$$p(v_1, \dots, v_n) = \prod_{v \in G} p(v | Parents(v))$$

4. Methodology

The first step is to create a directed acyclic graph with the fact that we know the relationships between risks. Furthermore, each vertex of the acyclic oriented graph is assigned a probability distribution table. And if the vertex has no parent, this is a conditional probability. The resulting probability then calculate by multiplying the individual cases which arise or it is possible to calculate the probability for each case, which would give quite a lot of values. Another possibility is calculating only the probabilities, which are the most realistic, we know with certainty that may occur. To estimate the probability to build a table of probabilities, are two conditions that have to be met: $0 \leq p(v_1, \dots, v_n) \leq 1$ and $\sum p(v_1, \dots, v_n) = 1$. The first one says that the probability distribution on the interval (0,1) takes values from zero to one, because the probability is expressed as a percentage and number one thus represents 100%. The second formula says that the sum of the probabilities have to be equal to one.

4. Methodology

We chose the case where a flood that could occur, threatening the two companies in the immediate vicinity of the watercourse, while company A is located closer to the watercourse than company B. Thus on company A the consequences of the devastating disaster will be much more stronger than on company B. Nearby companies are also located power plant, on which are the both of companies depended (because of electricity), but it is also may be threatened by floods.

Summary (see also Figure 3):

- Flooding affects at all three objects, i.e. the company A, company B and a power plant, each with a different probability, but everyone must reckon with some risk.
- Company A will be in case of flood the most affected. It is also dependent on the power plant. So if the floods hit power plant too, it may interrupt the electricity supply. An arrow that leads from the company A to the company B (see Figure 3) means that the company B is holding company A in some way dependent (it may be a supply of eat for example).
- The power plant may be at risk of flooding and otherwise has no other parents. Only children that is company A and company B, which are depending on it.
- Company B is dependent on all three objects. It can be threatened by floods, but also can be cut off his ties with company A and with the power plant.

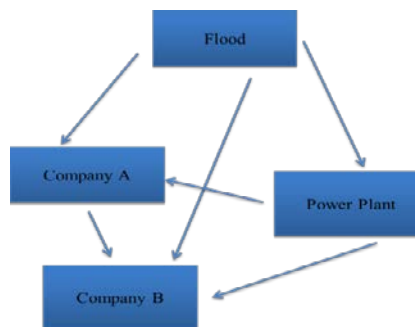


Figure 3: Directed acyclic graph of creation of the natech (authors)

Now the tables of conditional probabilities will be created. Each vertex in a directed acyclic graph must have a table. Since we have four vertices, we have four tables of conditional probabilities. Each vertex has a different number of parents, as well as tables will have a different number of possible combinations [7].

Vertex “Flood” has no parents and its table of conditional probabilities, therefore, not conditions:

Table 1 Conditional probabilities for flood(authors)

Flood	Probability
Occurred	0,3
Did not occur	0,7

Vertex “Power Plant” has one parent, and therefore contains 22 possible combinations.

Table 2 Conditional probabilities for power plant(authors)

Power Plant	Flood	Probability
Occurred	Occurred	0,8
Occurred	Occurred	0,2
Did not occur	Did not occur	0,001
Did not occur	Did not occur	0,999

Vertex “Company A” has two parents, thus the two conditions in a table of conditional probabilities and the number of possible combinations is 23. See Table 3.

Table 3 Conditional probabilities for Company A(authors)

Company A	Flood	Power plant	Probability
Occurred	Occurred	Occurred	0,9
Did not occur	Occurred	Occurred	0,1
Occurred	Did not occur	Occurred	0,2
Did not occur	Did not occur	Occurred	0,8
Occurred	Occurred	Did not occur	0,8
Did not occur	Occurred	Did not occur	0,2
Occurred	Did not occur	Did not occur	0,001
Did not occur	Did not occur	Did not occur	0,999

Vertex “Company B” has tree parents, thus tree conditions in a table of conditional probabilities and the number of possible combination is 24. See Table 4.

Table 4 Conditional probabilities for Company B(authors)

Company B	Flood	Power plant	Company A	Probability
Occurred	Occurred	Occurred	Occurred	0,9
Did not occur	Occurred	Occurred	Occurred	0,1
Occurred	Did not occur	Occurred	Occurred	0,6
Did not occur	Did not occur	Occurred	Occurred	0,4
Occurred	Occurred	Did not occur	Occurred	0,7
Did not occur	Occurred	Did not occur	Occurred	0,3
Occurred	Did not occur	Did not occur	Occurred	0,2
Did not occur	Did not occur	Did not occur	Occurred	0,8
Occurred	Occurred	Occurred	Did not occur	0,7
Did not occur	Occurred	Occurred	Did not occur	0,3
Occurred	Did not occur	Occurred	Did not occur	0,2
Did not occur	Did not occur	Occurred	Did not occur	0,8
Occurred	Occurred	Did not occur	Did not occur	0,55
Did not occur	Occurred	Did not occur	Did not occur	0,45
Occurred	Did not occur	Did not occur	Did not occur	0,0001
Did not occur	Did not occur	Did not occur	Did not occur	0,9999

It is now possible to calculate the probability for each of the vertices in the graph, which is actually for companies and power plant, according to the formula given above:

$$p(v_1, \dots, v_n) = \prod_{v \in G} p(v | \text{Parents}(v))$$

Vertex “Flood” has no parent, and as it can be seen from the Table 1, the probability that the flood occurs is 30 % and the probability that does not occur is 70 %.

Vertex “Power plant”, which has one parent and is therefore dependent on only one variable – flood – the probabilities of an accident or power outage is:

If flooding occurs while power outage occurs, lends probability 24 %. If there is a flood, but power outage is not, it occurs with probability 6 %. From Table 2 it is possible to see that if flooding does not occur, the probability of an accident at a power plant is 0.01 % and 99.9 % it does not occur. The number is so low because it is based on the flood; not counting other unexpected events that occur in the plant without the presence of floods.

Vertex “Company A” has two parents, which are flood (which acts at all vertices), and power plant. The probability of occurrence an accident involving floods are following:

The worst option – a flood occurs as well as outage in company A and power plant also occurs, is 27 %. If there is a flood and power outage also occurs, but in the company B everything is in order, it comes with probability 3 %. If there is a flood and also outage in company A, there is a probability of 24 %. If there is a flood, but company A can do it without any harm, it is probability of 6 %.

The last **vertex “Company B”** has the most parents, tree: flood, power plane and company A. The probabilities of an accident is based on the same system like previous examples. For short space we introduce only the worst case of probability. The worst case that can happen for this vertex is when the flood comes and company B is affected by the outages in power plant and also in the company A. And it occurs with a probability of 27 %.

6. Conclusions

The advantage of this method is that is quite simple and if Bayesian network has a few vertices, it is easily counted manually.

The disadvantage is usability. Any company that is located near a watercourse of may be flooded, must applied this method directly to its company. In this case, there is no universal solution that would be applicable to all. Every company can be flooded with different probabilities and with another probability can accident, leakage of hazardous substances or other disaster occurs. These probabilities are subjective because each is selected from risk analysis of their company.

The method along with the proposed measures is thus certainly one of the means for reducing the risk of the combined risks.

Acknowledgements

This work was supported by grant VEGA 1/0175/14.

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INTERPERSONAL BEHAVIOR AND MUSIC PREFERENCES OF OLDER SCHOOL AGE CHILDREN

Peter Kusý

Department of Educational Studies, Faculty of Education, Trnava University in Trnava

Priemysel'na 4

Trnava, 918 43, Slovakia

tel.: +421904306324

e-mail: peterkusy7@gmail.com

Abstract: *The paper reports on music preferences in relationship to interpersonal tendencies of older school-aged children. Individual categories of music genres, which the children like and prefer, are identified and it is assumed that they are in relation to the current interpersonal setting of a child's personality. Employing correlation analysis it was discovered that interpersonal profile overlaps with the music-preference framework of a child recipient to a certain extent. The obtained results are a platform for the application of music-intervention means applicable, for instance, in the environment of school.*

Keywords: *interpersonal behavior, music preferences, children*

1. Introduction

Music preference has belonged rather to the scientific-research area of music sociology until recently (for example, the connection to education, age and affiliation to a social class). However, psychologists interested particularly in the psychological foundation and the background of the music-preference framework have gradually begun to deal with the preference of music genres. At present, the issue of music preferences related to the personality of a recipient has a rather multidisciplinary character [1]. However, considering children, this phenomenon is significantly influenced by the basic attributes of a current developmental period of a child. Music preference of children remains unresolved so far and it is being formed over time and it changes depending on several psycho-social, cultural and individual factors. Reasons for listening to music and fondness for it seem to be individually and generationally differentiated a lot. Music accompanies and follows us in everyday life situations (at parties, weddings, on our way to work, school, while driving, travelling on a bus, train, etc.) and it affects our emotions and behaviour peculiarly. It becomes a natural part of our physical and social environment. Music preferences can therefore help to define our role and identity in social context and to support the expressive side of our personality, by the means of which we can gain interest/disinterest or sympathy/antipathy of the people around us [2]. Music signals the tendencies of a child iconically, his/her imagined generalisation of the others in the interpersonal space (Knobloch's interpersonal theory of music). Individual psychodynamics and movement within the relationship network in a group of each and every child and during perception of music affect their settings within a school class interactively [3].

I believe that it is important not to forget about the importance of the role of music and implementation of various music means and interventions in the process of education. If a specialist working with children is able to utilise these techniques competently and to integrate them into the process of education, he/she can contribute not only to personality development, cultivation and

socialisation of a child, but he/she can also support the quality of life of a child in the school environment, his/her natural creative potential and a progressive accent within ontogenesis [4].

I will try to approach the phenomenon of music preference as a dynamic process and its individual particularities in relationship to interpersonal tendencies regarding older school-age children (from 10 to 15 years of age). The resultant findings can help us to clarify the design of the music-preference framework of a child and his/her socio-psychological connections in relation to the interpersonal side of a forming personality.

1.1 Music preference as a part of a musical biography of child

At present, a unified and complex theory that would explain the process of the development of music preferences in detail does not exist. Moreover, the music preference framework of a child listener is more difficult to be operationalised and exactly defined or identified, since together with a certain musical vagueness of a child a lower level of music literacy, a less saturated music experience and an overall "poorer" music biography of a child recipient is presupposed.

Music preference as a dynamic process (at a childhood age a vague – a rather confusing or diffusional character) is perceived in connection to music experience, which is subjective and differently saturated regarding each recipient. Music preference as well as music experience form together a part of a complex of individual music biography of a specific recipient. The fact that music experience is important for music reception and later for the preference is recorded by several authors pointing out thus to the importance of the phenomenon of experience in music perception [5][6][7][8][9]. Davies even speaks about episodic associations (connection of specific music compositions with some life events) and Franěk talks about iconic associations (based on the relationship between a music structure and some non-music phenomena and events that are emotionally charged) [5][7]. Majority of music-psychological researches deals with the link between a music preference and personality

characteristics, the stable features of a personality, as well as the impact on the emotional part of a man. A relatively small number of authors deal with interpersonal tendencies in relationship to music.

Attempting to search for the correlations between music preference and interpersonal tendencies of an older school-age child, the fundamental contours of a child's psyche ontogenesis in a given period need to be taken into account. Changes taking place in mental life in this age period can be significantly displayed in music perception and music interest or attitudes. A growing analytical-synthetic activity and a deeper mental processing of music is a result of a certain degree of music experience, too. Children at this age often "revel" in an excessively strong music reproduction and in general, music interests develop in a much greater degree and intensity than in the preceding periods. The increased interest in music has a socio-psychological character at the same time and various music subcultures, which are typical for (besides the commonly shared preferred music) strong cohesion, friendly relationships within the group and shared ideology, attitudes and values, singularise in individual music genres [10][11].

1.2 Research problem and goals

My effort is to approach the phenomenon of music preference as a dynamic process and its individual particularities in relationship to interpersonal tendencies of older school-age children. The primary aim is to identify typical interpersonal tendencies of the respondents and their current music preferences. It is assumed that relations that originate between the music taste of a child respondent and the current interpersonal setting are not random [3]. Thus, the final findings will help to clarify the design of the music-preference framework of a child and his/her socio-psychological connections to the interpersonal side of a shaping personality.

2. Methods and measures

Majority of researches dealing with music preferences (regarding pubescents, adolescents or adult population) utilise *Short Test of Music Preferences – STOMP* [12]. I decided to utilise this measuring tool after translation into Slovak and revision to our conditions (for the child population). The revised questionnaire consists of 17 items (specific music genres) and the modification was based on a Czech version of the research of music preference [1] and a Slovak study of music preferences, which are the closest regarding the needs of the presented research [13][14].

The Slovak translation of a reduced version (from the original 128 items to 64 items) of Leary's standardised questionnaire *Interpersonal check list – ICL* [15] was utilised to measure interpersonal profile.

2.1 Participants

The research set was formed by 158 pupils of the second grade of the Primary School in Levice (n=158), counting 73 boys (n=73) and 85 girls (n=85). Greater part of the respondents live in the town of Levice (n=84) and the rest

of the respondents live in neighbouring villages not larger than 5000 inhabitants (n=74). Among the fundamental descriptive indicators of the research set is also the level of music education. This factor is perceived as important due to the fact that it can include music experience into a certain extent and a certain level of music literacy of a child, which are important for the design of the music-preference framework. In the research the respondents were differentiated according to the level of music education into four categories: those who attend primary art school (n=4); private art school (n=1); those who do not attend any art institution, however, they learn how to play a musical instrument individually or they sing actively – "autodidact" (n=11) and finally, respondents without any music education (n=142), who form up to 89.9% of the set. Considering spare time activities and extracurricular club activities, about half of the respondents do not attend any clubs in the environment of school or in other educational institution (n=80); almost one fourth of the children attends sport clubs (n=39); next are art clubs (e.g. fine arts, photography, music, etc.) (n=21); language clubs (n=7); literary and drama clubs (n=3); science clubs (n=3); IT clubs (n=5).

2.2 Research questions

Since the issue of music preferences at childhood age is relatively poorly examined and the opinions of experts vary, I decided to formulate the following fundamental research question in my research:

Q1: What is the relationship between individual interpersonal dimensions of a child's personality and the preferred category of music genres?

3. Results and discussion

The ambiguities in research conclusions and the antagonistic views on the issue of music preference of children in general form a space for gaining new adequate information that can contribute to the overall process of the design of the music-preference framework (beginning in childhood) in connection to the shaping personality of a man (as a system of intrapsychic and interpersonal processes). In the research the answer to the following question was searched for: *What is the relationship between individual interpersonal dimensions of a child's personality and the preferred category of music genres?*

The initial findings (see Table 1) refer to the preferred category of *intensive and rebellious music – IR* (genres of rock, poprock, hardrock and metal) and a negative relation with a hyperaffiliative type ($r = .29$; $p < .001$) and a hyperprotective type of personality ($r = .25$; $p < .01$). In the case of the preference of the category IR a low degree of hyperaffiliative and hyperprotective tendencies, which are placed next to each other in the interpersonal diagram of personality according to Leary, LaForge and Suczek, can be assumed. The authors characterise the hyperaffiliative type as a type that is markedly cooperative, friendly, amiable with an affiliation to the others. Mostly, they hate the feeling of guilt, they avoid criticism and aggressive expressions compulsively and in an interpersonal encounter they rather try to satisfy the needs of the others

so that they can be positively accepted by them and so that they can maintain peaceful relationships. Situations that cause negative feelings are dealt with rather in such a manner that their hostility and indirect aggression are focused outside the group [15]. At this place the preference of intensive and rebellion music can be considered as a complementary reaction of a percipient. Characteristic features of this music (intensive, loud, dynamic, rebelling, pulsing, striking, sharp, rough, etc.) actually resemble the opposite interpersonal type of egocentric personality. The second type of a hyperprotective personality is according to Leary, LaForge and Suczek typical for the fact that people belonging into this dimension appear to be reasonable, considerate, mature, independent and strong in personality. The most distinctive feature is consideration, which together with affiliation and friendly behavior represent a transformation of an adaptive form of confident independence and strength [15]. A complementary type to the hyperprotective personality is a suspicious personality, which is typical mainly for critical, direct attitude to their social surroundings. Intensive critical tendencies, connected to bitterness, disappointment, hostility, alienation and rejection of the others and conventional norms, resembles the features of preferred intensive and rebellious music. Several studies have linked this category with aggressive expressions, hostility, non-conventional, non-cooperating and non-conform behavior [13][14][16].

Table 1 The relations between interpersonal behavior and preference of intensive and rebellious music

Interpersonal type of personality	n	r	p
Hyperaffiliative	158	-.29	.001***
Hyperprotective	158	-.25	.01**

Other findings regard the category of *traditional Slovak folk music and brass music – TF*, which is relatively specific for Slovak musical-cultural environment. The results presented in Table 2 show negative weak relations of the preferred traditional Slovak folk music to the egocentric type ($r = .24$; $p < .01$) and the hyperaffiliative type of personality ($r = .23$; $p < .01$). It can be assumed that the more the children prefer folk music and brass music, the lower rate of hyperaffiliative (see above) and egocentric interpersonal behaviour is displayed by them. The egocentric interpersonal type is understood in accordance with Leary, LaForge and Suczek, who understood it as behaviour oriented primarily toward one's own person. Such a personality expresses self-love, satisfaction with one's self, self-esteem and certain superiority in a social context. The opposing type to the egocentric personality is a hyperconformist type. It is typical for the display of a dependent, submissive conformity, admiration and a need to request help and advice [15]. The paradox is that hyperconformity is located next to hyperaffiliation in the interpersonal diagram a therefore, the interpersonal setting in this case sounds rather ambivalent and undefined, which is

understandable in case of the dynamics of mental development in the period of pubescence.

Table 2 The relations between interpersonal behavior and preference of traditional and folk music

Interpersonal type of personality	n	r	p
Hyperaffiliative	158	-.23	.01**
Egocentric	158	-.24	.01**

3. 1 Recommendations and limits

The paper offers one of the indicators of the connections between interpersonal behaviour and the music-preference framework of adolescents, which is still being developed and is not definitive within the ontogenesis. Besides music awareness and thinking, literacy, music education, music experience and the overall taste, the issue is entered by a number of other aspects. Perception of music, reception of music and the overall relationship to music of older school-age children is a relatively specific and demanding field for scientific research. Based on this fact there are certain limitations of my research work; as well as opportunities for its further amendment and extension in following research activities. Music preference is just one part in the complex music biography of a man and moreover, at a childhood age it is related rather to current sympathies or antipathies, which are closely associated with the dynamics of ontogenesis of child's psyche in the given developmental period. The topicality of music taste is thus connected to affiliation with individual subcultures of the youth (mainly in the period of adolescence) and it is mainly the social function of music in the process of socialisation and shaping of young man's identity that is dominant. In this period the interpersonal setting can be a good indicator for identification of social hierarchisation of a small social group (a school classroom) in the environment of a school. However, in further research activities it is necessary to examine music biography of a child in connection to socio-cultural apperception patterns, interpersonal setting and the overall sociometry of a school classroom deeper.

4. Conclusions

My primary interest was to discover whether interpersonal behavior (tendencies) can be related to music preferred by older school-age children. Therefore, it can be assumed that what we perceive in music and what attracts us in a certain way, is closely connected to the interpersonal setting of a percipient (interpersonal tendencies expressed in music). Presented results are a part of series of pre-research activities of the author, who plans to validate the interpersonal hypothesis of music regarding children experimentally and to regulate interpersonal behavior of a child in the environment of a school through the mediation of music. Such knowledge can be an important source for systematic application of music interventions into the process of education.

Acknowledgements

The paper originated with the support of the VEGA grant No. 1/0266/14: *Indicators of Quality of Life in the Context of Education* and with the support of the grant fund of Trnava University 2014 and the grant No. 4/TU/2014.

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AN OUTLINE OF THE ISSUE OF INTERPRETING CZECH SIGN LANGUAGE FOR PEOPLE WITH HEARING DISABILITY

Barbora Hrdová Kolíbalová

Palacký University Olomouc, Faculty of Education

Žižkovo nám. 5
Olomouc, 771 40, Česká republika
+420 603 473 387
widdy@volny.cz

Abstract: *The contribution deals with an outline of basic information related to the issue of interpreting Czech sign language for people with hearing disability and it is an output of a research. Twenty-eight respondents took part in this research. Professional interpreters from the whole Czech Republic were addressed as the research sample. They were addressed through the research method of a questionnaire in an electronic form. The contribution focuses on the basic notions from the area of interpreting for people with hearing disability, particularly the notion Czech sign language and its phases, interpreting types and the legal frame of the issue are mentioned. The analysis of chosen results of the research follows together with conclusion.*

Keywords: *person with hearing disability, interpreter, Czech sign language*

1. Introduction

The aim of this contribution is an outline of basic information related to interpreting Czech sign language for people with hearing disability; particularly the notion Czech sign language and the legal frame of this area are stated. The theoretical part deals with the definition of interpreting, its phases and types. Areas where the interpreting takes place are mentioned as well. The research and its chosen questions ought to help to analyse this issue from a practical point of view in the way the interpreters of Czech sign language themselves see it.

1.1 Czech Sign Language and Legal Frame

Any communication system may be called a language in a broader sense. It may be the language of animals, the language of culture etc.; a language in a narrower sense is seen as a system of signs used for human communication. It is a natural language. On the contrary, the definition of a sign in a broader sense is seen as a semiotic notion and in a narrower sense the definition of a sign is an item of sign language. A sign is something (sound, move, picture, object etc.) which represents something else based on the common experience of the communication participants [1]. The basic legal pillars for interpreting and the choice of communication code within the area of the Czech Republic for people with hearing disability are in particular the Constitution Act n. 1/1993 Sb., the Constitution of the Czech Republic; where Art 3 states that a part of the Constitutional Order of the Czech Republic is the Charter of Fundamental Rights and Freedoms.

Except for others, the Charter declares equality in rights, guarantees special protection in working relationships for people with hearing disability and the right to an interpreter during court proceedings [2].

Czech sign language is defined in the Act n. 384/2008 Sb., on Communication Systems of People with Hearing Disability and People with Hearing and Sight Disability, as a basic communication system of those people with hearing disability in the Czech Republic who themselves

consider it their main form of communication. Czech sign language is a natural and full communication system consisting of specific visual-kinetic means i.e. shapes of hands, its position and movements, facial gestures, positions of head and upper part of the trunk. Czech sign language has basic attributes of language i.e. signability, system, double division, productivity, peculiarity and historical aspect; and it is stabilised in terms of lexicology and grammar. Czech sign language may be used as a communication system of people with hearing and sight disability in a tactile form which consists of perception of its means of expression through touch [3].

It is, thus, a natural language of people with hearing disability with its own grammar and sign order and it is not derived from the spoken language of the given country.

It is necessary to mention the Act n. 108/2006 Sb., on Social Services, which enables people with hearing disability to draw some interpreting services within the area of the Czech Republic free of charge.

1.2 Interpreting

According to the World Health Organization (WHO) hearing disability is considered to be one of the most serious disabilities when 60% of information, which intact person gains via hearing, is lost. People with hearing disability are limited in the input of information, which seem to be invisible. Hearing disability itself is not a problem; the consequences related to this disability are the problem [4].

Interpreting Czech sign language to people with hearing disability at least partially enables to get information in their natural language, possibly their mother tongue.

Interpreting may be characterised as oral transfer of a statement from one language into another one during the speech or interview. Speaking about a written statement, it is considered to be a translation. When transferring the language, the differences between the languages must be taken into consideration [5].

In case of people with hearing disability, it is necessary to take the differences between Czech sign language and culture of people with hearing disability and the world of the intact into account [6].

From the point of view of the interpreter, interpreting has three phases:

1. Reception – input of information via hearing or sight occurs together with its analysis.
2. Translation – processing and short term storage of gained information and transformation into the target language occurs.
3. Reproduction – expressing in the target language occurs.

Types of interpreting may be divided according to the time order of individual phases of interpreting. It means:

1. Simultaneous Interpreting – i.e. interpreting when the interpreter interprets the statement into the target language simultaneously with stated information. Reception, translation and reproduction are minimally delayed.
2. Consecutive Interpreting – the interpreter makes short breaks between listening and interpreting. It is following interpreting [7].

The areas of interpreting may be divided into the interpreting situations taking place within services (for example at the office, in the company, at the doctor’s etc.), taking place in the area of education (schools, seminars, courses) and taking place in other areas (cultural events, weddings, funerals or celebrations etc.) [8].

2. Methodology

The primary aim of the research was to establish which situations the interpreting services are the most used in and which areas interpreters consider to be their favourite ones. The partial aim of the research was to establish how the professional interpreters evaluate their occupation from the point of view of demandingness. The research method of a questionnaire was used from the empirical methods for this contribution. The research sample consists of professional interpreters from the whole Czech Republic who were addressed via a questionnaire in an electronic form. They were chosen on the basis of a database of interpreters or on the basis of personal meeting. Gender, age, education or the type of interpreting was not taken into consideration. The significant point of choice was professional interpreting occupation based on performing legal terms and conditions. The total number of twenty-eight respondents took part in the research. Their average age was thirty-three, 85.71% were of a feminine gender and 89.29% stated university degree as the highest achieved educational level. The chosen results are analysed, graphically processed and commented.

3. Analysis of Chosen Results of the Research

1. In which area do clients with hearing disability require interpreting the most?

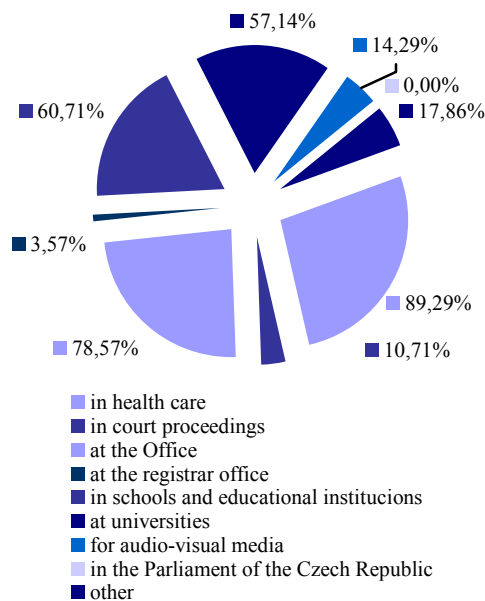


Figure 1: 89.29% of professional interpreters interpret in the area of health the most, the area of interpreting at the offices follows with 78.57%, 60.71% of interpreting is required the most in the area of schools and educational institutions. 57.14% represent interpreting required by clients at universities. 17.86% of clients prefer a different interpreting from the ones stated in the questionnaire. 14.29% of professional interpreters interpreted in the area of audio-visual media and 10.71% interpreted in the area of court proceedings. Interpreting at the registrar office was required in 3.57%. Nobody has ever required interpreting in the Parliament of the Czech Republic.

2. Which area of interpreting do you prefer?

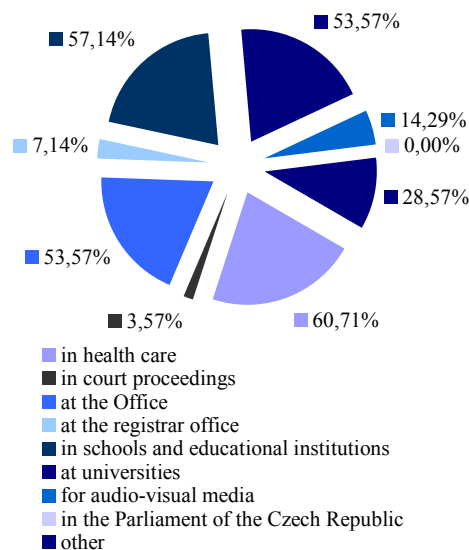


Figure 2: The favourite area of interpreting, according to the results, is health with 60.71%; the area of schools and educational institutions which are preferred by 57.14% of

professional interpreters follows. 53.57% prefer the area of universities and the same amount of respondents prefers interpreting at the offices. 28.57% of professional interpreters prefer a different area than stated in the questionnaire. 14.29% prefer the area of audio-visual media and 7.14% like interpreting at the registrar's office. Only 3.57% of professional interpreters like interpreting at court proceedings. None of the addressed respondents prefers interpreting in the Parliament of the Czech Republic.

3. How do you evaluate the occupation of an interpreter of Czech sign language from the point of view of demandingness?

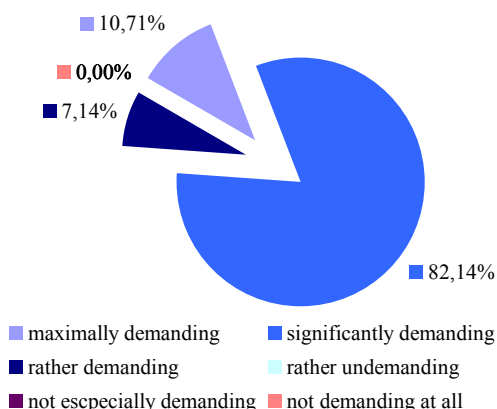


Figure 3: 82.14% of respondents consider the occupation of an interpreter to be significantly demanding. 10.71% of respondents assume that their occupation is maximally demanding and 7.14% is persuaded that their occupation is rather demanding.

4. Conclusion

The result is the conclusion that according to the professional interpreters who took part in this research the most preferred area of interpreting for people with hearing disability is the area of health and interpreting at the offices, interpreting at schools and educational institutions and universities follows. People with hearing disability require interpreting services in these areas the most as they get very important information in the area of health and at the offices they deal with matters which are significant for them as well. Stress and insecurity play significant roles in these areas and the presence of an interpreter into Czech sign language facilitates mutual communication and the result of communication. The area of education is specific and arises in particular from the right to education in one's mother tongue guaranteed by the law. Professional interpreters themselves prefer interpreting in the area of health which may be a consequence of the fact that some interpreters may be educated and experienced in this area; or since this area is required the most. As a consequence, interpreting in this area is easier for them despite the fact that interpreting in this area is mentally demanding.

Interpreting at schools and educational institutions belongs to the favourite area of interpreting as well. We may assume that the reason comes from the fact that an interpreter working in this area for a longer period of time finds the area pleasant. Simultaneously, a situation may arise that the interpreter is a pedagogue as well, teaching at schools for students with hearing disability, possibly an assistant, or he interprets within integration. Interpreting at universities is preferred as well as interpreting at the offices, even though interpreting at universities is timely demanding, it requires knowledge of terms of the given major and time for preparation in advance. Interpreting at the offices is usually less stressful than interpreting in the area of health. If an interpreter works in one area for a longer period of time, he or she acquires professionalism in this area and it also enables him or her to get education in other areas.

The demandingness of the occupation of an interpreter of Czech sign language is indisputable. An interpreter must be flexible, accurate, responsible and unprejudiced. He or she must know the community of people with hearing disability, the culture of people with hearing disability and in particular know the law of his or her major. Considerable demands are made on professional interpreters especially in the area of terms and following education in Czech sign language; acquiring new information and participation in courses, seminars etc. is necessary for his or her professionalism. The occupation of an interpreter for people with hearing disability is highly demanding and the number of interpreters within the Czech Republic is insufficient compared with the number of people with hearing disability and requirements.

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SYSTEM OF EDUCATION AND DEVELOPMENT OF MANAGERS (COMMANDERS) IN THE AUSTRIAN ARMED FORCES AND THE LITHUANIAN ARMED FORCES

Petra Hurbišová

University of Defence
Kounicova 65
Brno, 662 10, Czech Republic
+420 734 397 827
hurbisova@gmail.com

Abstract: *The paper deals with the education and development system of managers (commanders) in both the Austrian Armed Forces and the Lithuanian Armed Forces. It analyzes the current state, followed by a comparison of education and development of military managers (commanders) in Austria and Lithuania. The first part of the paper briefly describes the structure of officers education, study programs at Theresian Military Academy in Wiener Neustadt and National Defence Academy in Vienna and courses related to the education and development system of managers (commanders) offered within the Austrian Armed Forces. Another section is devoted to the system of education and development within the Lithuanian Armed Forces at General Jonas Žemaitis Lithuanian Military Academy in Vilnius and to other officers courses related to this area.*

Keywords: *education and development, military leadership, human resources management*

1. Introduction

As we have the opportunity to see around us, there are constant ongoing conflicts, terrorist attacks, cyber threats etc. As a result the security environment is highly variable. For this reason, it is necessary to continually educate and develop military commanders in military leadership and crisis management and thus contribute to the sustainability and security and to prevent crisis situations. Among one of the current and most popular approaches to leadership, that has been the focus of much research since the early 1980s, is the transformational approach. Transformational leadership is the process whereby a person engages with others and creates a connection that raises the level of motivation and morality in both the leader and the follower. This type of leader is observant to the needs and motives of followers and tries to help followers reach their full potential. One classic example of transformational leadership is Mohandas Gandhi. Gandhi raised the hopes and demands of millions of his people, and, in the process, changed himself. Transformational leadership can be delivered through the use of the Multifactor Leadership Questionnaire (MLQ) which measures a leader's behavior in seven areas: idealized influence (charisma), inspirational motivation, intellectual stimulation, individualized consideration, contingent reward management-by-exception, and laissez-faire. High scores on individualized consideration and motivation factors are most indicative of strong transformational leadership.

2. System of education of managers (commanders) in the Austrian Armed Forces

In 2013, Austria voted within the referendum whether to keep its compulsory military service or switch to a professional army. In the end Austria continues in military drafts (six months of service) and, as a neutral state, it is not a member of NATO. To meet all Austrian Armed Forces (AAF) requirements, the army is supported

on three pillars: the Land Forces, Air Forces and Special Forces. Currently, Ministry of Defence and Armed Forces have the following personnel strength:

14,000 soldiers
8,000 civil servants
25,000 militia soldiers

47,000 people

2.1 Structure of officers education

The core of officers education, as shown in the figure below, consists of a bachelor's program. The possibility of completing six semesters is open to anyone who meets the entry requirements and corresponds to such candidates who are likely to be eligible for a later career as a military commander and expert. During the study, students are required to complete so-called on-the-job training for at least twelve weeks in the fifth semester (national) and during the sixth semester (international). After graduating from the Bachelor's exam they receive a graduate degree "Bachelor of Arts" (Bachelor of Humanities) at program Military Leadership. In addition to this study program military students receive specific military training between semesters with a focus on professional and administrative needs of the officer profession (Austrian officers are an integral part of the public service, and therefore cannot be released.). During these military modules cadets gain practical experience at the both platoon and section levels. Modules, hidden under the auspices of the Career Officers Course (COC), represent an obligation under the law on public service. This includes, in addition to training platoon, all types of operations, such as downhill skiing, professional, physical and complementary training. A Career Officers Course, which ends with a final examination under the laws of the civil service, leads to a commission to AAF with the rank of Lieutenant.

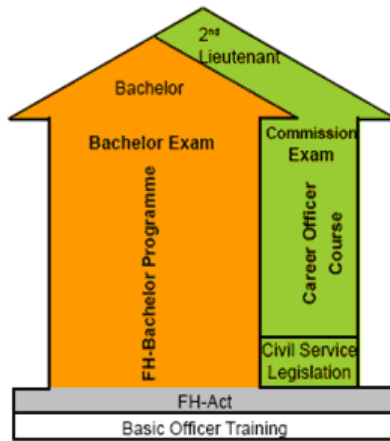


Figure 1: Basic education of officers

1.2 Theresian Military Academy in Wiener Neustadt (Bachelor's degree program)

Within the bachelor program of the Military Leadership at the Theresian Military Academy (TherMilAk) in Wr. Neustadt, the future military and civilian crisis managers are being educated. Training at the academy at the university level is within the above-mentioned bachelor program of Military Leadership at Institute 1 and lifelong education and the accompanying officers at the Institute 2.

Institute 1

Education of military officers at TherMilAk consists of:

- Bachelor program – The FH-Bachelor Program Military Leadership,
- The troops Officer Course which is a part of the training between semesters. The course is divided into the following sections: driver training, qualified and specialized mountain training, professional or technical training and increasing physical fitness.

The military leadership program focuses both on communication, teamwork and organizational skills as well as analytical and independent development methodology solutions. It provides students with the academy facilities for leadership and crisis management and qualifies them as professional managers in the military and civilian organizations.

Knowledge and skills are developed so that graduates are able to cope with modern security challenges, which include:

- the full range of the so-called Petersberg tasks (humanitarian and rescue; peace-keeping; peace-enforcement),
- combined joint warfare,
- global deployment (excluding the Arctic Region) with inter-cultural awareness,
- and civil-military co-operation (CIMIC).

To obtain the expertise, the students are educated in basic military subjects and in relevant disciplines such as law, politics, the economy and business administration, philosophy, sociology, psychology and pedagogy.

In addition, there is a need for methodological and analytical skills for voracious judgment and reasoning to special and interdisciplinary relationships. Everything is further complemented by the professional qualifications and skills, such as problem solving, decision making, reduce complexity, management information and preparedness for lifelong learning. These aspects have been taken into account when determining the required profiles and formulation of study components and modules from them.

Qualification and competence profiles

When designing modules, special attention was given to interdisciplinary collaboration. This principle was also used for grouping modules into the following sections:

- Operation subjects and methods,
- In-depth study of vocational subjects,
- People and ethics,
- Society and social systems,
- Routine service and training,
- Military English.

Institute 2

The Institute for Education of officers is a center for the development of professional, social and personal skills. Lifelong learning, continuing education and training in appropriate career courses and supporting training are an integral part of the Austrian Army. For these purposes Institute 2 offers a wide range of courses and seminars that are going beyond traditional military tasks, mainly covering area of personal development and training in areas as management. Emphasis is placed on training leadership as part of the command and staff training.

2.3 National Defence Academy in Vienna (Master's degree program)

Army officers who have completed a Bachelor's degree can also complete the Master's degree program - Military leadership throughout their career. This degree program at the National Defence Academy in Vienna provides students with the knowledge, skills and competencies that will enable them to fulfill their responsibilities as managers and highly qualified staff officers in the emergency services. The study is made possible not only for soldiers but also for civilian employees of the organization. Students come mainly from the Austrian armies. But studies are being offered to foreign forces, other official institutions of the federal government and the federal states and employees of the state, international organizations and non-governmental organizations.

3. System of education of managers (commanders) in the Lithuanian Armed Forces

Lithuanian Armed Forces (LAA) have been a part of NATO since March 2004. In 2008, compulsory military service was suspended and Lithuanian Armed Forces became fully professional. Professional military service personnel in the Lithuanian Armed Forces numbers up to 7,000 along with approximately 4,200 volunteer troops. The maximum admissible number of military personnel is

approved by the Seimas of the Republic of Lithuania by a law on an annual basis. The Lithuanian Armed Forces consist of the Land Force, Air Force and Navy.

Education and development of managers (military leaders) is provided by the following institutions at different levels:

3.1 General Jonas Žemaitis Lithuanian Military Academy

This Military Academy, which is situated in Vilnius, provides education and training for cadets to receive the first officer rank and arranges tactical level career, qualification and specialisations courses for officers.

The Lithuanian cadets can choose from the three different programs at bachelor level which are International Relations, Management of security and defence institutions, Management of Modern Defence Technologies, Transport and Logistics. Particularly the program Management of security and defence institutions offers various subjects important for development of managers skill such as Human Resources Management, Public Relations (Crisis Communication), Negotiation Theory, General and Military Sociology, Safety Action Forecasting and Management, Crisis Management, etc.

Cadets usually graduate at age of 23 (a maximum of 29) with a rank corps of 2nd Lieutenant. After a bachelor's degree cadets can possibly apply for Master's degree program but only those with previous average grade point no lower than 7.5 points.

Currently three master programs are being offered, which are Military Diplomacy, Human Resources Management and Public Security and Defence. Human Resources Management program offers subjects such as Military Diplomacy, Public Security and Defence, Strategic Communication, Terrorism Studies.

There is also a possibility of Doctoral degree program but only at Political Science.

Military Training

Officer training system is divided into four levels. Part of the first level are *Basic Officer Training* and *Specialist training courses*. The highest officer rank for these courses is Captain. Courses on the tactical (2nd) level with the highest possible rank of Major are as follows: *Junior Staff Officer Course*, *Specialist training courses*, *Staff officer courses*, *Vytautas the Great Army Command and Staff Course*, *Air Force Command and Staff Course* and *Naval Intermediate Command and Staff Course* (Latvia).

At third (operational) level is offered *Command and General Staff Officer Course* which is taken at Baltic Defence College or other foreign educational institutions. The highest possible rank is Lt. Colonel. And finally at the fourth (strategic) level there are *War college level courses* usually attended at Baltic Defence College or other war and defence colleges. The highest possible ranks for strategic level are Col. – Lt. Gen. The first three levels are within the bachelor educational level and the fourth one is within master educational level.

Apart from military training Military Academy provides range of courses intended for National Defence System officers and civil workers and international courses designed for Lithuanian officers and foreign Armed Forces. The Military Academy provides some of these courses as distance based learning. Courses related to education and development of military leaders (managers) are as follows:

- *National Security and Defence Course* is a course on a strategic-level, suitable for civil servants to develop their competence in national security and defence. Also to improve leadership skills and communication by performing the tasks of national security and defence. The course takes five days and is given twice a year.
- *International Politics and Diplomacy Courses* (length of 2 weeks, since 2009)
- *English Language Courses* organized at the Institute of Foreign Languages

Training and Doctrine Command of the Lithuanian Armed Forces implements Military Training Policy in the National Defence System and trains Lithuanian troops capable of completing various military tasks.

Other military training centres which are specialized in training of specialists required in the Lithuanian Armed Forces (Land, Air, Navy, military engineers, reconnaissance specialists, etc.)

As the requirements for the Lithuanian Armed Forces vary, military training institutions must also adjust their programs to ensure high level and high quality of military training. Lithuanian military is delegated to foreign military training institutions (e.g. Baltic Defence College) both to acquire basic military training and to enhance qualification.

6. Conclusions

The main difference between Austrian Armed Forces and Lithuanian Armed forces can be seen in the fact that Austria retains its neutrality and also maintain military conscription, therefore the AAF does not operate at a fully professional level. In contrast the LAF is a member of NATO and to fully professional army Lithuania crossed in 2008. In comparison with the Austrian educational and development system General Jonas Žemaitis Lithuanian Military Academy offers Bachelor, Master and Doctoral program within one academy - which could be perceived as a more unified system. On the other hand the AAF educational and development system is more focused on military leadership as they have identical named programmes of study in Military Leadership at both Bachelor's and Master's degree. One interesting point is that the AAF system, probably because of the nature of the drafts, is open to military and civilian persons in a wider extent than in Lithuania.

Acknowledgements

The contribution was created under the support of the specific university research at University of Defence Brno with the ID code SV13-FEM-K109-03-DAV - Education and Development of Crisis Managers in the Ministry of Defence of the Czech Republic.

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HOW TO DEFINE STATISTICAL LITERACY OF STUDENTS OF TEACHING NATURAL SCIENCE

Aneta Hybšová

Charles University
Magdalény Rettigové 4
Prague, 116 39, Czech republic
+ 420 732 910 149
anetahybsova@gmail.com

Abstract: Students of educational disciplines should obtain a variety of skills during their studies. One of the key competencies is also the competence to solve problems, which is now strongly linked to the statistical literacy and training in statistics based on the using of the statistical procedures and methods. Students apply scientific approach to the problem and a solution of the problem becomes more objective and better interpret. This contribution defines the term of statistical literacy for students of teaching natural science subjects.

Keywords: professional didactics, research skills, statistical literacy, teaching natural science

1. Introduction

People living in today's information society is exposed to influence of numbers and charts. So that they were able to understand to provided information, analyze them and finally develop on their basis some judgments. People have to always be able to think analytically and to become familiar with some methodological procedure. This procedure can make easier the data understanding. The source of data which are around us is not only others but we ourselves can produce lot of data. In this case, it is even more important that the individual has been able to focus on information flows and is well able to analyze it and interpret it.

Nowadays it is very useful to understand to data and numerical information which is around us. Not only for common life but also for others occasions. For example teachers of natural sciences has to use charts in explaining some problems to students. They have to read articles about the news in their field. In these situations they also need to be statistically literate. This article aims to define the concept of statistical literacy for students of teaching natural science, to define its content and highlight the its need for student of teaching natural science.

2. Definition of statistical literacy

The concept of statistical literacy was widely discussed and some researchers tried to established the term of statistical literacy (eg. [1], [2], [6], [7], [8])

Statistical literacy can be defined as the ability to create, understand and critically evaluate statistical results. This definition has two levels. The first level, the ability to understand and critically evaluate statistical results describe virtually all of the above international definition. The second level, the creation of statistical results, it is also important. Statistically literate person knows how to create from primary data a summary of information – statistics. So he or she can describes the data set and he or she is capable of interpretation and critical evaluation of this information.

3. Levels of statistical literacy

However statistical literacy is defined term it is not clear how should be statistically literate. For example teachers of natural science should be statistically literate. This opinion has three reasons which are expressed by three levels of statistical literacy (Fig. 1).

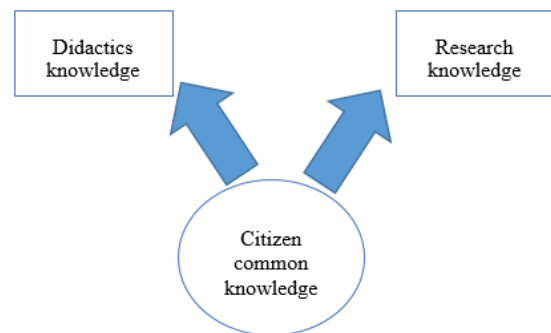


Figure 1: The dividing statistical literacy into different level of knowledges

3.1 Citizen common knowledge

Each citizen should understand to socio-political situation of his country. This informations about policy, economy and social affairs are presented in newspapers, televisions and internet every day usually by numbers. We know mean of wages, percentage of preferences of our political party or inflation rate. If we want to understand to these common information which are provided to us we have to have citizen common knowledge of statistics and mathematics. That should be learnt on elementary and high schools. That covers only descriptive statistics as mean, mode and some basic informations about variance and probability.

3.2 Didactics knowledge

Teachers of nature science make experiments for explain to student validity of global principles. During this

evaluation of these examples teacher gain data which is necessary to process, analyse and interpret. This process should be shown to students because it is just practical usage of mathematic in interdisciplinarity with natural sciences. Sometimes is possible to compare results of students and indicate differences between these results. That can help to students realized that every fact presented in textbook became from researches and that is very long process with its rules.

Unnoticed should also not be the fact that teacher supports the integration of various disciplines such as mathematics and science, which enriches students in several disciplines / areas and creating a comprehensive knowledge and skills that allow generalizations and applications in other fields.

This didactical knowledge should be provided by university by faculty of education. Student usually visit didactically orientated subjects but there is no connection to statistics. But interdisciplinarity is very important. [3] recommended to implement to subjects some interdisciplinary overlaps. This will ensure the complexity of teachers' education.

3.3 Research knowledge

The modern teacher should also have the ability to study the latest trends in his or her field. Frequently teacher can meet statistical terminology (in books and articles) which logically does not match with his or her field but he or she has to understand it. But these terminology is being used to use for description or demonstration of the result of any experiments. That is very often in natural science but also in research in pedagogy.

According to [4] many teachers of statistics agree on the fact that the introductory courses in statistics should raise students' awareness about the data they encounter in their daily lives and prepare them for a career. The second goal, which is according [4] underestimated, is to educate students as future scientists and encourage them to use scientific methods. Students should be able to ask questions, collect data (evidence), using statistical tools is verified and the results are interpreted and finally create appropriate interpretations and conclusions. The entire procedure requires statistical reasoning and analytical-synthetic thinking, which is necessary for students to gradually create.

Second reason why is good to improve statistical literacy of students is the fact that they have to write final thesis. In practical part of this document they usually have make some research by themselves. If they do not lot of statistical methods it is difficult to start to learn basic terms of statistics.

Research knowledge is require knowledge of statistical methods. For example [5] defines levels of research for finishing bachelors and masters. Bachelors make research based on their own questions experienced by fellow students. A broad spectrum of research methods is understood and applied so student can choose of the best method concerning the research topic. Finishing master students translate other people's experience into own research questions. They should know wide range of research methods [5].

Also research knowledge has to be provided by universities. Because diploma thesis is proof not only of quality of students but it shows also quality of universities.

3. Conclusion

If is the main goal of faculties of education is complex education of students of teaching natural science they should to implement statistical literacy into curricula. Although opponent might argue that the main goal should be to teach them only natural science. But nowadays teaching is much harder. It is not only about frontal teaching. In relations with new methods of teaching for example inquiry-based learning it is increasing the importance of lifelong learning.

This paper describe statistical literacy as a part of curricula of future teachers of natural science. There are three main reasons why to implement statistical literacy into curricula. The first one is the fact that everybody who live in this society should be orientated in informations around his or her. That is not possible without knowledge of basic terms of descriptive statistics. The second fact is that during teachers career teacher should cooperate with another teachers on interdisciplinary projects which are more often part of curricula. The third reason is that teacher has to read papers about new methods and new knowledge in their field. In this papers are usually used statistical method so for understand the research is necessary to understand the described methods. The citizen common knowledge needs everybody and that's why it should be taught on elementary schools mainly. On this knowledge are based the others two – didactics and research knowledge, which has to be developed during university studies of teacher of natural science.

The dividing statistical literacy into three parts (citizen common knowledge, didactics knowledge and research knowledge) is the main benefit of this paper and it could provide a space for a deeper discussion on this topic.

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FACTORS OF RISK BEHAVIOR AND PERCEIVED CONTROL OF ADOLESCENTS IN LOWER SECONDARY EDUCATION

Michal Čerešník

Department of Educational and School Psychology, Faculty of Education, University of Constantine the Philosopher in Nitra

Dražovská 4
Nitra, 94974, Slovakia
+421 37 6408 289
mceresnik@ukf.sk

Abstract: *The contribution is focused on the relation between risk behavior and perceived control of the adolescents aged 12-15 years. Perceived control is conceptualized by the Skinner's theory. It consists of four basic variables: effort, attitudes, powerful others, luck. Risk behavior is conceptualized by Mezera's theory. Mezera assumes that risk behavior in school consists of several types of behavior: asocial, antisocial, egocentric, impulsive, maladaptive, negativistic and lean towards the problem groups. In our research group there were 109 adolescents visiting the primary school in Stropkov (Slovakia). We hypothesized that the adolescents with high level of risk behavior will have the lower level of perceived control. Our hypothesis can't be accepted because we didn't find out the significant difference in the perceived control in the relation to antisocial, egocentric behavior and lean towards the problem groups. On the other hand we found out the differences in the perceived control in the relation to asocial, impulsive, maladaptive and negativistic behavior. The results show the importance of personal believes about Self in the relation risk behavior production.*

Keywords: *perceived control, risk behavior, adolescence*

1. Introduction

The risk behavior can be a specific form of adolescents' activity which is very typical for this ontogenetic stage. According various criteria we can say that more than 50 % of adolescents behave by the way we evaluate as risky at least one in life. If we seriously look at the statistical numbers and results of the periodical researches (for example SAHA, ESPAD) in the area of risk adolescent behavior we discover that only 2 % of adolescents are really problematic and have some troubles with serious violation. Drinking of alcohol, smoking, fast driving or early start of sexual contact are some of the examples of the risk behavior which can have the significant influence to the future life of young people. There exist a lot of interpretations of the risk behavior reasons. One of them is concerned on the psychological variables. And this lense is used also in this contribution. We try to identify if the risk behavior is in the relation with psychological variables, especially with perceived control.

2. Perceived Control

There exist a lot of theories of perceived control. But in our research we work with Skinner's theory (1995). According to Skinner (1995), perceived control is derived from four dominant theories of control including Weiner's causal attributions, Seligman's learned helplessness, Bandura's self-efficacy, and locus of control. It is based on the theory of the action which looks at the action as a central unit of behavior analysis (Boesch, 1976; Frese, Sabini, 1985). The action is defined as a goal-oriented, intentional, emotionally coloured behavior enacted in a social context. The differentiation of theoretical components of action: agents, means, ends and relations among them were the central task of the Skinner's conceptualization of perceived control. If we accept this fact we can define three complexes of believes:

- a) Believes about control
They refer to generalized anticipations about the extent in which Self can produces desired events and avoid undesired ones.
- b) Believes about strategy
They refer to generalized anticipations about the extent in which some means or causes are adequate conditions for production of ends or outcomes.
- c) Believes about capacities
They refer to generalized anticipations about the extent in which Self controls or has an access to the means.

The term belief is used to the nature of perceived control. It indicates cognitive constructions which are opened to change. They refer to the future (expectations) or past (attributions). Skinner (1995) assumes that the regulation and interpretation of action is a function of believes. Believes about control are primary regulative believes (I have a control, so I am competent). Interpretative believes are believes about capacities (I have an attribute which is necessary to be successful) and believes about strategies (I use an attribute which I to be successful). All complexes of believes are considered for separated cognitive constructions. From the aspect of semantics, we consider believes about control for the combination of believes about capacities and believes about strategies. So if someone disposes the ability to apply the effective strategy, then he/she has a control. Interpretative believes (believes about capacities and believes about strategies) are filled by attributions which we know from the theories of Levenson (1981) and Lefcourt (1981). It means that these attributions are effort, attitudes, powerful others, luck and unknown strategies.

3. Risk Behavior

Risk behavior is a quite short term for a very wide variety of undesirable forms of behavior that may be developed in an adolescence period.

Jessor (1991) classifies the risk behavior into three categories: abusiveness of psychoactive substances, psychosocial disorders and risk sexual behavior.

Dolejš (2010) defines risk behavior as individual or group behavior that causes demonstrable increase of social, psychological, medical, developmental, physiological and other risks to humans, their environment and society.

The same author tries to clarify all this issue relying on aetiology (Širůček, Širůčková, Macek, 2007), definitions of dissocial behavior (Švarcová, 2002), asocial behavior (Hartl, Hartlová, 2004), antisocial behavior (Švarcová, 2002), delinquent behavior (Koudelková, 1995). He perceives the risk behavior as a superior term to above mentioned forms of behavior (dissocial, asocial, antisocial, delinquent) and as a multidisciplinary problem.

Širůčková (2012) defines risk behavior as a term covering a variety of forms of behavior that have a negative impact on the health, social and psychological functioning of a person or endanger his/her social surroundings, while the threat may be real or anticipated. Generally, we may state that a reason of development of these behavior forms (disorders) is multifactorial and specific for particular disease entities.

Nielsen Sobotková et al. (2014) defines the risk behavior through a lot of categories: (1) truancy, (2) lying, (3) aggression, (4) bullying, cyberbullying, (5) criminal behavior, (6) addictions, (7) risk behavior on internet, (8) risk sexual behavior, (9) risk behavior in traffic, (10) extreme risk sports, (11) anabolics and steroids using, (12) unhealthy eating habits, (13) extremism, subcultures, (14) xenophobia, racism, intolerance, anti-Semitism.

We would like to point out that the level of intelligence is not a factor that would increase a chance of risk behavior. However, adolescents who produce risk behavior often fail in a school performance. Mostly, it is a parental failure which meets with rejection of customary conventions. Risk behavior represents a major research problem in terms of aetiology (cause of development), symptomatology (manifestations), categorization and general theoretical delimitations.

The legitimate assumption is the relation between risk behavior and perceived control. If we agree with the description of perceived control as a set of beliefs about one's role in society, about own power to influence the environment, we can hypothesize that the high risk behavior, which is the indicator of low beliefs about oneself and his/her importance in society, is in the relation with low perceived control.

4. Method

The research sample consisted of 109 adolescents aged 12-15, average age 13.54. The girls and the boys were divided into the same sized groups. The probants were the students from 7th to 9th grades of the primary school in Stropkov in Slovakia.

In our research we used two methods:

- *SRBP - The Scale of Risk Behavior of the Pupil*

Author: Mezera (2000)

It is a forty-six items questionnaire. The items are evaluated by probants by seven point scale. The outputs of the questionnaire are the subscales named as asocial behavior, antisocial behavior, egocentric behavior, impulsive behavior, maladaptive behavior, negativistic behavior, lean towards problem groups.

This questionnaire is primarily conceived as the rating scale through which the teachers evaluate the adolescent behavior. Because of the relative high counts of probants in the research we modified the items of the questionnaire into self-rating form.

- *SPoCQ - Student Perceptions of Control Questionnaire*

Author: Skinner (1995)

It is a sixty items questionnaire. The items are evaluated by probants by four point scale. The questionnaire is created for measurement of diverse indexes connected with perceived control in educational environment: effort, attitudes, powerful others, luck, promote (factors facilitating perceived control), undermine (factors stressing perceived control), control. In this contribution we used only the total score, it means the scale control.

5. Results

We applied Statistical Program for Social Science 20.0 while testing hypothesis. As statistical methods we applied t-test. We consider a standard level $p \leq 0.05$ as a critical value of significance which points to important relationships between variables, resp. significant differences among research groups.

In the first step of analysis we divided the types of risk behavior into two groups – low and high level. This distribution was realized according to average mean. The probants who scored below the mean were in low level of the risk behavior. The probants who scored above the mean were in high level of the risk behavior. Then we compared these two groups in the relation to perceived control of adolescents.

Results of analysis are displayed in Table 1 and Figure 1.

From the table 1 we can read that in all cases the high level of risk behavior is in the relation with low level of perceived control (also Figure 1). But in the case of antisocial, egocentric behavior and lean towards the problem groups we didn't find out the significant indexes. From this reason we can't accept the hypothesis. On the other hand we found out the differences in the perceived control in the relation to asocial, impulsive, maladaptive and negativistic behavior.

6. Conclusions

On the base of our findings we can characterize the adolescents in lower secondary education with low level of perceived control by (consistent with Mezera's interpretation):

- Poor integration into peer groups caused by unacceptance of the social norms and rules.
- Different perception of the social values and interpersonal relations.

- Psychomotoric disturbance, high excitability, unadequate reactions, instability.
- Malfunction of will regulation and self-control in the sense of non-productive dynamics of behavior and absence of goal orientation and intentionality.
- Poor social competence.
- Failures in the area of social learning.
- Aversion, refusing of actually realized activity.
- Passivity, hostility, escapes, elective mutism.
- School refusal, fears.

Table 1 Comparisons of adolescents' perceived control score according to level of risk factors

behavior	perceived control		t	p
	low	high		
asocial			2.616	0.005
N	70	39		
M	14.90	7.87		
SD	13.43	13.51		
SEM	1.61	2.16		
antisocial			1.472	0.072
N	78	31		
M	13.61	9.31		
SD	14.03	12.97		
SEM	1.59	2.33		
egocentric			1.288	0.100
N	64	45		
M	13.81	10.36		
SD	13.24	14.50		
SEM	1.66	2.16		
impulsive			1.771	0.040
N	57	52		
M	14.60	9.95		
SD	13.56	13.82		
SEM	1.80	1.92		
maladaptive			1.763	0.040
N	63	46		
M	14.36	9.68		
SD	13.70	13.66		
SEM	1.73	2.01		
negativistic			1.804	0.037
N	70	39		
M	14.15	9.22		
SD	13.85	13.36		
SEM	1.65	2.14		
lean towards problem groups			1.305	0.098
N	72	37		
M	13.62	9.98		
SD	14.63	11.89		
SEM	1.72	1.95		

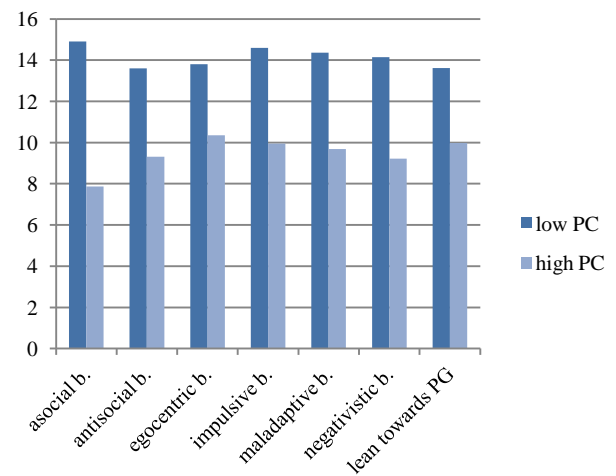
Legend: N = count; M = mean; SD = standard deviation; SEM = standard error of mean; t = value of t-test; p = significance

It means that the adolescents who believe that they have no important role in the society behave by the ways which were described in the text above.

These findings can't be generalized to the whole population of adolescents because of the size of the research sample which is not representative. But we can say that the personal features as perceived control are the

variables which influence the behavior of the adolescents (and people in general).

Low perceived control as a representative set of beliefs contains beliefs about inconsistency and uncontrollability of the world. So world (environmental, social, educational, etc.) starts to be misunderstandable for the adolescents, they are lost in it and try to find out their own place in it and to handle with negative emotions following this state of disappointment. We evaluate their behavior as risky. But from their point of view it is an effort to adapt to new context and they don't know their behavior is not mature. These findings open the old questions about the role of the emotional and social support in the family, the support of the teachers in the schools, the attitudes of the pupils toward the school etc. and their influence to the behavior.



Legend: b. = behavior; PG = problem groups; PC = perceived control

Figure 1: Comparisons of adolescents' perceived control score according to level of risk factors

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CONFUSION AND FRUSTRATION OF FOREIGN STUDENTS IN SLOVAKIA STREAMING FROM INTERCULTURAL MISUNDERSTANDINGS: WHAT COULD HELP?

Ingrid Madárová

Pavol Jozef Šafárik University in Košice

Šrobárova 2

Košice, 041 80, Slovakia

+421 902 980 480

imadarova@gmail.com

Abstract: *Considering the increasing importance of intercultural understanding and tolerance within concepts of multiculturalism in today's Europe, this work concentrates on the aspect of cultural understanding in effective communication as an inseparable part of second/foreign language acquisition with the focus on interrelationship between language and culture. Streaming from the author's findings in the field of intercultural communication, as the result of seventeen year work experience in multinational environment, author notices a gap obtainable in the definition of the position of Slovak culture within the concept of general cultural differences. The attempt of the paper is to introduce the research perspectives of Slovak culture characterized "from outside" by the members of other culture groups - nations. Considering also the integration problem of immigrants into European society obtainable in the last decade leading into contemporary crisis of multiculturalism in today's Europe, the paper presents one of the sub-research results theses, which is the influence of culturally-defined beliefs and presuppositions on the development of foreign/second language learner's effective intercultural communication within foreign language acquisition, concluding that foreign language learners equipped with the basic knowledge about cultural specifications within pre-defined categories of intercultural differences feel more comfortable in communication with the native speakers in the foreign language and express lower level of possible culture shock frustrations in the country of target language.*

Keywords: *Intercultural Communication, Language, Culture, Second/foreign language acquisition*

1. Introduction

The interrelation between culture and language has become the interests of many researchers approaching this idea from different points of view. This subject brings together research in anthropology and social cognition, as well as second language learning, acquisition, and teaching. The researchers take the position that multidisciplinary studies on culture carried out in various domains of applied linguistics, sociolinguistics, interaction and pragmatics, and rhetoric and writing can form second and foreign language learning and teaching. Conversely, the environments in which languages are learned and taught often serve as research grounds where the impact of culture can be investigated. (1)

*Author's experience in a field of intercultural communication gained from seventeen years spent prevalently as a manager in multinational companies and also her recent experience achieved in a position of a Slovak foreign language teacher, teaching foreign medical students in Slovakia, frustrated from conflicts streaming from intercultural misunderstandings, led to her conviction that a second/foreign language learner should become aware of the coexistence of different concepts within multicultural environment and understand that *cultural differences cause most of the confusion, frustration, sometimes even hostility that occur when people from different cultures interact with each other. (2)**

1.1 Culture in a context of intercultural communication

Understanding of the interdependence of culture and language has its own development within linguistics. We

believe that intercultural communication is an inseparable part of effective communication in second/foreign language. Second/foreign language learning containing training in intercultural communication potentially means more effective communication in second/foreign language with members of a different cultural (and language) group. To understand "intercultural", it is useful to define the term "culture". Mistrík mentions the existence of more than 200 argued definitions of culture and he defines culture within the concept of multicultural education as a system of three aspects which exist only together where a cognitive aspect *concentrates, contains, processes and transmits information about the world, a sign system contains the objectivised ideas and information in signs, instructions, records, symbols, norms, ciphers, and an active system in a sense that all above mentioned parts of culture would not function if they were not involved in the activity of the concrete society and they even would not arise without their involvement in the activity. Contents and the way of their processing are thus formed by culture with regard to their user, i.e. with regard to their use in life of the existing generations and in life of future generations. (3)*

The definitions of culture varies according to the purpose of the definition. Within the concept of intercultural communication as a part of foreign/second language acquisition we prefer to use simplified definitions of culture represented by the Moerman's definition of culture: *Culture is a set - perhaps a system - of principles of interpretation, together with the products of that system. Within his definition, culture can be understood as a subjective concept of ideas, beliefs and assumptions*

through which the other people acting and behaviour could be interpreted. (4) Focussing on cultural differences, Craig Storti defines culture as *the shared assumptions, values, and beliefs of a group of people which result in characteristic behaviours* and he believes that *cultural differences are in the ways in which a person from one culture thinks and behaves differently from a person from another.* (6) Consequently, we believe that second/foreign language learner should become aware of the coexistence of different culturally-defined beliefs and pre-suppositions within multicultural environment. Knowledge and understanding of unlimited numbers of different cultures is impossible. To simplify the classification of different cultures coexisting within Europe and the world, we found it useful to define horizontal and vertical stratification of culture. Within vertical stratification we can distinguish various cultural groups in a society prevalingly speaking the same language. For the intercommunication of various cultural groups with the same nationality we prefer to use a term cross-cultural communication. For the purpose of the intercultural communication aspect in second language acquisition we concentrate on the differences in cultures within horizontal stratification where we classify a culture group as a nation. Intercultural communication is then preferred as a term for the communication among cultures groups within the concept of horizontal stratification.

1.2 Concept of general cultural differences

Although it is known that any generalizations can contain unfair and not accurate statements about the individuals as members of a group, we agree that *cultural generalizations can help to understand how people from certain cultural group may act and behave in situation and not necessarily how they will behave.* (7)

We assume that introducing the concept of general cultural differences to a second language learner within *cultural matrix of language in verbal exchanges* (5) and *blocks of culture which correspond to four broad categories of human experience* (8) and consequently identifying foreign/ language learner's position within the defined categories will help a foreign language learner to identify the possible cultural differences and consequently avoid *the confusion, frustration, sometimes even hostility that occur when people from different cultures interact with each other.* (2)

2. The conducted research: the main research objective, methodology, research sample.

The main objective was to determine if foreign language learners equipped with the basic knowledge about cultural specifications within pre-defined categories of intercultural differences feel more comfortable in communication with the native speakers in the foreign language and express lower level of possible culture shock frustrations in a country of the target language.

The survey was conducted as a qualitative research; used methods, interviews and focus groups, were set on a basis of a loose structure, made up of open-ended questions, defining the area of cultural differences obtained by

foreign students. A topic guide had a list of the key categories to be covered, with some useful prompts to encourage the interviewee to talk about specific issues if they did not come up spontaneously.

The research was conducted on the Medical Faculty of Pavol Jozef Šafárik University in Košice, Slovakia, in October, November and December 2014 and January 2015. Respondents were first year - newcomers - foreign students of general medicine, learning Slovak as a foreign language within their general medicine program studied in English language. Students were selected and divided into three groups according to the level of their cultural-awareness, within Storti's definition of four stages of cultural awareness; *unconscious incompetence, conscious incompetence, conscious competence and unconscious competence.* (9)

For the purpose of the study there was formed an A group and a B group and C group.

A group: consisting of six foreign students selected as *unconsciously competent* representatives; born in Europe (former communistic countries excluded) in a family of recent immigrants culturally still bounded to the country of their origin - out of EU. Selected students also spent a few years of their life in another country mainly in the USA. Their experience with different cultures (the culture of the country where they were born - Sweden, Norway, Ireland, England, Germany the culture of the family they were raised in - Bangladesh, Hawaii, Pakistan, India, Kurdish Turkey, and the culture of a country they studied part of their secondary studies) caused intuitive understanding of intercultural differences. This A group was **formed for the purpose of Slovak culture place definition within Storti's four blocks of culture** (10).

B group: consisting of six foreign students selected as *unconsciously incompetent* representatives; born outside of Europe, with very limited experience with other cultures (from relatively closed cultures in Syria, Iran, Iraq, Afghanistan, Tunisia and Arabic small villages in Israel) This sub-research was conducted in two main stages; students were **equipped with the basic knowledge about cultural specifications within pre-defined categories of intercultural differences;**

C group: consisting of six foreign students selected also as *unconsciously incompetent* representatives; born outside of Europe (from the same countries as B group members or some other relatively closed cultures - in Syria, India, Afghanistan, Tunisia and Arabic small villages in Israel, Palestine) **not equipped with the basic knowledge about cultural specifications within pre-defined categories of intercultural differences.**

2.1 Determination of the place of Slovak culture within pre-defined cultural categories

- an introduction of pre-defined basic general cultural categories to an A group members,
- determination of the Slovak culture place within pre-defined cultural categories "from outside" by the A group members.

2.2 Comparison of the foreign students frustration level streaming from intercultural misunderstandings caused by intercultural differences - students equipped with the basic knowledge about cultural specifications compared to the students not equipped with any information about cultural specifications and deliberately not even introduced any cultural concepts.

a) presenting and discussing (with B group members) the conclusions streaming from the previous (A group's) definition process of the Slovak culture place within pre-defined cultural categories "from outside" by the A group members; B group members equipped with the basic knowledge about cultural specifications moved into the stage of "conscious competence",

c) avoiding any discussions on cultural differences related matters with members of the C group, suppressing any comments about intercultural differences streaming from students' confusion and frustration caused by intercultural misunderstandings as a consequence of "unconsciously incompetent" cultural awareness stage of the C group members.

2.3 Pre-definition of cultural categories within the study

Four fundamental dimensions of building blocks of culture which correspond to four categories of the human experience were defined by Storti:

1. *Concept of self - individualist and collectivist*
2. *Personal versus societal responsibility - universalist and particularist*
3. *Concept of time - monochronic and polychronic*
4. *Locus of control - internal and external.* (10)

Members of the A group described examples of cultural differences which they experienced. They were introduced four fundamental dimensions of building blocks of culture according to Storti and consequently they determined cultural differences according to the pre-defined categories. (Note: During the research there was identified another category, "acceptance of different culture" as a consequence of students' deep impression from experience with negative interaction with middle-aged and older members of Slovak culture, probably based on the Slovak middle-aged and older generation fear to communicate with foreigners which appears as a consequence of very limited experience with foreign languages of older Slovak generations streaming from specific historical development of Slovakia, former Czechoslovakia, as a country closed to the world - excluding former communistic countries - for more than forty years. This category was considered as irrelevant from the point of view of our research as further research is needed for its definition).

3. Concluding remarks

The members of the B group, where the cultural differences were discussed, expressed the lowest frustrations (out of three defined degrees of frustration: high, medium, low) streaming from culture shock at the end of school term (3 months) and were actively looking

for opportunities to communicate with native speakers outside the classroom.

All six students from the C group, without any knowledge about cultural differences - *unconsciously incompetent*, expressed at the end of school term high frustration streaming from misunderstandings in intercultural communication, they felt confused and rejected by native speakers.

The aim of the research was also to identify the position of Slovak culture within the concept of general cultural differences characterized "from outside", by the members of other culture groups - nations. Within the pre-defined Storti's four fundamental dimensions of building blocks of culture which correspond to four categories of the human experience, the place of Slovak culture was identified in the middle of the Storti's axis (11) (only a few examples are mentioned for illustrations out of numerous examples of students' experience with intercultural differences that were discussed, analyzed and categorized, regarding to:

1. *Concept of self - individualist and collectivist* - it was closer to individualist concept (students experienced "the best student of the year" competition),
2. *Personal versus societal responsibility - universalist and particularist* - it was identified closer to particularist concept (students named their experience related to "the rules can be always discussed")
3. *Concept of time - monochronic and polychronic* - in the middle, closer to monochronic (students experienced teacher's low tolerance of students' late arrivals to their lectures, often experienced approach "do not waist the time" on one side but on the other side no strict time management as for local authorities, doctors' appointments...)
4. *Locus of control - internal and external* - based on students' experience, a place of Slovak culture was agreed in the middle position (students experienced the attitude "you are responsible for your life", "you can achieve anything if try hard enough" but also "it is your destiny" or "God's will").

4. Conclusion

Our preliminary findings show that foreign students in Slovakia are not aware of the power of consciously using the knowledge about specific cultural features when communicating with a members of a different culture group which may cause misunderstandings in communication resulting into high level of frustrations and even hostility. Considering the fact that present foreign students of the Medical Faculty of Pavol Jozef Šafárik University come from forty different countries, it is understandable that many of them come from completely different cultures. Foreign students challenged by demanding study program, struggling with difficulties connected to their studies in English - which is prevailingly not their mother language, having very limited or no language skills of the country of their stay, the majority of them with a very low level of cultural-awareness, they experience a high level of culture shock streaming from confusion and frustrations caused by intercultural misunderstandings. We assume that a skilled

second/foreign language teacher should be the one who could help to eliminate the negative impact of the potential cultural misunderstandings within intercultural communication by the qualified, well structured introduction of the intercultural studies to students, be their good guide to help them to reach *consciously competent* (10) stage of cultural-awareness, including equipping the students with the basic knowledge about cultural specifications within pre-defined categories of intercultural differences to avoid or at least decrease the confusion and frustrations of students streaming from intercultural misunderstanding.

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PERCEPTION OF POOR ROMA PEOPLE ON QUALITY OF THEIR LIFE

Jurina Rusnáková – Marianna Šramková – Miroslava Čerešňíková

Constantine the Philosopher University in Nitra

Tr. A. Hlinku 1

Nitra, 949 74, Slovak Republic

+421534412339

jrusnakova@ukf.sk – msramkova2@ukf.sk – mceresnikova@ukf.sk

Abstract: *The paper deals with the perception of crisis and demanding life situations in the context of poverty and social exclusion. It presents the results of qualitative research of perception of poor Roma people in Slovakia on quality of their life.*

Keywords: *roma people, crisis, poverty, demanding life situations, perception*

1. Introduction

The term crisis is ambiguous and we can look at it from different perspectives and approach it from different scientific fields. To illustrate, the term crisis is used in medicine while determining if an illness will deteriorate or relieve its symptoms. From the psychosocial point of view, crisis is defined as the result of encountering an obstacle we are not able to handle on our own - either by our coping strategies, by the way individuals have acquired and in a reasonable time (Vymětal, 1995). As far as psychological perspective is concerned, crisis stands for a situation when all previous self-regulatory mechanisms fail and is characterized as biological (sleep, food), psychological (loss of life's purpose) and social (living with other people) non-functionality. In the field of psychiatry, psychology and psychotherapy, the term crisis also defines extreme mental burden, high risk life circumstances, situation or a decisive turn in the course of treatment as well as the period between developmental stages (Hartl, Hartlová, 2010, p. 279).

Unfavourable social situation is perceived as a crisis or burden. For instance, a particular category of crises is formed by so called social traumas - crises caused by external factors which are not under control of an individual. Various life situations, such as dismissal from work or unemployment may result in change in financial situation. The theories of crises involve chronic long-term as well as latent crisis. The former is accompanied by gradual, less striking course rather of psychosomatic character. An individual suffering from the latent crises is not aware of them and does not want to (or can not) admit them. This state may last for a long time and usually leads to unconscious, often unfavourable ways of adaptation (Lucká, 2003, p. 124, Vymětal, 1989, p. 42).

2. Different perspectives on crisis and demanding life situations

Crisis can be understood as "*subjectively threatening situation with a considerable emotional charge, potential of a change. It would not be possible to grow and progress in life.*" (Vodáčková, 2007, p.28). Some circumstances in life may be dangerous or threatening for some individuals, may be vague for the others and might even become an inspirational source and lead forward to individual personal growth. Many authors, such as Thom (1992). emphasize

the subjective factor. Subjective perception of crisis, burden or high risk situation can considerably differ from real risk under influence of individuals' environment (Nilsen, 2004). The same life situation may be of different significance, evoke various feelings and make different impact for each individual." (Heretik, Heretik et al., 2007, p. 109).

The subjective perception of an individual's own situation can also differ (even significantly) from the "external point of view" – other individuals (organizations, state, communities...). *If it seems to me that somebody else is in crisis, it does not necessarily mean that (s)he perceives his/her situation in the same way.* Illustratively, the studies focused on measuring poverty often show different results depending on which concept of poverty they emerge from. Subjectively perceived poverty can be seen as value different from poverty measured according to some objective criteria.

It is important to note that there are some theories that deal with the perception of mental burdens (e.g. burden caused by social and cultural pressure, unfavourable living conditions, marginalization) from different perspectives (not through the eyes of an individual), but point at common features of perception and handling crisis or burden. As an illustrative example, we can use the explanation of poor Roma communities where the people are perceived more collectively than individually.

Subjective perception of the Roma on quality of their life who encounter total poverty in the long term in connection with social exclusion interested the authors of the research project VEGA (Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic): No. 1/0206/13. This paper serves as one of the outputs of the project.

The perception of an individual's quality of life is present in the research of strategies coping with poverty and threat of poverty conducted by a panel of researchers from the University of Ostrava in the Czech Republic. The following strategies connected with an individual's perception of poverty belong to the defense mechanisms of coping:

- Escape from reality: "*People deny situation they got into, make it easier and idealize it.*"

- Intentional exclusion: *“There is a loss of what used to be safe and a drop in social situation.”* These individuals would like to keep at least an illusion that they control their own self-destruction. They can express their lack of agreement with their demanding life situation and yet can claim that is is their choice.“ (Gojová a kol., In Sociální práce, sociálna práca 2014, p . 49)

When we take theoretical concepts explaining the behaviour of people living in poverty and social exclusion (considered by experts as extreme burden and threat) on a long term basis, we can assume that people who actually live in these unfavourable conditions do not necessarily need to perceive and realize them. For instance, Oscar Lewis understands poverty as a *“...subculture within its own culture, on logical basis and as a way of life which is passed through family lines from one generation to another“* (Lewis 1965). According to him, poverty is rather a strategy of life, a way of adaptation to situation and living conditions in which the poor live and even the reaction to marginal status in class-divided society. It becomes the norm and the expected way of life. Adaptive mechanisms which allow individuals to endure poverty also cause that they accept poverty as a normal condition. Children born in this culture are led to adapting to unfavourable living conditions. Their attitudes to life, strategies and values unfold through the adaptive mechanisms and through coping with marginal situation in which they end up (Bodnárová a kol., 2005, p. 65).

In relation to the concept of poverty as culture in Slovakia, the Roma people, specifically in Roma marginalized communities, are the most discussed issue. It is important to point out that most authors dealing with this problem do not agree with the explanation of existence and condition of poor Roma communities through the concept of poverty as culture. Many of them refuse this concept and claim that many features, as described by their author (such as aggression, refusing social norms, etc.) are absent in Roma communities. They share the opinion that the Roma belong to the population groups which are affected as well as endangered by poverty and social exclusion the most.

3. Basic information about Roma in the Slovak republic

The oldest reference to Roma in the area of Slovakia dates back to 1322. They form one of the biggest ethnic minorities with officially granted minority status. At present time, approximately 403 000 Roma people (Mušinka et al, 2014) live in different types of communities in Slovakia (see Table 1).

Table 1 Typology of Roma communities in Slovakia

<i>Scattered among majority population</i>	<i>Rural and urban settlements</i>
46,5% of overall Roma population in Slovakia form this type of settlement. Their living conditions differ, but are really similar to majority population.	Urban areas occupied mainly by Roma people are located inside a village or town (f.e. streets, neighbourhoods...). 12,9% of overall Roma population live in these settlements.
<i>On the outskirts of a</i>	<i>Far from a village/town</i>

<i>village/town</i>	<i>(segregated)</i>
Urban settlements situated on the outskirts of a village or a town (without spatial separation from the dwellings of majority population). 23.8% from the overall number of Roma in Slovakia.	Often even 20 km far from “home” village or town. Unsafe living conditions. 17% of all Roma in Slovakia live in segregated communities (68 540 people).

Source: Mušinka et al, Atlas rómskych komunit na Slovensku 2013, 2014

With respect to sub-ethnic differentiation, it is important to point out that predominantly Romungro (settled Roma) – according to estimates approximately 90% of all Roma – live in Slovakia. Another group is formed by Vlachi Roma (estimated number less than 10%). All Roma groups in the area of Slovakia adopted a settled way of life as nomadism vanished.

The attitudes of a majority towards Roma are not positive, as Roma are blamed for welfare system abuse and passivity. Some other negative subjective characteristics are attributed to them. Roma population is seen as homogenous, with only minor exceptions. The public debate (e.g. in media) about Roma as a threat has been quite intensive lately. As far as an attitude towards Roma population and unfavourable conditions in Roma communities are concerned, Slovakia faces criticism from the international organizations over a long period of time. The development of Roma communities is a part of national priorities of Slovak social policy.

4. Perception of poor Slovak Roma on crisis and demanding life situations (empirical findings)

The authors of this paper were engaged in the question of which situations or conditions are perceived as demanding or critical by poor Roma. They also felt interest in what Roma worry about. The authors tried to discuss the following questions: What do Roma fear of? How do they cope with unfavourable life-situations? Will they perceive their own poverty as a crisis or demanding life situation? The answers to the above mentioned questions were obtained through analysis of qualitative interviews. Researchers addressed Roma living in various living conditions as well as communities that showed signs of extreme poverty and social exclusion (f.e. spatial segregation, inaccessibility of basic infrastructure, almost 100% unemployment rate in a community, etc.). These conditions are considered by experts as factors triggering real burden. More than 50 members of all types of Roma communities were addressed in order to conduct interviews (see Table 1). The research was carried out at the beginning of 2014. The following part of the paper presents the basic findings from the conducted interviews. Most respondents are quite satisfied with their lives. Even respondents living in overcrowded dwellings of very low quality (made of waste material) without any basic equipment (water connection, sanitary facilities, furnishings) indicated satisfaction with quality of their life. Participants of our research are mainly dissatisfied with their housing (a quality, proportions, location and

equipment) as well as regular absence of cash in hand (sometimes they do not have even basic foodstuffs). These circumstances are regarded as uncomfortable, but do not pose “insuperable problems” - Roma always manage to go through them, as “*things will get solved somehow*“. Respondents living closer to majority population (ethnic Slovaks) were more critical although they live in seemingly better conditions.

“*Some people live worse lives. We have always something to eat. Even if we have no money, we buy on credit from the shop or borrow money from someone. We are not poor, as we would not have anything to eat if we were.*“ (Mária, who lives among non-Roma)

“*We live a modest life just like everyone else. I would like to get a job, but I do not know how. I can not change it so we could live better...*“ (Jano from a community on the outskirts of a village)

These findings can not be considered as surprising because even other qualitative studies (Radičová 2001; Rusnáková 2009; Lajčáková 2014;) suggest that Roma from poor communities do not compare quality of their life with anyone outside their community, which relates to their evaluation. As an example, the research report by Lajčáková (2014) states that in the opinion of Roma who live in segregated communities, they enjoy better health than Roma living among majority population. An explanation can be drawn from so called “modesty as an acquired notion“ or adaptation to living conditions, which can lead to perceiving poverty as a normal state.

The table below states the basic findings from the interviews with Roma and presents their answers to the questions regarding demanding life situations, ways of coping and visions of their future. The answers are categorized and accompanied by quotations. Due to limited scope of the paper, explanations and interpretations of the findings are not provided, but quotations serve as sufficient clarification.

Table 2 Reception of crisis by respondents

	Category	Quotation
<p><i>Demanding life situations</i></p>	Problems with children	“My children do not want to study.“
	Children feel a shortage of money	“The hardest struggle is when you do not have any food for your children. You have nothing to feed them.“
	Atypical life situations and experience	“...when I went abroad and begged. A swindler took me there so I could earn some money. Yet, he was beating me and took everything from me. I hitchhiked all the way home.“
	The loss of a loved one	“Just imagine that I do not have any money and I need to see the doctor with my daughter so he can prescribe some pills for me as I have nothing to buy it for.“
	Suffering from an illness (either their own or a family member’s)	“They urge us to get loans - but then we can not pay them. It makes me feel terribly worried so I can not even fall asleep.“
	Quarrels in family or neighbourhood	“We have a small flat where a lot of us live and sleep altogether... we live in a colony among the Gypsies and feel threatened all the time.“
	Partnership problems (infidelity, breakup, common arguments)	“We are humiliated and underrated - but some also praise us. “
	The lack of money (total absence of money)	
	Shortage of other resources (e.g. clothing, food, etc.)	
	Loans – debts	
Living in a segregated settlement		
Relations with majority population		

<i>Ways of coping</i>	Suppressing problems	„I will put behind me the misery.“ It is not that bad.“
	Pushing problems away	“I will think of it tomorrow.“
	Without the help of others (f.e. rituals)	„I will go for a walk... light a ciga-rette and make a coffee...go to bed and not talk to anyone.“
	With the help of medication	“I confide to my friend while we are drinking coffee.“
	With the assistance from others (family members, friends, neighbours)	“My brother or other relatives help me with the kids.“
	Thanks to belief in God	
<i>Visions of the future</i>	Concerns about children's future	“I do not rather think of the future.“
	Concentration on the present	“What is meant to be will be... But I can not imagine what will be...“
	Worries if they will go through hard times (if they will have money)	

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5. Conclusion

People choose their own interpretation of what is considered as crisis and what is its scope, nature and impact on an individual as well as family. Estimates and evaluation of possible risks of particular phenomenon or situation relate to how we interpret the outside world based on our own experience and beliefs. A majority of our sample respondents is quite satisfied with the quality of their life. The really important fact is that in case they feel unhappy with something, they do not see many opportunities for change. They can not afford to pull themselves out of poverty as they do not have enough money and choice – hyperbolically speaking, their own life is not within their power. While conducting the interviews, many of them seemed to be resigned and powerless. Adaptation to their living conditions appears to be a form of rational “rescue“ strategy in their life situation. On the other hand, it poses an obstacle that stands in the way to making positive change in their life. Restricting outer circumstances have an impact on their subjective feeling and in addition to other phenomena, they also lead to a lack of initiative from the poor ones.

The paper is a part of the research project supported by VEGA (Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic): No. 1/0206/13: “Perceived Social Support and Satisfaction with Social Network in Roma Communities“

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IN SEARCH OF THE NATURE OF TEACHER AUTHORITY

Jaroslav Šaroch

Faculty of Education, Charles University in Prague
Magdalény Rettigové 4, Praha 1, 116 39, The Czech Republic
+420608538386
jaroslav.saroch@gmail.com

Abstract: *The paper aims to contribute to the current understanding of teacher authority by focusing on possible interpretations of this phenomenon among student teachers from different sociocultural backgrounds. It is based on data collected during a pilot e-learning course focused on the nature of teacher authority which is a part of the European project called SoNetTe. The project and the course have made it possible for pre-service teachers from three European countries – Czech Republic, Estonia and Finland - to get together and discuss what they believe teacher authority is, what in their opinion it should be based on, and to learn, adapt and utilize various research methods in order to study the phenomenon. All participants eventually carried out a research and collected data from their peers in their respective countries. This paper presents the comparison of the most significant results of the analysis and interpretation of data collected during the quantitative research conducted at the end of the course using the adapted questionnaire of teacher interaction style.*

Keywords: *teacher authority, teacher interaction styles, adapted QTIS questionnaire, sociocultural bases of authority*

1. Introduction

The crisis of authority in our postmodern society has been thoroughly discussed in the last few decades by a considerable number of scholars (e.g. Arendt, 1954 [1]; Metz, 1978 [2]; Arum, 2003 [3]; Pace, Hemmings, 2007 [4]). There may be various reasons for this: challenge or even loss of established traditions, distortion of moral values, economic and sociocultural globalization, new technologies and media, social liberalization and emancipation, and/or a combination of several factors. It has a logical implication that there is a huge impact of these changes on the system of education, which makes a crucial part of the process of socialization. As a consequence of such shift in values across the majority of societies, teachers tend to struggle with exercising authority in class. Since it is a major problem in contemporary education, it seems only natural to try to understand the current bases of teacher authority and compare them in different sociocultural environments.

2. The nature of teacher authority through the prism of student teachers

2.1 E-learning pilot course on the nature of teacher authority and background of the comparative research

The main idea behind the SoNetTe eLearning course called “The Nature of Teacher Authority”, which took place from October till December 2014, was to provide the platform for its participants - pre-service teachers - from different countries to share ideas regarding contemporary bases of teacher authority. One of the main objectives was to collect from the participants as much data as possible regarding this phenomenon using selected qualitative and quantitative research methods. At the same time, participants had a chance to learn by doing all the methods utilized during the course. Based on data collected from all initial surveys that student teachers took part in, they were asked to make a mind map, participate in a focus group webinar via LMS Moodle and eventually as a result adapt

the questionnaire of teacher interaction style - QTIS (Gavora, Mareš, den Brok, 2003 [5]), which is a modified QTI (Questionnaire of Teacher Interaction – Levy, Créton, Wubbles, 1993 [6]), to better suit the needs of a research focusing on teacher authority.

The reason why we have chosen the adaptation and utilization of the QTIS for the purpose of studying teacher authority as the main outcome of the course is that we believe that the authority is a construct that is mainly being built and maintained via constant interaction between teachers and pupils. This is in complete accordance with Pace and Hemmings who maintain that “in the real world of classrooms, authority is enacted through ongoing negotiations between teachers and students and often involves conflict that affects the balance of legitimacy and consent”. They also say that studies show how “authority ... is a social construction constituted by interactions between teachers and students” [4].

Apart from the analysis and interpretation of all collected data, the most important outcome of the course was the possibility for participants to use the same or similar verified questionnaire again with their peers or pupils/students in order to learn about their expectations regarding their teacher’s traits and interaction styles as the key elements of teacher authority.

The methods used in the course in a logical sequence leading to the collection of data using adapted QTIS and its analysis were as follows:

- Free word association (key words – authority, teacher authority) and sentence completion tests
- Mind mapping (teacher authority in the core)
- 4x short written narratives (the most memorable teacher and his/her traits)
- Focus group using online environment
- QTIS adaptation
- Data collection from peers
- Analysis and interpretation of the collected data
- Concept mapping

This paper presents the comparison of the most significant results of the analysis and interpretation of data from the quantitative research conducted at the end of the course using the adapted QTIS.

2.2 Research on authority using QTIS and its characteristics

The main aim of the surveys and the final research was to identify similarities and differences in understanding teacher authority between participants of the course (pre-service teachers) as well as their peers from three different countries – the Czech Republic, Estonia and Finland.

We sought answers to the following questions:

1. What skills and traits as part of teacher's interactive styles student teachers believe help or interfere with building and maintaining teacher authority?
2. What similarities and differences were found in data collected on teacher interaction style as a key element of teacher authority from pre-service teachers in the Czech Republic, Estonia and Finland?
3. Are the similarities and differences statistically significant?

Based on the analysis of all surveys and research, including free word associations, incomplete sentences, participants' own mind maps, written narratives, results of the focus group and webinars, it was possible to collectively adapt the QTIS and use it for the purpose of the research among course participants and their peers regarding interactive styles that they believed make a good teacher. Word "authority" was avoided on purpose during the collection of data not to influence respondents.

The adapted QTIS is comprised of 64 four-level Likert-type scale items with answers ranging from 0-never to 4-always. Items are evenly distributed into 8 dimensions, each of which characterizes one of teacher interaction styles. The core unfinished sentence that each item completes is: Good teacher...

- Leader/organizer (with answers such as – is enthusiastic about his/her subject, knows everything that goes on in the classroom)
- Helpful/friendly (e.g. is willing to explain things again, creates a pleasant environment in the class)
- Understanding (e.g. listens to his/her students, is patient)
- Democratic (e.g. is benevolent, shares decision making regarding class matters with students)
- Uncertain (e.g. is shy, is not sure what to do when students fool around)
- Dissatisfied (e.g. is grumpy, is suspicious)
- Admonishing (e.g. is arrogant, is easily crossed)
- Strict (e.g. is severe when marking tests, has very high expectations)

The questionnaire was piloted among participants of the course before it was distributed by them to their peers at respective universities across the three countries.

Even though English was neither participants' nor respondents' mother tongue, the decision was made to adapt and distribute just the English version of the questionnaire that could be used in any European country providing the respondents speak English to ensure full

understanding of all items. Translating the questionnaire to national languages could cause ambiguity and inaccuracy during the analysis of the collected data. Nevertheless, researchers (course participants) needed to be at hand to help respondents fully understand items whenever they needed clarification. The most ambiguous expressions were avoided altogether and the difficult ones were thoroughly explained and discussed during webinars in respective national languages prior to the data collection.

2.3 Sample and data analysis

The sample consisted of 60 English speaking student teachers from the Czech Republic, Estonia and Finland - 20 respondents from each country. There were 18 men and 42 women respondents with the average age of 25. Student teachers were chosen to get an insight into their pre-service preconceptions concerning teacher authority based on their sociocultural background and previous experience and education. Their opinions about the most important interaction styles and traits that they think are expected of teachers can help them, teacher trainers and subsequently other pre- or in-service teachers realize what their mindset is regarding the basis of authority. Therefore, it might help them to focus on these skills, traits, abilities further in their study. Possible subsequent comparison with their pupils' expectations using similar questionnaire can shed light on how those expectations differ between them and their pupils, which is not part of this paper though.

In order to measure the reliability of the adapted QTIS questionnaire we used Cronbach's alpha which averaged at 0.73. It shows that all dimensions have acceptable internal consistency and correlation of items.

The research took place in all three countries in December 2014. Questionnaires were distributed by student teachers - participants of the SoNetTe course.

When analyzing the collected data of the adapted QTIS we calculated scores for each of 8 dimensions and divided them by the number of items in the dimension, after which we used arithmetical mean. The results gave us the mean item scores for each dimension. For the purpose of the comparison of similarities and differences between the three countries we used arithmetical mean scores for each scale item from all respondents divided into groups according to their nationality.

2.4 Interpretation of collected data

The analysis of the collected data helped us identify what traits and interaction styles (dimensions) student teachers believe help or interfere with building and maintaining teacher authority. Also, it helped us find differences and similarities between student teachers' approach to each dimension of teacher interactive styles based on their nationality.

As shown in figure no. 1 and table no. 1 differences between student teachers' opinions from different countries are not major. All participants emphasized leadership and organizational skills, which included e.g. classroom management and knowledge of the subject, as the most important and it peaked together with helpfulness, friendliness and understanding towards pupils.

Those three dimensions were followed by the importance of the teacher’s democratic approach (i.e. sharing power with pupils). On the other side of the scale (i.e. 0 - 2) was strictness, uncertainty, overt dissatisfaction and admonishing. Apart from strictness, which reached almost 2 points on the scale, the rest of dimensions have minor gains and therefore in respondents’ opinion they do not help teachers to build and maintain authority.

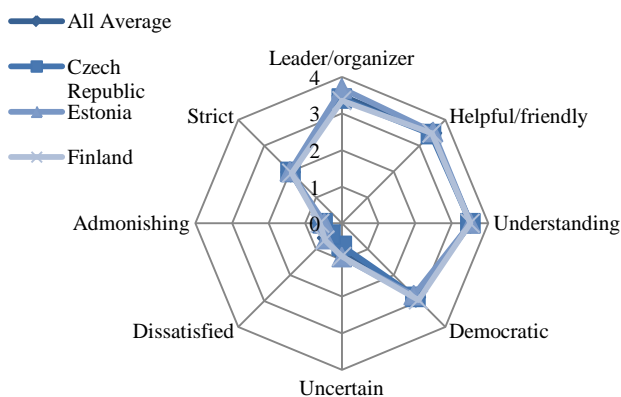


Figure 1: Results of the data analysis

Table 1: Results of the data analysis – mean scores

Dimensions	All Average	Czech Republic	Estonia	Finland
Leader/organizer	3,479	3,406	3,679	3,350
Helpful/friendly	3,483	3,444	3,592	3,481
Understanding	3,513	3,513	3,563	3,506
Democratic	2,860	2,844	2,819	2,959
Uncertain	0,817	0,619	0,934	0,906
Dissatisfied	0,567	0,438	0,606	0,650
Admonishing	0,533	0,525	0,468	0,600
Strict	1,975	1,981	1,971	1,938

The most significant differences in scores between the three countries were in the following dimensions (more than 0.10 difference - Δ):

Leader/organizer - in Estonia student teachers believe that teacher needs to be a leader and organizer more than their Finnish or Czech counterparts (Estonia vs. Finland - Δ 0.329; Estonia vs. Czech Republic - Δ 0.273)

Helpful/friendly - Estonian respondents showed that they are ready to be slightly more helpful and friendly than those in Finland or the Czech Republic (Estonia vs. Finland - Δ 0.111; Estonia vs. Czech Republic - Δ 0.148)

Democratic - student teachers in Finland express readiness to be more democratic than their Czech or Estonian counterparts (Finland vs. Czech Republic - Δ 0.115; Finland vs. Estonia - Δ 0.14)

Uncertain - respondents in the Czech Republic feel more strongly about the teacher not showing his uncertainty (Czech Republic vs. Finland - Δ 0.315; Czech Republic vs. Estonia - Δ 0.287)

Dissatisfied - in Estonia and Finland respondents think that a teacher can show dissatisfaction with pupils more

than in the Czech Republic (Czech Republic vs. Finland - Δ 0.212; Czech Republic vs. Estonia - Δ 0.168).

Admonishing - respondents in Finland have the highest value when it comes to rebuking pupils closely followed by the Czech Republic, the lowest value came from Estonia (statistically interesting was difference between Estonia and Finland - Δ 0.132).

As far as scores for Strictness and Understanding are concerned, the difference between the countries was marginal.

There are many interesting results concerning specific items that show rather high statistical significance and are noteworthy (see Figure 2 and 3) when it comes to comparing sociocultural backgrounds of interaction styles, and thus the basis of teacher authority.

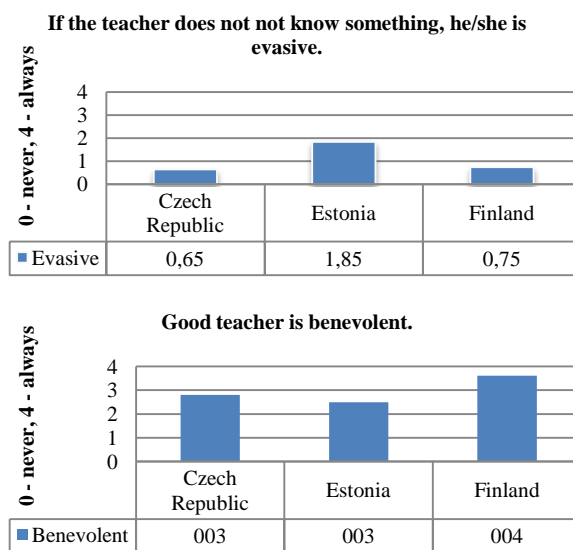


Figure 2 and 3 – Significant difference in mean score

When comparing Estonia to Finland or the Czech Republic for that matter, it is conspicuous that Estonian student teachers tend to be less open and free-minded as far as honesty in interaction with pupils is concerned (see Figure 2 and 3). This was commented on by Estonian participants during one of the webinars dedicated to the analysis of the research data, which was part of the above mentioned online course on authority. According to them, evasiveness (i.e. avoiding losing face), less benevolence and little tolerance towards breaking rules was inherited in Estonia from the old Soviet school system with teachers in its center.

Many items received very high scores from all participants and are therefore considered important and beneficial for teacher authority in all countries. All of them were from Leader/organizer, Helpful/friendly and Understanding dimensions (see Figure 4).

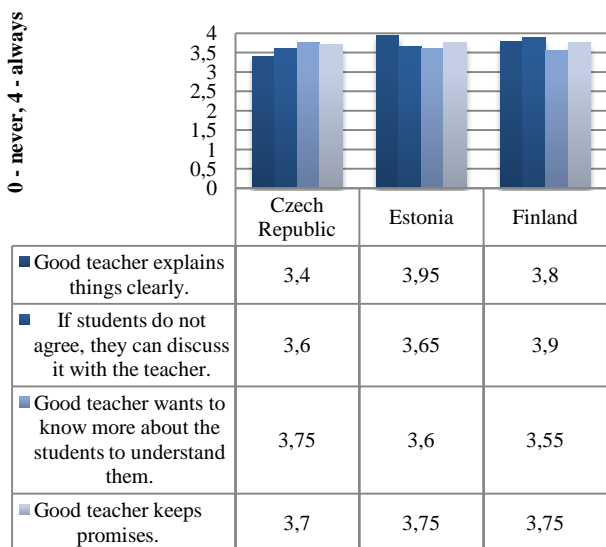


Figure 4 – Highest mean scores in all countries

On the other hand, there were a considerable number of items in Uncertain, Dissatisfied, Admonishing and Strict dimensions which received very low scores from all student teachers and are thus considered by them as detrimental to teacher authority (see Figure 5).

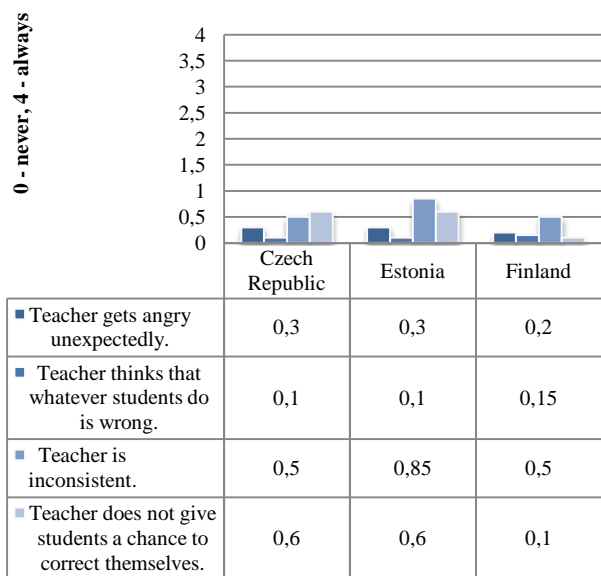


Figure 5 – Lowest mean scores in all countries

Democratic dimension was not considered as something indisputably positive (see Figure 6).

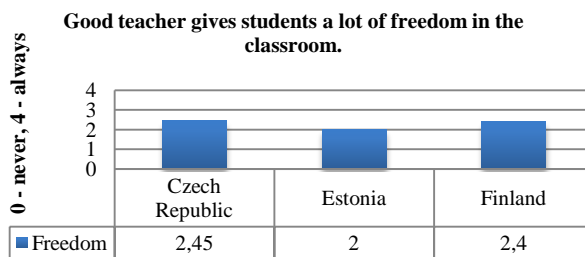


Figure 6 – Democratic dimension lowest score

At the same time strictness was not always considered as something purely negative (see Figure 7).

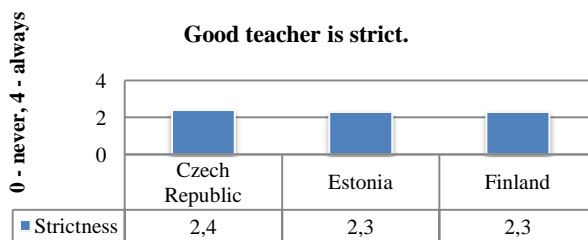


Figure 7 – Strict dimension highest score

3. Conclusion

The adapted QTIS proved to be a valuable and reliable instrument for use in providing information about teacher interaction styles as well as traits, skills and behavior that student teachers believe can help building teacher authority and those that can diminish it.

Apart from clearly beneficial styles (Leader/organizer, Helpful/friendly, Understanding) and distinctly detrimental ones (Uncertain, Dissatisfied, Admonishing), there are two dimensions (Democratic, Strict), the scores of which are not purely positive or negative.

Thus, data analysis shows that student teachers, recently being students themselves, do not rely on formal authority, but they rather value in their “ideal” teacher his/her organizational skills, knowledge of the subject and craft, good humour, wit, understanding for students and pupils and readiness to listen to their views and needs in particular. That kind of teacher they would apparently like to become.

When it comes to statistically significant differences, there are several items that show variance in approaching specific interactive styles, e.g. openness and honesty towards pupils and classroom management, with Estonian respondents being more rigid than Finnish ones and Czechs usually taking the middle ground.

Based on the above, we believe that the results of the research using the adapted QTIS helped us answer our research questions. Also, the adapted QTIS proves to be a useful tool for both pre- and in-service teachers to gather data for self-reflection on their performance (interaction style, basis of authority) and might be able to help them with their further studies and/or modification of their teaching strategies.

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RESEARCH RESULTS ON LANGUAGE LEARNING IN ADAPTIVE LMS*Štěpánka Nedbalová – Kateřina Kostolányová***Ostrava University, Department of information and communication technologies**Fráni Šrámka 3
Ostrava, 709 00, The Czech Republic
+420 597 09 2510

katerina.kostolanyova@osu.cz - stepanka.nedbalova@seznam.cz

Abstract: *The article discusses a language learning approach in adaptive LMS including detected sensory modalities of a student. Many learning styles can be used in a language learning. Why just sensory modalities? By way of introduction the reason to choose sensory modalities in adaptive language learning has been explained in relation to specifics of a language learning. Further the proposal of the particular adaptive approach in a language learning has been introduced. The proposal has been done based on the original adaptive LMS model for general subjects. The original LMS model has been divided into three mutually interdependent modules: STUDENT module, TEACHER module and AUTHOR module. All three modules have been used in the adjusted LMS model for a language learning instruction. However the content and the inner structure of each module has been changed as a field of language learning has their specific attributes in comparison to general subjects learning. For example when learning a foreign language the student must become familiar with phonetics, vocabularies, sentence structure, reading, listening, writing and speaking skills. In general subjects learning as physics or chemistry there are no such skills needed or developed. The last part of the article has been devoted to the research methodology description and research results presentation having goal to assess the success rate of sensory modalities application in adaptive language learning. The research has been carried out at Higher Vocational School of Law and Economics with 114 students aged 20-27 in average.*

Keywords: *adaptive LMS, language learning, visual student, audial student, sensory modalities*

1. Introduction

Adaptive LMS and learning styles. What does it have in common? Both of these areas either adaptive LMS or learning styles focus on individual learning approach toward a student. We suppose the more you adapt the study process to the specific student's learning style the better study results he might obtain. The effectiveness is mainly seen in a way of deeper understanding of a presented knowledge and as a result the student being able to put his obtained knowledge into practice in case there is a practical outcome of this knowledge. Being able to create the individualized learning environment for a student the electronic approach in a way of adaptive LMS must have been used. Trying to apply this adaptive learning approach in the classroom is impossible. Every time being in the classroom you must always choose the "happy medium" to be able to pass knowledge on people of different learning styles. Concerning of an individualized approach in a language learning we haven't found a research dealing with this issue yet (year 2014). There has only been terms like "Mobile assisted language learning", "Computer assisted language learning" or "Intelligent computer assisted language instruction". In the field of a language knowledge testing there has been terms like "Computer based language assessment" or "Computer assisted language testing". The adaptive approach in a language knowledge testing can be seen in so called "adaptive test". The adaptive test detects a language level of a student in a way of submitting an easier or more difficult tasks on the base of student's answers [1].

2. Adaptive LMS and a language learning

To create the adaptive teaching materials for a language learning a theoretical basis for creation of multimedia language projects can be used. The core of adaptive teaching materials is so called Second Language Acquisition Model (SLA model). This SLA model is based on Krashen's idea who defines entries when learning a target language and how this entry to be processed by a student to influence his language skills positively [2]. The model of a language learning in adaptive LMS could prove the supposition that it is useful to place students in different study groups not only according to their grammar language level but also according to their initial language skills such as listening, reading, writing and speaking skills. What's more, the adaptive LMS model could also prove if it's useful to place students according to their preferred sensory modality. The beneficial effect of this approach is mainly seen in findings if students placed in different language level groups together with their preferred sensory modality will learn faster and with knowledge better retained.

Now coming to the term "sensory modalities". It can be explained as a synonym of stimulus modalities. On biological level we perceive through sensory receptors activated by the stimulus. There are six stimulus modalities: light modality including light, color and subliminal visual stimuli (eyes), sound modality (ears), taste modality (taste buds), temperature modality (skin) and pressure modality (the sense of touch, tactile perception). All sensory modalities work together to heighten stimuli sensation when necessary [3]. For the use of a language learning in adaptive LMS the two stimulus

modalities have been chosen. First “light modality” as we perceive information by eyes and the second “sound modality” to perceive information by our ears. These two categories have also been chosen to correspond with how we perceive information on general level and on the base of current terminology in the field of a language learning (2014). First category The “Read/Write” student and the second category “Aural” student [4]. “Read/Write” student is defined as someone who prefers information input and output in a text form. On the contrary “Aural” student prefers to gain information in an audio form. Together with these two categories above another two categories from the field of cognitive learning styles have been chosen. These are “Visual” and “Verbal” students [5]. On the base of cognitive learning styles research by means of magnetic resonance (fMRI) students being diagnosed as “Visual” students had their grey matter connected with visual abilities more activated. “Verbal” students had their grey matter connected with aural abilities more activated [6]. Being inspired by Fleming’s research in a field of sensory preferences of a student Vlčková and Lojová [7] working in a field of a language learning added attributes to “Read/Write” student. After adding pictures, mental maps, videos with subtitles and other visual learning supports to stimulate visual imagination of a student they defined a new category of a student in a language learning such as “Visual student” which is basically compilation of Fleming’s “Read/Write” student, “Visual” student from the cognitive style research (see the text above) and their own recommendation based on their teaching experience in the field of a language learning instruction.

The issue of sensory modalities application in a language process has been widely discussed and insufficient number of empirical oriented research has been done so far. Also, some studies theoretically oriented have been carried out.

On a general level a neurobiology research has been carried out proving that Sensory modalities work together and don’t function separately. They appear with different intensity depending on each individual [8].

The scientists also think about the existence of one dominant sensory modality of a student to include its attributes in study supports of a particular student to support the function of his long term memory. But it’s only speculation not being supported by any empirical research yet. Moreover, Coffield et al. [9] hasn’t found any positive effect between interconnection of learning instruction and sensory modalities of a student. He supports the idea to match the task with suitable methodology that corresponds with the nature of the task not taking sensory modalities of the student into account. Similarly, Marzano [10] concluded that graphic representation of information and tactile way of learning has a positive effect in learning not including effect of sensory modalities of a student.

To summarize, the conclusion on sensory modality effect in learning on general level is rather negative.

On the other hand in a language learning scientists see the effect of sensory modalities in a more positive perspective. This might be caused by the fact that language learning is focused on language skills improvement being connected

with language areas as reading, listening, speaking and writing where sensory modalities of as student can be applied more naturally than in other field of study.

Oxford and Ehrman [11] in their second language research resulted visual student achieved better reading results in comparison to aural students. Oxford [12] confirms the ability of visual students to percept information via text. Tuition, conversation and speaking instruction without visual support can be confusing and difficult to understand for a visual student. On the contrary, aural students don’t need visual support when something is explained. They prefer action in the lesson as interactive games. Sometimes they have problems with written form of message being delivered to them.

As it has been said before, there is a lack of credible empirical research on sensory modalities influence on a language learning.

In October 2014 we carried out the research with 88 students on interconnection between their dominant sensory modality and their reached language skills. The VARK questionnaire of sensory preferences and internationally recognized language tests by Cambridge University Press was used. The language tests respected the student’s current language level. In our case A2, B1 level according to Common European Framework of Reference. *The results showed that the majority of tested students have better results in reading skills regardless of their dominant sensory modality.* In other words, the results say, if you intensify the quantity of learning material and time being spent by students on one language area (listening, speaking, reading or writing area), the majority of them will reach better study results in this area. I assume that if the tested students had lived and studied the chosen foreign language in the country where the language is spoken by the time of the research, they would have reached better learning results in aural form of a language because when living in foreign county you “hear the language” more than you “read the language”.

The empirical research above surveyed the gained language knowledge of students being exposed to traditional study materials and traditional language teaching instruction. But my other question was: “What will happen if we expose the student to a language study support being adapted for their dominant sensory modality?” Will their study results stay the same as in traditional approach or will there be any difference?

3. Adaptive LMS

As the students’ dominant modalities differ student from student and every students prefers different learning pace and time for study, adaptive LMS resulted to be a suitable electronic tool for the pedagogical experiment that would prove or disprove the effect of adaptive study support with dominant sensory modalities attributes in a language learning.

3.1 Adaptive LMS for general subjects

The adaptive LMS consists of 3 modules. STUDENT module, TEACHER module and AUTHOR module. STUDENT module has been designed to detect student’s

study characteristics. This module consists of static and dynamic characteristics and continuous monitoring sections for the reason to match the student with a suitable study support. The AUTHOR module consists of basic framework which is divided in 3 depths of curriculum instruction and basic framework variants (verbal, visual, audial and kineasthetic variants).

3.2 Adaptive LMS in a language learning

To design the model of a language learning in adaptive LMS the current model of adaptive LMS must have been slightly adjusted regarding the specifics of a language learning in comparison to general subjects' instruction. The adjustments have been concerning of student's characteristics and structure of the adaptive study supports. STUDENT module also includes static and dynamic characteristics of a student as original adaptive LMS does but in static section sensory modalities of a student are detected and in dynamic characteristics section language knowledge test for each language area has been chosen. Both sections include much less testing of initial student's characteristics in comparison to original adaptive LMS model. In the AUTHOR module there has been only one depth of curriculum instruction designed and only two basic framework variants (visual and audial). These variants are fully sufficient for two designed types of students in a language learning. Visual student in adaptive LMS corresponds with VARK definitions for "Read/Write" student plus additional attributes from cognitive research results and "Audial" student in adaptive LMS corresponds with VARK definitions for "Aural" student including cognitive research results too.

4. Research results on adaptive language learning

The research on adaptive language learning has been carried out in December 2014 – February 2015 at Higher Vocational school of Law and Economics.

4.1 Basic research facts

Number of students tested: 114 students
 Conditions for final analysis met: 72 students
 Conditions for final analysis: students without technical problems and defined time spent on the whole tuition
 Research methods: pedagogical experiment
Experimental group:
 Aural students – Aural study support (22 students)
 Visual students – Visual study support (13 students)
Control group:
 Aural students – Visual study support (22 students)
 Visual students – Aural study support (13 students)
 Adaptive study support language level: B1 (intermediate)
 Language level of students in both groups:
 A1(13%), A2 (54%), B1(18%), B2(10%)
 Each, experimental and control group consisted of students with similar representation of a language levels.
 Adaptive tuition structure: LISTENING tuition, READING tuition, WRITING tuition (48 adaptive study supports have been designed with respect to dominant sensory modality of a student)

Evaluation tools: PRETEST – POSTEST, the same content, different questions with each test.

4.2 Research methods description

In table 4 the system of adaptive study support distribution has been described.

Table 1 System of adaptive study support distribution

Types of students	Adaptive study support matched in LISTENING – READING – WRITING tuition	Abbreviaton Student – adaptive support
Aural students) (22	Study support for aural students	A-A
Aural students) (22	Study support for visual students	A-V
Visual students) (13	Study support for visual students	V-V
Visual students) (13	Study support for aural students	V-A
Total number of students		72

4.3 Research results

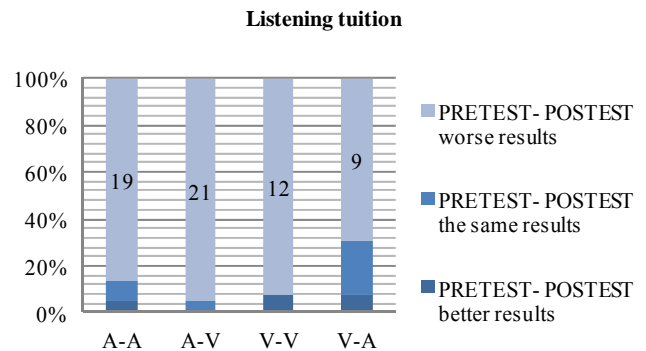


Figure 1: Results on Listening tuition in adaptive LMS

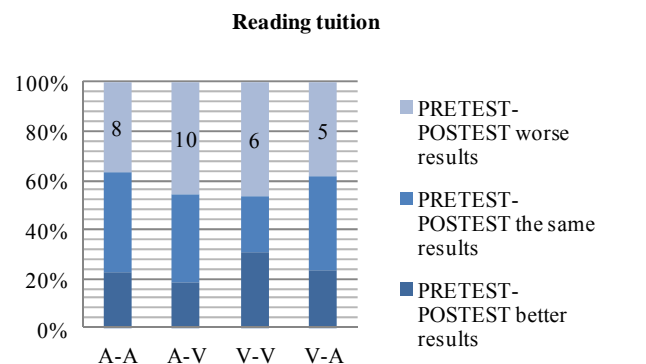


Figure 2: Results on Reading tuition in adaptive LMS

5. Conclusions

There have been better results detected in pretests than in posttests in LISTENING and READING tuition. Less negative effect of dominant sensory modality in adaptive study supports has been detected in READING tuition. However, it should be noted that the students in qualitative research being followed by the whole research responded that it has been a great benefit for them experiencing the adaptive tuition (26%), it has been a medium benefit (72%) and low benefit (2%). Also the students enjoyed studying adaptive study support (42%), they liked motivational study support (15%), they liked relaxation pace during the tuition (42%), they didn't like the tuition (2%). As we can see, the findings from qualitative research are in contradiction to posttest results. To find out the possible positive effect of adaptive language learning on student's knowledge there will be a placement test given to them to learn if they improved on grammar level at least.

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USE OF (AUTO)BIOGRAPHICAL-NARRATIVE APPROACH IN RESEARCH OF LIFESTYLE LIMITATIONS IN CHRONICALLY ILL

¹Jan Chrastina – ²Gabriela Smečková – ²Kateřina Ivanová

¹Institute of Special Education Studies, Faculty of Education, Palacký University Olomouc

²Department of Social Medicine and Public Health, Faculty of Medicine and Dentistry, Palacký University Olomouc

Žižkovo náměstí 5

Olomouc, 771 11, Czech Republic

+420 585 63 5333

jan.chrastina@upol.cz – gabriela.smeckova@upol.cz – katerina.ivanova@upol.cz

Abstract: The paper presents the experience with the application of an (auto)biographical-narrative approach in qualitative research. The research was aimed at the area of identification, description and interpretation of lifestyle limitations in persons with chronic illnesses. In a pilot study the research design was used in three adult individuals (multiple sclerosis, diabetes mellitus and depression). The research sample, in which the above mentioned approach was applied, consisted of four adults with multiple sclerosis. The method of overall conceptualization was the (auto)biographical narrative in the form of multiple case study research design. Data collection was performed by means of the life history method (in the form of life curve and life story), semi-structured interview and Cantril ladder. The research was carried out as a part of the dissertation of the main author. The applicability of the content and results described in the paper is seen especially in understanding the (auto)biographical narrative approach and description of the experience of the team of authors with the performed qualitative research using specific methodological triangulation.

Keywords: (auto)biographical approach, narrative approach, chronic illness, lifestyle, limitation

1. Introduction

The *biographical design* is a suitable approach used to capture the integrity of an investigated phenomenon (which cannot be usually anticipated beforehand) [1; 2].

The aim is to capture a certain development as seen by an individual (intensity, development in time, degree of experience, etc.) This approach uses the assumption that each of us develops certain (completely specific and unique) interpretations of experienced events. As stated by Čermák (In [3]), “the aim of biography is to capture the perspective of a research participant and reveal the meaning and purpose “behind things” and “in the story”. The biographical approach thus evokes required and appropriate interpretations through a *life story* (narrating to another person), using personal memories. Regarding a degree of similarity to an interview, a significant fact is the monitoring of the *horizontal level* (specific areas) but also the *vertical level* (development, dynamics, story extent, etc.) In all cases however, the biographical design is directed towards a specific reconstruction of previous (but also future) life from an actual experienced and lived perspective (so-called *emic perspective*).

Professional literature makes a didactic division into ‘biography’ and ‘autobiography’. Regarding the fact that the authorial research used case history description by another person (i.e. “*biography*”), which uses subjective case statements (i.e. “*autobiography*”), this was a combined approach labelled as “(auto)biographical–“.

2. Biography and its typology in designing research

According to Hendl [4], this is a special version of the *case study* as it concerns one or a few cases (research participants). Although biography is bound to an individual (author’s narration about previous life), the case study is considered to be more comprehensive as it

captures the current state from several perspectives. However, this is frequently a complementary phenomenon – biography often becomes a part of (as a technique – data collection method) of the case study as an autonomous research method.

The *biography* itself is understood as the *history of life* of an individual, its reconstruction and interpretation directly by the participant. Also, as mentioned by Hendl [4], the biographical approach might try to compare various biographies and search for similarities and patterns in *life paths*, and thus contribute to the clarification of personal or social phenomena. Biographical research uses material of a biographical nature, which is collected in a controlled way. Biographical research focuses not only on an individual’s narration about life but other required documents (materials) are collected – always according to the research questions or research objectives. A good reason for the selection of this approach and research design is the fact that “the findings are arranged according to topics that concentrate around *critical moments* in an individual’s life” [4].

For the purposes of the research the (auto)biographical-narrative approach was selected. This means that the biography was complemented with own interpretations and constructions by the study participants. However, this was not a mere description and interpretation by another person (i.e. biography). In this type of approach the final product is always the result of mutual interaction and interpretation of reality between the researcher and the person under research. Denzin (In [4]) defined three basic approaches to biography: (1) *complete*, (2) *episodic*, (3) *commented*. There is also another system of classification of biographical design (according to various authors): (1) *realistic*, (2) *neopositivistic*, (3) *narrative*. Realistic biography uses the methods of embedded theory and its

coding. The objective of this approach is to design/develop a new theory. The name of this biographical approach is derived from a realistic assumption – through the perspective of the participant it is possible to understand reality [3]. Neopositivistic biography uses verified theoretical data. Narrative biography uses the perspective of a life story as a result of a joint activity of the researcher and the participant [3]. The perspective (narration) of the participant is influenced by the current situation and context. Another type of specific individual method of data analysis is the *narrative analysis* (also used in other types of research and approaches). The basic principle of the narrative analysis is the *form (genre)* into which the story is situated. Researching narrative biographies of individuals and their interactions might bring a deep understanding of human experience, which is absolutely crucial in social-scientific reality [5]. Regarding the fact that the research did not include comprehensive mapping of complete life experience (i.e. *complete biography*), or a pre-defined section of life experience (i.e. *episodic biography*), the adopted procedure can be described as *commented biography*. This approach uses commentaries, additions, additional information, and at the same time can be both complete and episodic.

3. Qualitative research of lifestyle limitations in persons with chronic illnesses – design and methodology

For the purposes of the research we used the *episodic commented autobiography of a narrative nature*. The suitability of application is explained by Flick [6]: this is a narration of an episode (or episodes) of specific experience of an individual. For this reason the researcher asked specific clarification questions (i.e. aimed at the area of lifestyle limitations by the illness – preparation of “key moments” to be subsequently captured by the Cantril ladder). The basic technique of data collection is the narrative interview, which was introduced by a German sociologist Fritz Schütze in 1977 [7]. This type of interview uses several stages: stimulation – narration – questioning (clarification) – generalising questions. This authorial research was carried out as a part of the dissertation aimed at the area of identification and description of lifestyle limitations in persons with chronic illnesses. The (auto)biographical narrative approach combined with specific techniques of collecting qualitative-based data was performed in compliance with the following research objectives: (1) To design specific qualitative methodology for the identification of lifestyle limitations in persons with chronic illnesses; (2) To identify, describe and analyse lifestyle limitations in individuals with chronic illnesses; (3) To demonstrate that (both by means of a pilot study and own research) the verified specific qualitative methodology is applicable in the promotion of “validity” of diagnostic elements of selected NANDA Int. nursing diagnoses in persons with a specific chronic illness; (4) (according to the obtained qualitative research results) To propose an authorial definition of “chronic illness” related to the concept of “lifestyle” that would be data-saturated and would be

applicable (not only) in the area of nursing, social-scientific and (special) education research.

The main research concept was of an exploratory and descriptive nature. The research itself was preceded by a pilot study. The main research design was the case study with intentional methodological triangulation. The pilot study was used in three individuals (with multiple sclerosis, diabetes mellitus and depression). The results of the Libuska case (depression) could not be processed due to the current performance condition. For purposes of respecting the chronological aspect in researching chronic illnesses, the main input criterion was the duration of illness in an adult individual (i.e. older than 18 years) for at least three years. The individuals meeting the input criteria were chosen by means of intentional selection. The following methods were used: *life history and case study (objective oriented and intrinsic and instrumental case study)* with *life curve (life-line)* techniques with *life story* description; *Cantril ladder*, and *semi-structured in-depth interview* (as a continuous auxiliary technique). The specified combination of the techniques (methods) has not been used in the area of Czech nursing research – according to available results of review activities. For this reason this combination can be considered unique and specific. The methodology also included an element of data anonymousness; concealing the objectives, circumstances and retrospection of the research; an element of personal approach ‘researcher – research participant’, etc. The *core participant* of the multiple case study is the first person of the multiple case study research, which was the case of Marcela. The remaining cases were included in the *verification group (verification cases)*. The verification group comprised the cases of Eda, Kristina and Adelka. The approach corresponded to the replication multiple case study according to Yin [8]. Interview processing was performed by means of the Transcriber programme. By the dissertation author’s own idea, a new way of using the ladders outlined in a chronological order according to *Cantril Ladder Points* was developed. In this way, the lines connecting point intensities resulted in further curves, i.e. secondary curves (visually similar to the frequency polygon). The first connecting line is based on *Ladder Present Points*, the second on *Ladder Future Points*. The research sample was developed in a gradual way. The data analysis was arranged in the following sequence: (*data collection*) – (*primary analysis*) – (*verification group cases*) – *data arrangement* – *story development* – *interpretation (summary report)*. For the purposes of summarization of the data analysed, the method of *analytical induction* was used. The analytical units were developed by means of *segmentation*. The analysis of the multiple case study used *unsorted meta-tables*.

4. Results

A frequent initial limiting symptom included *vision loss, walking disorders, dizziness, fatigue, sleep disorders or fine and gross motor skill disorders*. A period was identified that predetermined the period of illness diagnosis (long-term mental stress, life uncertainty,

‘neglecting diseases’, extreme work load or problems in personal or family life, etc.) A frequently discussed issue was also the presence of *depression* and *tingling*. The life curves of Marcela, Eda and Adelka were drawn in both diagram dimensions that imaginarily divided the curve into a positive (+) and negative (-) areas. The life curve of Kristina – despite frequent rises and falls – was depicted above the dividing line for curve depiction. For individual categories subject to analytical processing together with their descriptions for the cases of the multiple case study see the table below (Tab. 1).

Table 1 Overview of categories and their description

Category	Category description
Pain	headache
Vision impairment	temporary vision loss diplopia
Fatigue	presence of fatigue
Loss of employment	loss of employment
Walking	walking disorders stability disorders occasional falls dizziness stumbling
Fine motor skills	fine motor skills disorders upper limb coordination disorders impossibility to perform usual housework
Sleep	sleep disorders
Memory	memory disorders
Tingling	presence of tingling
Self-knowledge	learning to listen to own body
Depression	presence of depression and depressive moods
What the illness changed	hobbies, interests changes in the value system selection of friends – ‘true friendships’ loss of family disagreement with family members future planning
Financial uncertainty	loss of employment financial uncertainty
Urological issues and sexual implications	urological issues frequent urination decreased libido

5. Discussion and conclusion

The symptomatology of multiple sclerosis was very rich for all cases. However, a certain similarity in time was identified. The following areas were defined: ‘*period prior to diagnosis*’, ‘*period of defining diagnosis*’, ‘*period of symptomatology*, *lifestyle limitations*’ and ‘*period of future*’. In the target group of persons with dementia or elderly individuals, available foreign papers use the concept of *life story* (or *narration*). The conceptual technique used in these cases is identified as ‘*life story work*’. This approach rather resembles the reminiscence technique, not an empirical data collection technique. McKeown et al. [9; 10] used the same research design for the multiple case study. Their study focused on elderly persons with dementia and used the techniques of semi-structured interviews, observations and conversations. Hewitt [11] carried out a study using the life story method

in individuals with special educational needs (technique of ‘*life story books*’). The same target group was also referenced in a systematic literary review by McKeown, Clarke and Repper [9]. Other target groups involved children, elderly persons in inpatient wards, persons receiving nursing and residence care. Several studies were found focusing on the validation of the defining characteristics of the nursing diagnosis of ‘*Fatigue (00093)*’. The studies were performed on a group of adult oncological patients [12] using two tools – *The Revised Piper Fatigue Scale* and *The Schwartz Measurement of Fatigue* [13] and using the *Piper Fatigue Scale-Revised (PFS-R)* [14]. Two different types of fatigue are typical not only for individuals with multiple sclerosis. These are *primary fatigue* and *secondary fatigue*, or *central* and *peripheral*. A potential issue in nursing diagnostics is the relationship between a fatigue symptom and sleep disorders. A significant correlation was described between fatigue and sleep disorders or an abnormal sleep cycle in individuals with multiple sclerosis [15]. However, in the defined diagnostic aspects for the nursing diagnosis of Fatigue (00093) this correlation is missing. Quality-based research allowed efficient capturing of the phenomenon in a comprehensive perspective (i.e. the constructs of ‘*lifestyle*’ / ‘*chronic illness*’ / ‘*chronic illness limitations*’). However, the conclusions based on the results of an authorial research study cannot be applied to a wider population base. As a result, only transability with a multiple case study context can be expected. To various professions (specializations, nursing, special education and auxiliary professions), the methodology provides effective communication, personalized and targeted questioning, establishing required trust and compliance. If the professional uses the story, its interpretation and perceived needs, desires and wishes to adjust the ‘professional – client’ relationship, planned and personalised care will be delivered, the content of which will be based on the communication provided by the care recipient. The area of nursing reality, which uses various assessment approaches and tools can also use the Cantril ladder as a separate scale. According to the original method, ladder score 6 and higher is considered ‘high life satisfaction’ [16]. The Cantril ladder might be used e.g. for the evaluation of the following nursing issues: pain, thirst, fear, fatigue, self-sufficiency/independence, etc.) For further research it appears desirable to continue with studies using the same proposed design. Based on the results of the research, the following working definition of the chronic illness concept was defined by Chrastina, Ivanová [17]: ‘*Chronic illness is present for at least a year and affects the bearer’s life. In particular, the illness symptomatology can affect the performance of everyday activities and lifestyle in the form of lifestyle limitations, and at the same time can affect the quality of life of the bearer, who develops own illness coping strategies, where the implications of the chronic illness do not change life and the performance of everyday activities always in a negative way*’.

Acknowledgements

The paper is dedicated to the following project: 'Percepce subjektivního dopadu zdravotního postižení/přítomnosti chronického onemocnění a pojetí zdravotního uvědomění a gramotnosti | Perception of subjective impact of disability/presence of chronic illness and concept of health awareness and literacy' (IGA_PdF_2015_003).

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MOBILE PERSONAL LEARNING ENVIRONMENT AS PRACTICAL APPLICATION OF MOBILE TECHNOLOGY IN PRIMARY SCHOOL EDUCATION

Tomáš Javorčík

University of Ostrava, Pedagogical Faculty
Mlýnská 5
Ostrava, 701 03, Czech Republic
+420 774 505 538
Javorcik.Tomas@seznam.cz – D13703@student.osu.cz

Abstract: *New technologies can not only replace traditional teaching tools, aids and methods, but also expand their possibilities with the elements of managing one's own learning process, nearly unlimited possibilities when searching for information, communication and global cooperation. By new technologies we mean particularly mobile technologies represented by tablets or smartphones. Mobile technologies can be used in many organizational forms and in various kinds of education (museum education, non-formal education, informal learning, or Place-Based Learning). The Personal Learning Environment seems to be another effective way of interconnecting modern technologies with the pedagogical approach. This paper is aimed at the possibilities of the use of the Personal Learning Environment in the Czech school environment (upper primary school pupils) for teaching of natural sciences with the use of mobile technologies.*

Keywords: *mobile technologies, Personal Learning Environment (PLE), mobile Personal Learning Environment (mPLE)*

1. Introduction

Lately, the implementation of mobile technologies in education has been an often discussed topic. Keengwe and Bhargava [1] argue that the integration of mobile technologies in education is an irrevocable process. The enormous potential of mobile technologies lies in their omnipresence and the possibility to share information through social networks and cloud services.

The characteristics and possibilities of mobile technologies suggest that they can help in the development of all the key competencies (learning, problem-solving, communication, social, personal, civic and working competencies). One of the possibilities of the development of these competencies through the use of mobile technologies is the so-called Personal Learning Environment.

2. Personal Learning Environment

Mobile technologies can be used for developing learning competencies when creating the so-called Personal Learning Environment (PLS) in the mobile version for tablets.

The term PLS can be defined either from the technical or pedagogical point of view.

As far as the pedagogical point of view is concerned, Attwell's definition [2] is used that defines the PLS as a new way of using new technologies in education that supports the organization of an individual's own learning process.

The technical point of view characterizes the PLS as a set of tools and services that can be used for everyday personal learning and cooperation [3].

Chatti's definition [4], which contains both technical and pedagogical points of view, seems to be more general. Chatti defines the PLE as a set of simple services and tools that are controlled by pupils. The main idea, however, is not the integration of various services in a centralized system, but offering them to a pupil who can then use them. Therefore, a pupil can manage and decide about the use of their learning space, through which they can share their knowledge with their classmates.

The definition implies that the implementation of the PLE in education is rather a didactic issue than technical.

To specify the definitions, Igmato and Zeilasko [3] list the signs of the PLE:

- It enables to adapt the educational environment to learning styles.
- It supports collaborative education.
- It helps manage educational aims.
- It interconnects various services and tools.
- It helps search, sort and share notes.

The comparison of the PLE and VLE (Virtual Learning Environment) can be seen frequently. The classic example of the VLE is the eLearning system Moodle. Attwell argues that the PLE is an alternative to the VLE. Direct comparison of the features of both the PLE and VLE can be seen in the Table 1.

Table 1 VLE and PLE Comparison [5]

	<i>Advantages</i>	<i>Disadvantages</i>
VLE	Easy to use and a meeting place for students; Safe data storage; Reliable and regularly updated software; Guaranteed by an institution.	Selection depends on an institution; Access to the content is time-limited; Environment limits the possibility of communication through personal messages; Tools and functions are limited by software and an institution.
PLE	Created by students; Students can identify with an environment (tools, sources, equipment); Support of cooperation and co-creation; Unlimited access to the content; More collaborative and social.	Superior level of management on a student's part is required; The user can miss the VLE institution integration.

2.1 Mobile Personal Learning Environment

The features of the mobile PLE (mPLE) coincide with the features of the general PLE. Its mobility, however, enables it to be used wherever and whenever one wants. It is the mobility that makes the mPLE different from the general PLE and that enables it to be used in various organizational forms of education. The disadvantages of the mPLE are underpowered mobile devices, a limited battery capacity and a smaller size that does not allow the creation of a more extensive content, which, however, can be created in different ways (short note, audio or video recording, photograph, scheme, etc.). Further development of applications and tools can minimize all of these disadvantages.

Apart from the possible disadvantages, the mPLE has one major advantage, which is the interconnection of all three parts of the educational system:

- Formal education
- Non-formal education
- Informal education

The mobility enables the user to use a set of tools (mPLE) for information processing in different situations: during instruction at school, during an optional course, during a museum visit or a field trip.

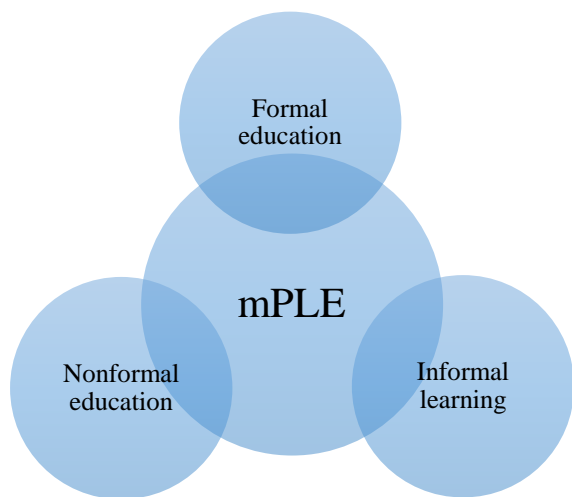


Figure 1: mPLE Educational System Components

When processing information through the mPLE every user can create a personal digital portfolio. By a digital portfolio we mean a user space for working with information. [6]

- Saving
- Sorting
- Completing

The collection of processed information has archival, reflexive (retrospection of a professional/personal development), free time (image gallery), informative, educational (one’s own materials and materials of other users) and aggregation functions. [7]

3. Implementation of mPLE in Elementary School Education

The possible implementation of the mPLE in an elementary school required information about the way in which mobile devices are used in this type of schools.

Study, interviews with teachers and consultations helped discover that there are three concepts of the integration of mobile technologies in Czech schools:

- BYOD (*Bring Your Own Device*)
- Shared school devices
- Tablet used only by a teacher

Neumajer [8] considers the BOYD concept to be the most suitable one. This concept, however, is not widely represented in Czech schools. On a global scale, the concept is becoming more and more popular [9] and we believe that it is to be the best choice for the implementation of the mPLE.

The so-called shared school devices are the most frequent way of the integration of mobile technologies. Tablets are being lent to pupils either for the entire time of instruction or only in selected subjects.

An inappropriate concept of the implementation of the mPLE is when a tablet is used only by a teacher.

3.1 Suitable mPLE Solution for Elementary School Purposes

When creating the mPLE proposition, the way in which mobile technologies are used in a particular school and the operating system platform need to be taken into account.

Considering the popularity of the concept of shared school devices, it is necessary to propose the eventual application in a way so that pupils can work with the notes (or create further notes) even if they cannot use the mobile device.

That is why we chose the version with all the mPLE tools for tablets and other devices (PCs, laptops, cell phones) being accessible through the web interface. At the same time, this choice will help us solve the problem of diversity of operating systems on these devices.

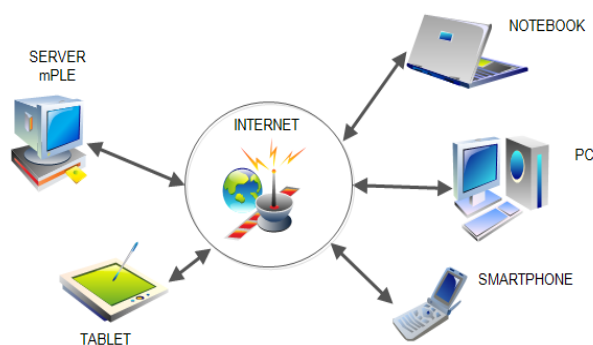


Figure 2: mPLE Access Scheme

The developed application, the contribution factor of which we will be examining later along with the development of pupils’ key competencies, will contain the following tools:

- Quick note
- Tool for creating simple diagrams and mind maps

- Terminology dictionary
- Double notebook
- Address book for storing photographs, video and audio recordings

One of the rarely solved areas of the PLE are insufficient or non-existent tutorials on the use of the PLE individual tools. Another issue appears to be the selection of suitable educational methods and strategies that would form the PLE through the use of mobile technologies.

4. Conclusion

We cannot avoid mobile technologies in the modern educational system. Tablets and other mobile devices offer many possibilities that can improve the education process and make it more interesting. One of the possibilities is the PLE that can be optimized for mobile devices (mPLE).

Pupils will be able to use a set of tools accessible through the web interface during instruction in school, in their extracurricular activities, and in other possible education or profession. Pupils will be able to access processed information through their user accounts and will be able to share their notes with their classmates. The interconnection of all parts of the educational system is one of the advantages of the mPLE compared to other ways of implementation of mobile technologies.

Our research will be based on the implementation of the developed mPLE in one of the natural science subjects (physics, natural history, or chemistry). The research will be aimed at the development of key competencies, particularly the learning key competence, which is often neglected by teachers.

The target group on which we intend to focus will be upper primary school pupils – particularly because the purpose of primary education is to develop the aforementioned competence to the level which can be attained by particular pupil. The mPLE might improve this process and make it more effective.

The research will be conducted as an experiment. The experimental group of pupils will be able to use mobile technologies and the mPLE while the control group will be able to use only mobile technologies and will not have access to the mPLE.

Questions, which we ask ourselves not only in relation to our research and to which we would like to have answers at the end of it, are as follows:

- Which organizational forms, educational procedures or methods are suitable for using mobile technologies in school?
- Is the use of mobile technologies in the education process necessary?
- To the development of which competencies can mobile technologies contribute?

Acknowledgements

This paper has been written with the support of the Student Grant Competition (SGS) of the University of Ostrava. The title of the SGS project: Mobile Technology and Social Media in Education; SGS7/PdF/2015-16.

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THE IMPACT OF COMPUTER ACTION GAMES ON THE COGNITIVE SYSTEM: A SHORT REVIEW

Andrzej Cudo – Marta Jaśkiewicz

John Paul II Catholic University of Lublin

al. Raławickie 14

Lublin, 20-950, Poland

+ 48 81 44 53 509

andrew.cudo@gmail.com – martajaskiewicz007@gmail.com

Abstract: *The aim of this review is showing the impact of playing computer action games on the cognitive processes- mostly on attention. Firstly, we described results from behavioral research indicating that the influence of playing computer games on attention, working memory, short-term memory or cognitive flexibility is not consistent. Secondly, results checking the impact of training connected with computer action games on event-related potentials (such as: N1, P1, P2, P3) are mentioned. Additionally, we present longitudinal studies carried out to investigate the persistence of computer action game training on cognitive abilities. Finally, we give some critical view of factors such as: playing experience, kind of game, participants' sex and motivation which can affect the result of mentioned studies.*

Keywords: *action computer game, cognitive functions*

1. Introduction

The intensive development of new technologies has contributed to the fact that the computer has become part of human life and entertainment tool. More and more people spend their free time not only using the Internet or social networking capabilities, but also playing various games. Some of them are action games in which a person takes the role of a virtual character whose task is mostly to kill as many enemies as possible. However, hours of gaming are not without consequences for the player. It should be noted that 58% of the U.S. population plays video games, and the amount of players in the period from 2009 to 2011 increased by 241% (*The 2013 Essential Facts About the Computer and Video Game Industry, Trends in Digital Gaming: Free-to-Play, Social and Mobile Games*). In addition, 41% of players believe that computer games are more valuable than music or cinema. Besides 43.5% of the best-selling game console in 2012, are games of action and "shooters" (*The 2013 Essential Facts About the Computer and Video Game Industry*).

This new phenomenon, which replaces the earlier forms of entertainment, is the subject of many studies in psychology from the 80-ies of the XX century. In most of them the negative consequences for the social and emotional functioning of the individual are shown. However, research in the field of cognitive processes can show the positive effects of action computer games. After the Green's and Bavelier's article in Nature in 2003, there were established more and more studies on this subject [1].

2. Behavioral research

Most research on computer players focused on finding differences between players (*VGPs* - *video-games players*), and those who do not play at all in the games or who play occasionally (*NVGPs* - *non-video-games players*) and play in the other game types (e.g., *RPG* - *role playing games*).

The differences between these groups were sought in a variety of cognitive processes and using different research paradigms [1, 2]. It was noted that VGPs have a greater

range of visual attention than NVGPs in the study using the functional field of view task. In addition, researchers using attentional blink task paradigm demonstrated that VGPs have a greater ability to information processing over time than NVGPs [1]. Additionally, differences in the spatial attention and working memory using enumeration task paradigm were found [1, 3]. It should be mentioned however that other studies did not confirm these results [4,5]. Researchers have shown also differences between VGPs and NVGPs for visual short-term memory [4], working memory [6], visual searching [7, 8], attention switching [4, 9-12], and cognitive flexibility [13]. It was observed that the experience of action games can improve top-down control of attention processes (top-down), and may also modulate the negative effect of bottom-up attentional capture [14, 15]. However, there are discrepancies whether computer action games also have an impact on these processes [16]. In addition, the researchers also postulate that VGPs and NVGPs have similar control mechanisms of visual attention, but VGPs have a better ability to scan the field of view, which leads to a faster response in experimental tasks [7].

The studies mentioned above show that there are many differences between the two groups in cognitive processes and functions. Researchers often show the positive effects of playing computer action games. However, the results are not conclusive. Some studies indicate their existence [1-3], while in others, using an analogous paradigm those effects are not observed [4]. In addition, most research oscillates around the differences between VGPs and NVGPs focusing on different cognitive functions which are verified in different research paradigms [see 1-4, 7-11, 14, 15]. Moreover, within the same paradigm, the researchers use different test procedures [see 4, 9, 11].

In addition to the investigation of the differences between VGPs and NVGPs, researchers wondered about the consequences of action games training – its impact on cognitive abilities and transfer these abilities to other tasks [17-19]. Studies were conducted in the corresponding paradigms as the research on VGPs and NVGPs [see 1-4,

11, 12]. For example, subjects (who have no experience in action games) after the training consisting of daily playing action games (e.g., *Metal of Honor: Pacific Assault*) revealed an increase in the accuracy and response time for tasks of recognizing the spatial and temporal aspects of attention [1-3, 11]. However, other studies using analogous procedure did not confirm these results [4]. In addition, the researchers observed differences in the results of training depending on the strategy type [20]. In this case, the differences were only in the three of twelve cognitive tasks used in the study. This study indicates that action games training improves cognitive functions, especially functions corresponding with attention. However, as in the case of investigation of the differences between VGPs and NVGPs, the results are inconclusive and require further verification.

2. Psychophysiological research

Previous studies have used behavioral indicators of differences between VGPs and NVGPs and differences between the state before and after the training based on the action computer game. These researches have used indicators such as reaction time, correctness answer, etc. However, the development of science and technology resulted in the use of eyetracking and EEG methods for exploration of the impact of computer action games on cognitive processes. [15, 21-24].

First of all, the psychophysiological studies showed an increase in the P3 component amplitude after action games training [23]. There was also a difference for the component amplitude between VGPs and NVGPs [21]. In addition, the P2 component revealed a similar dependency as the P3 component in the research using action games training. However, there were no changes in amplitudes of the P1 and N1 components and the latency of P2 or P3 component [23].

In this regard, it is considered the P1 and N1 components may be associated with the activity of neurons in the extrastriate pathway, which is associated with the area V1. Therefore, these components can be psychophysiological correlates of early visual information analysis [25]. Moreover, even if the amplitude of these two components may be modulated by selective attention, their character is mainly exogenous [26]. These results confirm the behavioral studies observations [see 14].

It was also observed that those who undergo action games training, despite the lack of differences in the accuracy of the task, differ with respect to the amplitude of the P2 and P3 components [23]. The increase in the P2 amplitude may reflect an adaptation to the requirements of the task for the selection and control of attention [27]. However, the component P2 can also be associated with distinctness stimulus [28]. These studies confirm previous behavioral results showing the impact of training on improvement of cognitive functions in a top-down process. On the other hand, the results show the ambiguity and possible other interpretations.

The P3 component is considered as an indicator of the allocation of attentional resources [29]. This interpretation would suggest that the action game training gives greater

ability to allocate these resources in order to solve task [23]. The increase in the amplitude of this component was observed for the inhibition ability of the distractors impact [29]. Other research paradigms confirmed these observations. Greater inhibitory effect of distractors - in a situation of irrelevant stimuli exposure, caused greater suppression of the SSVEP amplitude in the group of VGPs than NVGPs [21]. In addition, in studies using fMRI less activation of visual motion-sensitive middle temporal area / medial superior temporal area was observed only for VGPs in the task with distractors [30]. However, research connected with The Dual Mechanisms of Cognitive Control Theory [31] indicated a negative relationship between the experience of playing action computer games and proactive control [32].

These findings are consistent with previous behavioral results and suggest better filtering of on the early stages of information selection by VGPs than NVGPs. However, it is difficult to formulate definite conclusions. There is little research on psychophysiological correlates of cognitive processes connected with playing computer action games. In addition, the use of different research paradigms significantly hinders the ability to compare these results. However, the results of experiments show that the differences between VGPs and NVGPs are associated with top-down cognitive processes. A similar relationship can be observed in researches on action games training. In both research streams exposes a greater ability to inhibit the effect of distractors, which may be associated with a higher allocation of attention resources in VGPs and subjects after the action game training. However, the deterioration of proactive control in VGPs [32] may be associated with top-down processes. The results are in contradiction with previously studies. This suggests that the issue of cognitive mechanisms connected with computer action games should be future explored.

3. Longitudinal research

As it was shown, playing computer action games contributes to the improvement of cognitive abilities. However, a significant question is whether this improvement maintains at a time or changes. Feng, Spence and Pratt [33] observed that ten-hour computer action game-based training results in better execution of correctness task and this effect mentions for five months. Other studies confirmed above results [34].

In addition, it was observed that the strengthening of contrast sensitivity function remained even over a year after completing the action computer game training [35]. It should be noted that these conclusions [33, 34] are based only on the results of the correctness task and do not include other measures, such as speed of response or psychophysiological response. In addition, there are some uncertainties which can affect the results. In the study by Feng, Spence and Pratt [33] the two men from the experimental group continued to playing in computer action games in the period from the end of training to the test time 5 months later [33]. Moreover, in the case of one woman there was a decrease of accuracy of 14% [34]. In addition, participants were playing up to 4h/month in other

types of games in the last 3 years, which also may have influenced the results [34].

On the other hand the studies by Li et al. [35] considering differences between the measurement of after a training session and after the adjournment, reported an decrease in accuracy of the task execution by 15%, but the result was still significantly higher than in a situation before training [35]. However, in both experimental and control group, postponement ranged from about five months to two years. Therefore, it is difficult to determine whether after a break of more than five months the results would still be clearly higher than before training. The effect of action game-based training may persist over several months afterwards. It should be therefore mentioned that this effect has been shown only in the paradigm of functional field of view task for correctness of the task.

An important question still remains whether the observed persistence of the effects of training also applies to other cognitive processes than just associated with the expansion of the field of view. An important issue to be resolved is the question of what is the base of the observed effect. In addition, we should consider the impact of memory and cognitive control on the results.

4. Critical comments

Because of the various research paradigms and different procedures the interpretation and comparison of the results poses some problems. The text below highlights a few more differences between the studies, which can explain differences in the results obtained.

Firstly, the disparity in the results can be caused inter alia by heterogeneity of the group of subjects. The minimum experience in playing action games ranges from about 3-5 hours / week for 6 months [1-3, 11, 15] to 7h/week for two years [4]. In addition, NVGPs are considered as those who did not have any experience with action games or the experience was minimal. Moreover, in the case of training, the time ranged from 10 hours [see 1-3, 21] by 21.5 hours [4] and ending with 50 hours [see 11]. These differences hinder a clear interpretation of the results, in particular for assessing the impact of action games training on cognitive function.

Secondly, VGPs are considered as players playing action games with both first and third-person perspective (e.g., *Auto 3*, *Halo*, *Counter-Strike (CS)*, *Crazy Taxi*, *Rogue Spear*) [1-4, 11] or as players playing games only with first-person perspective [5, 6, 13, 24]. In addition, in the case of training different types of action games were used [see 1-4, 11, 22]. This inconsistency may be important, because other studies suggest different brain activity during the playing action games using avatar first-person view, compared with the third-person view [36]. Moreover, the difference in brain activity during passive situations, associated with a lack of movement, and the situation when the character moved has been observed [36]. To sum up, omitting the importance of the game type may contribute to different results despite of using similar research paradigms.

Thirdly, most of the subjects in the study of differences between VGPs and NVGPs were male. However, in the

studies focused on the impact of training gender was balanced [1-3] or women were the majority of the respondents [4]. In this regard, Feng, Spence and Pratt noted that women achieve greater benefit from the workouts in the functional field of view task and the mental rotation tasks than men [33]. It should be noted that these differences may hinder comparisons between disparate studies, and thus also their unique interpretation. However, studies on the same group have shown a similar procedure, the lack of gender differences in the accuracy of before and after training based action games [34]. This suggests the issue of gender differences is still unclear in studies of the impact of computer action games on cognitive system.

Finally, it should be indicated that VGPs may be more motivated to complete a task than NVGPs. The experience in action games may give more motivation to achieve better results. What is more VGPs may have knowledge about the positive impact of games on cognitive performance because of their playing experience [37].

Problems and methodological errors described above may contribute to the difficulty of comparing results from different studies. Similarly, analyzing the impact of video-games-based exercise on the functions and cognitive processes, in particular, the attention should be paid to the possibility of subsequent draw firm conclusions from the conducted research. Without strict testing procedure it is difficult or even impossible.

We can find some ambiguities in studies of cognitive processes connected with playing action computer games which should be an area of further exploration. In addition, an issue that requires an examination is the problem of persistence of the effect of training on the functions and cognitive processes [see 1-4, 11, 23].

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DEPICTION OF SOCIETY INFLUENCE ON AN INDIVIDUAL IN THE NOVEL *HROMADNÝ HROB PRI NEW HONTE* BY LAJOS GRENDEL

Magdaléna Barányiová

Univerzita Konštantína Filozofa, Fak. stredoeurópskych štúdií UKF v Nitre, Ústav stredoeurópskych jazykov a kultúr

Dražovská 4

949 74 Nitra

Slovakia

+421919282336

baranyiovamagdalena@gmail.com

Abstract: *The aim of this work is to introduce known Hungarian writer living in Slovakia, Lajos Grendel. In the section titled Personality Lajos Grendel will focus on the characteristics of the creation of the author. In the section titled Hromadný hrob pri New Honte analysis is novel with emphasis to reflect the impact society of the individual. At the end of this article summarize the benefits of Lajos Grendel in the context of the Central European cultural region.*

Key words: *Lajos Grendel, New Hont trilogy, Hromadný hrob pri New Honte, society, individual*

1. Introduction

An age long mission of literature is not only to set the mirror to life but to rate and judge it as well. Even in democratic society literature cannot renounce this role if it wants to fulfil its mission – to be a co-creator of better life, to be a teacher and governess of a new man, an organizer of his emotional and mental experience. In connection with Grendel's prosaic work, there in his foreground is an inner world of characters, misery, suffering which results from the feeling of being estranged from the society, loss of belief in the good of man, looking for the meaning of human. However, the author did not find positive solution, he just mentioned the problem. Grendel was always interested mostly in destinies of Hungarian inhabitants living in Slovakia. Grendel's role in the 1980s as a significant representative of minority literature represents scenes and experiences of novels that are through people and memories bound specifically to minority Hungarian society living within the territory of the Slovak Republic. The value of importance of his work, and that not only for angered community (Slovakia - Hungary) but also for wide culture (the whole Hungarian literature) and in guaranteed sense for overall human meaning, has the message.

2. Lajos Grendel, The person

Lajos Grendel belongs among prominent national Hungarian authors living in Slovakia. As a literary scientist, writer or politician he is respected not only at home but abroad as well. Karol Wlachovský significantly participates on his literary work within the translation activity; he together with Lajos Grendel creates almost an inherent couple. His writing activities were awarded by various state and private prizes and honours. Grendel's prose unconditionally attracts every conscious or well-read reader by its psychological motive. By psychology here I do not mean a particular type of prose, let's say psychological that makes a closed epic unit, but I mean a certain collection of life values, feelings, characters' destinies that create a real epic subject of Grendel's prose. He, in his novels, analyses and evokes a particular standard of living, a certain way of life of a small town

inhabitants, that is in this novel is represented by the town of Levice, and he reflects all this with his traditional cultural, habitual and psychological orientation. On all accounts, I have to remind also ideological nature of his prose.

Already in the time before the Velvet Revolution the author was talking about the things that would represent certain taboo in the society, though he was talking about them in extensive and convincing connections that after all represent the essence of his whole prosaic thinking. Grendel in his successful experiments to generalize does not take stand on details, he cares about forward view, not once, unfortunately, from the anxiety [1]. In situations when the novel reality touches the history, the author uses the method of depicting these aspects of his prose thanks to grotesque [2], both tragical and comical at the same time. We also have to appreciate the openness of Grendel's ideological suggestions in such way that the social program which the ideology represents he puts into the relationship with the human problematic of an individual. Another aspect that significantly influences the meaning of Grendel's prose is the status of an individual as such. Each of us, thus every individual has nowadays a chance to reflect the world universally which covers his human integrity. Grendel is so called a master of group psychology. He does not try to form single characters because his characters represent only mirrors in which the whole society is being reflected [3].

3. Hromadný hrob pri New Honte

Grendel provocatively confronts tragically-historical past and blinded present that is dealing with this past in a loutish and silly way. The present does not have any real connection with the past; but if it finds the traces of the past it manipulates with them according to the own pettiness and selfish way of thinking.

The novel can be considered to be a portrait of a cynical historian and intellectual for whom the history means nothing except educational materials. The author in his work particularly well depicted some imaginary shield of an individual persecution (by the collective determination

of inhabitants of village T.). That scene written with a big vigour and in virtuoso passages of dialogues on one hand reminds a classical depicting of village gentlemen by the authors such as M^óricz or K^údry, and on the other hand the masters of the Czech grotesque absurdity such as Hrabal or film makers Forman and Menzel. An aggressive, narcissistic pharmacist is a perfect caricature of an eternal provincial pawn whose self-confidence leads him to be regarded as something like a prophet in a small community, the role he is never tired of and that gives him a great satisfaction.

The reader through the narrator sees and perceives the history and the present in the whole relativity in an ironic overview while the critique directs to those characteristics of the individual and the society which in the course of history have stuck on a human passively adapting to the circumstances and that's why human adaptable. He set the scene of the stories into the Central European territory in which through the course of history, let's say from the Turkish invasions, various armies have changed once as the winners and the other time as the defeated while their behaviour, regardless of nationality, was just managed according the logic of winners or losers. And this fact resonated in lives of ordinary people. He often paid attention to themes that put the incriminated period of overturn on the pillory. Actually, the majority of his works talks about absurdities of the era, about society, politics and about injustices in Slovakia. He writes about a man who wants with might and main suit to impalpable expectations – of course, unsuccessfully. He writes about power that it itself is

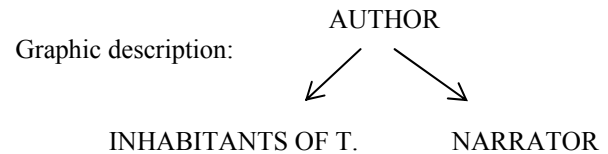
Grendel's analysis of contradictory feelings of a modern man is a typical motive of the trilogy *U nás v New Honte*, consisting of three novels: *U nás doma*, *v New Honte*, *Hromadný hrob v New Honte a Kráľ Matej v New Honte*. Common features are visible in thought processes, in inner structure and in precise personality imaging. As another common feature of these novels can be considered an important knowledge; man is responsible for the society but the society in higher rate is responsible for man. Man, as a social being, cannot exist as individuality – he needs other people, love, pleasure – in vain he resists against it.

The reader, on the basis of details, situations, through psychologically depicted characters, gets not only the picture of life of these characters, picture of the town but mainly the general picture of life of the people in village T.; he learns certain things about national, cultural and political problematic of the time.

The other novel of the New Hont trilogy narrates the story of a pedagogue at university, respectively focuses on important breaks in his life after he inherited a family plot in a small village with the name of T. Thus, an intellectual man gets again into the centre of interest. This citizen with his intellectualism, irony – clearly condemns a mass man without face, also himself, giving up own being and making compromise with social being; but the criteria in which name he does not judge only suggests. It is undoubted that Grendel in this novel wanted to create a transient man of the 21st century as well. Grendel's hero is again and again experiencing the history (stories of a

person and society) and in every case is experiencing them according to own inner laws. His intention is never a sort of practical aim but building own personality.

We see in Grendel's characters such individuals who with phlegm and resignation accept being or have the feeling of guilt.



One conception of the novel focuses on the main hero and at the same time the story narrator.

The second conception is focused on the resolution of the T. village inhabitants.

There in the subject of the novel are overlapping two main lines that we cannot separate one from another because the fabula poorness is coping through retrospectives in the compositional process.

1; Line of present story – it represents dynamic motives in fabula.

2; Line of thought - it represents reflexive motives in fabula

THOUGHT LINE:

1; Past train: Train of war memories that hit T. village too.

2; Tragic stories train: Discovery of skeletons in the mass grave.

3; Present train: Solving “problems” caused by mass grave discovery.

STORY LINE:

a; Exposure-life “stereotype” of a history docent at the University

b; Plot: Inheriting the house with the land in the village of T.

c; Knotting: Departure of the main hero to T., mass grave disclosure.

d; Culmination: Necessity to write “the history” of T. village.

e; Unravelling: Tension – Creation of the novel Mass Grave.

Grendel comes with a new concept of a man and his life: life and the man's way is not the way of a lonely individual but a permanent overlapping of many destinies that are not only touching one another but they also condition, supplement and contradict themselves. Human life and destiny is not only responsibility for me and towards myself; it is also responsibility for the others and towards the others.

Such knowledge allowed the author to penetrate to the questions of life and death, love and hate, to questions of “an inner man” and self- knowing. This time the setting place is not the town of New Hont itself although the name of the book evokes it, but a small village called T. We could have met with this little village without the name – because we can hardly accept only one letter as the name – in several tales in other books by this author. It seems to us that Lajos Grendel is consistent at baptizing the places of

his stories. The story itself is even banally simple but written with gentle humour. He, with understanding irony, describes activities of local authorities from a small village who try to get for themselves the most out of any old tragedy. One day a university docent, who lives with his girlfriend Lívia in Bratislava, receives a letter from which he learns that he inherited a house in the country, specifically in the village of T. This fact has nothing to surprise us with; finally it can happen to everybody. “The mentioned plot I have only recently inherited from my late mother and the heritage represents a house in a rural seclusion and some piece of land” [4].

The heir – story narrator – sets off for the village T. to see his newly acquired property. “T. is the godforsaken village and where a little lark is singing but otherwise nothing special. For me, all the villages were as one, houses, gardens, churches. T. was neither small nor big settlement, as I may conclude, it could have been a village with an average area inhabited by diligent Calvinists and by eager Catholics” [5].

A range of interesting characters is waiting for him (and for the recipient too) here. The inhabitants of T. village are somehow like from the time long ago; living according to their own value hierarchy. At first sight they are friendly, hospitable, kind, interested in everything about the new heir. But on the other sight a perceptive reader already feels a hidden aim of this interest: the more they know about the heir the more it can be helpful in their own progress. At first, friendliness and kindness is only caginess. Grendel, while describing these efforts and also at depicting the characters themselves, uses a kind sometimes even grotesque but not ironic humour without the sign of real mockery. The authorities of the village are represented by a mayor, a notary, a police captain. I cannot forget to mention a typical village gammer, aunt Ilonka with her geese. The very first meeting of the heir with the locals bears the shade of inconveniences. When digging the well they find bones on his land. Well, and with digging the amount of bones is growing only. Finally, the place turns out to be a mass grave. “The thing is that the well diggers found a skeleton on your plot.” [7].

A great tragedy of an individual – the heir of the site, at first seems to be a great tragedy for the village. Well, what the neighbouring villages, the general public, etc., will say about that. As if nobody bothered to whom and when in the history the bones could have belonged to, how they appeared on their present place of rest and most of all: what caused the death of these people?! Was it a murder? A mass murder? Slaughter of innocents? If yes, when? Did it happen in the time of the First or the Second World War? Who were the victims? Jews? Fascists? These questions are probably asked by the inhabitants of the small village of T. but the narrator is somehow not bothered enough with the presence of the mass grave on his land to really deal with them. While, at the beginning he is happy with his unexpected heritage, after newly discovered facts he becomes indifferent to the place. He does not want to have any problems; he would better forget about the place and would never come back to that small village. Thus, thanks to this fact we learn the

character of the heir. It is a type of a man living with his girlfriend in a block of flats in Bratislava. Fromm considers a virtue to love a fellow as well as himself because both people are human beings.

We cannot separate self-love and love because love to me myself is firmly connected with love to other person. Love is inseparable in relationship between the objects and own person. But this Fromm’s statement is not true about the heir who does not want to be responsible for anybody and anything. He is a person without emotions who even after tragic event of his friend indulges himself in sexual games with his girlfriend on the same day. And, immediately as he learns the fact that they found a mass grave on his land he wants to renounce the land. “But I definitely was lacking the virtue of determination as well as together with other virtues I was also lacking the courage, agility and inventiveness, and these qualities avoided me the whole life by giving me a wide berth.” [6].

But to renounce the land is out of question. The villagers by no means did not agree with that. The mayor immediately after the first meeting offered him an honorary citizenship, aunt Ilonka offers her most favourite goose for the docent...

The task the villagers entrusted him with is to write the history. Well, but how the history can be written when nobody knows thanks to whom the mass grave originated? The heir disposes with two versions of the “stories”. One version is represented by Doctor Demeter who claims that SS soldiers are responsible for the mass grave.

The second version of the story is by Almáši, he as a former partisan says that the Russians are responsible for the mass murder.

Still, it is impossible to write the history based on two contradictory statements! Finally, he decides to write a novel called Mass Grave. Although the villagers try to attract the heir of the mass grave under their snuggle desirous wings by any possible ways, well finally they succeed only through very well spun web that was wrapped in sweet-sticky love of a young girl. We also have a possibility to know the main hero through relationships. We can divide the relationships into three life stages:

The past: His first love Andrea who emigrated and who in any way intervenes into the story, only as if she were occupying several pages of the novel.

“She is four years older than me and in spite of this she was my friend in my childhood and later she was my first real mistress” [8].

The present: At present he lives with an interpreter Lívia. It cannot be said that this is a harmonic relationship. Lívia, the heir’s half, an emancipated woman who does not need a husband (or marriage) to be happy, a child would limit her as well at work which on the other hand satisfies her. Despite of living together with the narrator in his flat she also keeps her own flat – as some loophole in case of unsuccessful relationship. With discovery of the mass grave there arise complications in this relationship.

The future: Ilonka, a simple village girl, replaces Lívia. “Weekends spent with my Ilonka flow much more pleasantly, playfully, I could say more spontaneously.” [9].

Ilonka, a young, beautiful woman, was invited by the mayor to the dinner to make more pleasant still so nice moments with her beauty. Apparently, this was the intention of the village inhabitants that eventually came off. Ilonka does not leave anything to chance, and so Livia can read her love letter that surprisingly doesn't even move with her. During only one evening Livia falls in love and moves away from the narrator. Without questions, answers, actually without any word. The end of the novel this time as well does not have signs of romantic conclusions or gradual unravelling. We do not know what the destiny of the village settlement is; also Livia does not come in tears begging for forgiveness. Ilonka becomes the narrator's new mistress, they together move to the village of T. According to what we learn in the novel about their everyday life, this proves that he tries to strengthen relationships by indeed original sexual games. "We usually play "a slinking cat with eggs", "golden eagle and marmots." [10]

It is not quite clear to us why there in the name appears again the town of New Hont. After all, the story has any connection with other new hont works; there are no common characters even any other parallels. Except the name of the town itself. It also does not appear in the novel; only in its ending the author writes shortly about the trains coming to the village T. from New Hont. Lajos GrenDEL is a prose writer very typical for the present times. Southern Slovakia, history and man stand side by side as values in his prose.

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ALTERCENTRIC AND EGOCENTRIC INTERFERENCE ON LEVEL-1 AND LEVEL-2 PERSPECTIVE TAKING

Agata Złotogórska

Adam Mickiewicz University

ul. Szamarzewskiego 89/AB

Poznań, 60 – 568, Poland

agata.zlotogorska@amu.edu.pl

Abstract: According to Apperly and Butterfill there are two separate systems which are responsible for reading minds. One is cognitive efficient and inflexible, second is cognitively demanding but flexible. Aim of present study was to establish whether this two systems of theory of mind are activated in level-2 perspective taking. For that purpose, 77 people (mean age = 29.13; 54,5% women) were tested using computer version of Perspective Taking Test designed by author of this paper. Results show that subjects make both – altercentric ($M = .96$; $SD = 1.03$) and egocentric errors ($M = 1.62$; $SD = 1.36$) on VPT-2. Therefore, it is possibly that cognitive efficient and inflexible theory of mind system can support cognitively demanding but flexible system, when it is analyzed how the other person sees an object from a different perspective.

Keywords: altercentric errors, egocentric errors, level-1 visual perspective taking, level-2 perspective taking, theory of mind

1. Introduction

Social cognition is a broad construct that refers to perception of social stimuli, the theory of mind (ToM) and attributive styles [1]. This mental process mediates between basic cognition processes and social behavior. Specific clues, that provide basics for understanding of other's mental states are the knowledge of a direction of another participant's gaze in social interaction [2]. On this basis, between 9 and 14 months old infants develop the ability to share attention with another participant of an interaction [3]. This fundamental ability, considered as a foundation or a precursor of the mentalization, allows children to follow the other person's gaze and indicate interesting items. By sharing observations children learn to take another's perspective [4].

1.1 Visual Perspective Taking

Perspective-taking in the broad sense means "all the attempts of one person to understand or perceive a situation in the way that another person understands or perceives it" [5]. There are two types of this ability: the visual perspective-taking (prediction of what and how the other person perceive) and the social-cognitive perspective taking (requiring the creation of metarepresentation, identifying thoughts, intentions or motives of another person). For this purpose the brain adapts to the surrounding world and reflects its state (*mind-to-world*) [6].

Well-known problem of *The Three Mountains* it was observed that children under seven years old who are still in the stage of pre-operative thinking, usually cannot cope with this problem and usually choose the image of a mountain from their perspective, that is, they make the mistake of self-centeredness (egocentric interference). Surtees and Apperly [7] studied the perspective taking of children aged between six to ten years old and in adults. The results indicate once again the lack of significant improvement with age in taking account of someone else's perspective. When the other person's perspective was different from their own, subjects committed more egocentric errors (they were influenced by their own visual

experience when judging what the avatar saw) and altercentric errors (they were influenced by what the avatar saw when judging their own visual experience). In the opinion of Surtees and Apperly this demonstrates automatization of perspective taking.

1.2 Two levels of visual perspective taking

According to Apperly and Butterfill [8] this automatization of perspective taking is one of evidence for the existence of two separate systems (two-systems theory, TST) which are responsible for mind reading. One is low-level module for simple assigning perception, knowledge and beliefs attribution it is cognitively efficient and automatic, but inflexible. Second, high-level processing module is cognitively demanding, but flexible. It uses the knowledge and reasoning processes available for all other types of reasoning.

On the other hand Flavell [9] has identified the perspective of the first (*level-1 visual perspective-taking*) and the second level (*level-2 visual perspective-taking*). The level-1 perspective taking emerge at the age of two years. At this stage of development child understands that the other person can not see the same objects as it is, if he is looking from another angle. While on the level-2 perspective taking, appearing at the age of three years, the child knows that from another point of view, the other person can see the same objects, but in a different way. Only four years old children, on this basis, understands that having different beliefs about reality implies behaving in a different way (*ibidem*).

According to Apperly [10] automatic, cognitively efficient perspective taking develops early in life and is limited to the simple level-1 perspective-taking. On the other hand, the level-2 perspective-taking involves cognitively demanding, but a very flexible system. Adults use both systems in everyday life, it depends on the requirements of the situation. Indirect, *implicit* measure of automatic perspective-taking, is the evidence of an efficient, but inflexible system activity. Therefore, the evidence of the use of this system are altercentric errors - when the perspective of both individuals differ, participant asked

about their own point of view answers incorrectly by taking into account the perspective of other person. Furthermore, use of cognitively demanding, but inflexible system on the level-2 perspective taking, implies the correct answer to a direct question about your own or someone else's point of view when the perspective, by which the subject is asked, is incompatible with a perspective that is not taken into attention.

Quershi, Apperly and Samson [11] showed an increase in the number of errors, both egocentric and altercentric on the dual-task conditions. According to the authors, this indicates that executive functions are essential in the *selection* of the perspective process, based on which the participant is to formulate a judgment or take a specific action. However, the process of *calculating* what sees another person (eg. if he sees dots on the walls) has not been impaired as a result of the involvement of executive functions in the Luria task. It means that this process is automatic and independent of a cognitive control. The study of Surtees, Butterfill and Apperly [12] shows that the subjects were not automatically taking level-2 perspective of another person's, but used cognitively demanding, but an inflexible system. It indicates that in trials in which subjects evaluated what they see or response time or the number of errors did not differ significantly depending on whether their perspective was consistent or not (ambiguous digits placed on the table), with the prospect of an avatar. This means that the representation of how another person sees the object is not created automatically, in contrast to the representation of what he sees (the level-1 perspective taking) [11]. However, two systems theory is increasingly questioned [13].

1.3 The Present Study

The key question of this study was whether taking someone else's VPT-2 is implicit and measurable by indirect method. In the study [12], described above, was used a questionable procedure. First of all, these studies are not relevant ecologically. The situation, in which the illustrated character sitting at a table surrounded by three walls and the letters or numbers, is considerably different from natural circumstances. In addition, it was wondered whether ambiguous stimuli in the form of numbers "9" and "6" are not often used in everyday life material (puzzles, games, school). Respondents could automatically refer to their knowledge that when somebody see a "6", the person in front sees "9". This task may not require any mental object rotation, nor taking the someone's perspective.

Therefore, it the question was posed what is the role of Apperly's and Butterfill's [8] two systems in VPT-2? In particular, if cognitively efficient, but inflexible system is involved in VPT-2 and as a consequence altercentric errors.

It was assumed that VPT-1 is more automatic than VPT-2. The results obtained by Samson, Apperly, Braithwaite, Andrews and Scott [14] show that subjects take into account the perspective of the avatar, despite the fact that they should not do it, since the question related to their own point of view. Even when participants were informed

that during the entire study the need to take into account only their own perspective and to ignore avatar's perspective, they still had altercentric intrusions.

However it was suspected that besides cognitively demanding, but very flexible system, also cognitively efficient, but inflexible system is involved in VPT-2. According to Surtees, Butterfill and Apperly [12], on VPT-2 egocentric errors should occur (because of high demand of cognitive task) but altercentric errors should not occur (characteristic for cognitively efficient, but inflexible system). Nevertheless the procedure used by them induces some concerns, which have been described above. It may be the reason to draw a false conclusion that only one theory of mind system is used on VPT-2.

2. Method

2.1 Participants

Participants were recruited using internet advertisement. 77 people considered to participated (M age = 29.13; SD = 8.27, 42 females, 35 males). The participants of the study couldn't be minors, adults over 50 years of age, students and graduates in psychology and related fields, the visually impaired or of reduced intellectual ability. All respondents first received an explanation of the purpose and the test procedure then gave informed consent to participate in the study.

2.2 Measures

The study used the Perspective Taking Task (PTT). It is a computer test of designed by author. It has been prepared on the platform DMDX 4.1.1.1. available freeware [15] and is used to measure the ability to take someone else's perspective first and second level. It measures the response time and accuracy of responses to a visual stimuli. The stimuli are images on which a person (man or woman) is sitting at the table and is looking at an object or two objects on it. Some of the items look the same on each side, namely: a glass, a tomato, a box, a pillow, a flower pot and a dish (The Consistent Stimulus). Some of them looks different on each side, namely: headphones, a kettle, a teddy bear and an iron (The Inconsistent Stimulus). The person in the picture looks at these things, but not always sees all, as one of the subjects may obscure other (there are maximum two items on the table). In addition, on the wall behind the photographed person, hangs one of the two pictures (flowers or a horse).

During the test, first on the computer screen appeared the question (eg. "Does he see this item?") and the image of the object, which the participant was asked about. If the participant was ready to move on, he/she pressed the spacebar. Then, appeared the fixation point (at the eye level person in the photo) for 400ms. After this time, for three seconds, the photograph was presented gazing at objects on the table. During this time, participants had to answer the question which they have read earlier, pressing as quickly as possible the green button "YES" or red "NO".

The study consisted of six types of questions. They were measured the following aspects: the level of perspective

taking (Level-1, Level-2) and the type of perspective taking (Self/Other). Trials differed also in the type of the stimulus. On VPT-1 was used both type of the stimuli Consistent and Inconsistent. On the VPT-2 only the Inconsistent stimuli – objects looking differently from a different point of view. First were presented 14 exercise trials, then 40 test samples in a random order. The study lasted about five minutes. The program record correctness and latency responses. The reliability of the measurement in the PTT was high in three kind of trials (Self, Level-1 $\alpha = 0.90$; Other, Level-1 $\alpha = 0.94$; Other, Level-2 $\alpha = 0.91$) and a good reliability (Self, Level-2 $\alpha = 0.84$).

2.3 Procedure

Subjects performed the test and completed the questionnaires unrelated to the current study. Subjects were to answer by using the green button "YES" and red "NO", located next to each other at the site of the keyboard depending on the handedness. Subjects needed to answer correctly on all the exercise trials, to go to the examining trials. Otherwise, he/she was asked to repeat this part.

3. Results

Basic statistics can be found in Table 1.

3.1. Reaction times

Multivariate analysis of variance, where the dependent variable was the reaction time in individual test samples Making Perspectives, and the independent variable gender of the subject, showed that there is no difference between men and women in the time required to take the perspective, $F(1,75) = .02$; $p = 0,88$; $\eta_p^2 < .001$; $M_{women} = 701.92$; $SD_{women} = 208.41$; $M_{men} = 706.12$; $SD_{men} = 197.92$. There was not also a relationship between response times in the different test conditions and the level of education of respondents, $F(4,72) = 2.19$; $p = .08$; $\eta_p^2 = .11$. In contrast, only age had a relationship with reaction time ($r_s < .27- .74$; $p \leq .02$).

Table 1 Perspective Taking Task, reaction times (ms) and number of errors (e) – basic statistics.

		M		SD		min		max		
		ms	e	ms	e	ms	e	ms	e	
Level-1	Self	C	624	.10	188	.30	390	0	1078	1
		I	616	2.30	182	.67	328	1	1036	4
	Other	C	717	.60	186	.64	424	0	1216	2
		I	713	.47	186	.66	416	0	1078	2
Level-2	Self	I	648	.88	205	.99	352	0	1197	4
		I	852	.43	267	.62	390	0	1438	2

C – Consistent Stimuli

I - Inconsistent Stimuli

In order to check whether the Level (VPT-1/VPT-2) and the Type (Self, Other) affects the response time of

respondents, two-factor analysis of variance with repeated measures was conducted on both factors. In all types of trials were taken into account only samples from the Inconsistent Stimuli, as in VPT-2 trials was not the Consistent Stimuli. The dependent variable was the reaction time measured in milliseconds. All results was significant: the main effect of Level, $F(1,76) = 40.20$; $p < .001$; $\eta_p^2 = .35$; main effect of Type, $F(1,76) = 61.34$; $p < 0.001$; $\eta_p^2 = .45$; and the effect of the interaction of Type and, $F(1,76) = 6.98$; $p < .01$; $\eta_p^2 = .08$.

The main effect of Level lays in the fact that the subjects responded faster on the VPT-1 ($M = 695.14ms$) than the VPT-2 ($M = 795.82ms$). Furthermore, the main effect of Type lays in the fact that subjects take their own perspective faster ($M = 684.50ms$) than someone else's perspective ($M = 806.46ms$). In order to understand the interaction of main effects, they were analyzed by simple main effects (corrected Bonferroni multiple comparisons). All interactions turned out to be significant ($p < .001$). In VPT-1, Self trials subjects answered an average of 91.07ms faster than in other trials. In addition, in VPT-2, Self trials respondents answered an average of 152.85 ms faster than other trials (cf. Figure 1).

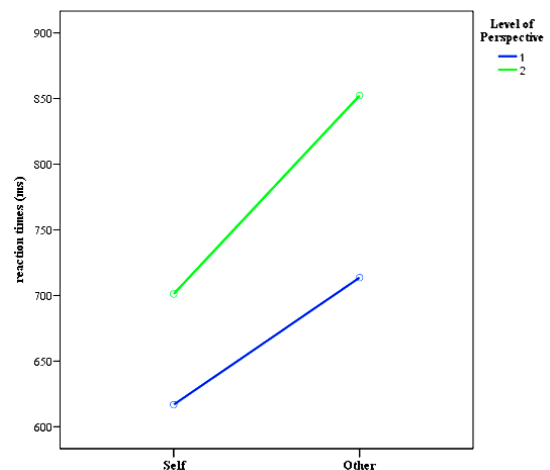


Figure 1: Reaction times (ms) in Perspective Taking Test

3.2. Altercentric and egocentric interference

In analysis of errors on the first and second level perspective, taking into account only the samples from Inconsistent Stimuli, because only in such trials may have been taken altercentric and egocentric errors.

For analysis of the number of errors, it was conducted two-factor analysis of variance with repeated measure on both factors, with Type (Self/Other) and Level of Perspective (Level 1/Level-2). A significant main effect was the Type of Perspective, $F(1,76) = 28.08$; $p < 0.001$; $\eta_p^2 = .27$ and the interaction of main effects Type x Level of Perspective, $F(1,76) = 188.46$; $p < .001$; $\eta_p^2 = .71$. Main effect of Level turned out to be insignificant, $F(1,76) = 2.63$; $p = .11$; $\eta_p^2 = .03$.

Analysis of the simple main effects showed that respondents committed significantly more altercentric than egocentric errors, the average difference = 0.66, $SE = 0.12$;

$p < .001$. Furthermore, the interaction effect was associated with that the subjects taking their perspective committed more errors altercentric in VPT-1 trials ($M = 2.44$; $SD = .75$) than in VPT-2 ($M = .96$; $SD = 1.03$). In addition, subjects taking someone else's perspective committed more egocentric errors in VPT-2 ($M = 1.62$; $SD = 1.36$) compared to VPT-1 ($M = 0.96$; $SD = .66$) (Figure 2).

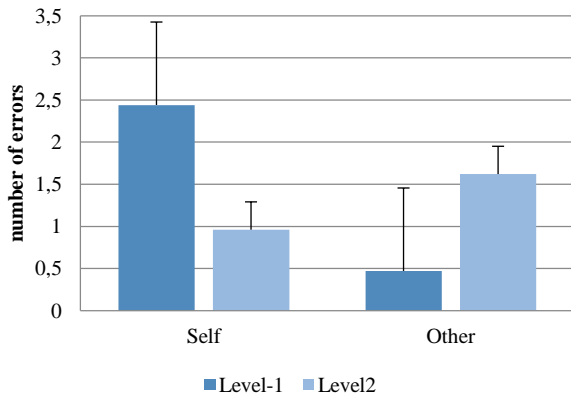


Figure 2: Number of errors in Perspective Taking Test.

4. Conclusions

This study aimed to establish whether two separate systems of theory of mind (cognitively efficient and automatic, but inflexible and cognitively demanding, but inflexible) are activated in level-2 perspective taking. Reported study sought to determine whether on VPT-2 people tends to commit not only egocentric, but also altercentric errors. There was likewise tested hypothesis that VPT-1 of another person operates more automatic than VPT-2.

Statistical analysis of the present study results confirmed the hypothesis. There was more egocentric errors on level-2 than on level-1 perspective taking. In opinion of Apperly and Butterfill [8] this is associated with a high cognitive load. It is more cognitively demanded task, it is harder to inhibited other' perspective.

Futhermore, participants commit altercentric error not only on VPT-1, but also on VPT-2. In accordance with what was expected, there were less altercentric errors on level-2, than on level-1. According Apperly and Butterfill [8] this intrusions are evidence of the use of the system theory of mind called cognitive efficient, but inflexible. The effect of this system is to automatically take someone else's perspective, even if the task requires ignoring it, so altercentric errors indicate implicit perspective taking and are treated as indirect measure of it. The above-mentioned researchers say that the efficient, but less flexible system is active only on VPT-1, that is, to take into account whether or not the other person sees an object. However, as it turned out, in our study, the subjects probably used this system also to determining how the item looks like from the perspective of the other person (although to a lesser extent).

Presumably, this system can support the cognitively demanding, but inflexible system. When there is time pressure or when the consequences of error are small,

human brain, which is the "cognitive miser", can run the system less loading cognitive resources. Nevertheless, it should be noted that this strategy is used less frequently than on VPT-1.

Favorable modification of the study would be to add a third type of test, in which, apart from Self and Others trials also should be used a third possible response - perspective that differs from their own and other people. This means that the test would be less sensitive to the confusion associated with the press the wrong key, deconcentration or forgotten questions. This allows to create confusion index (number of random errors in trials with a third perspective), which could be deducted from the number of errors in the Self and Other trials. However, this study would significantly extend by charging the same cognitive system, which would increase the number of errors committed by the subjects.

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UNDERSTANDING LABELLING EFFECTS IN THE AREA OF PERSONAL IDENTITY AND AGGRESSION

Ewelina Kamasz

Kazimierz Wielki University

Chodkiewicza 30

Bydgoszcz, 85-064, Poland

+48 52 341 91 00

ewelinakamasz@wp.pl

Abstract: *The present study was aimed at analyzing how a hostile school environment filled with bullying, aggression, labeling and nicknaming affects youth's identity. The Mini Direct Indirect Aggression Inventory (Mini-DIA; Österman & Björkqvist, 2008, The Dimensions of Identity Development Scale (DIDS; Luyckx, Schwartz, Berzonsky, Soenens, Vansteenkiste, Smits, Goossens, 2008) and one self-constructed questionnaire on pupils' nicknames were administered to a sample of high-school students. Findings indicate that there are relations between gender, identity, labelling and aggression in high-school youths.*

Keywords: *aggression, personal identity, labeling effect, youths*

1. Introduction

School bullying is a widespread social phenomenon involving both individual and group variables. There have been a lot of studies on the links between aggression and gender. Scientist have already discussed different forms of aggression, the readiness to act violently and even the likeliness of becoming either the offender or the victim of violent acts [1, 9, 15]. However, most of these studies included adult subjects. There are too few research studies on the development of gender identity and aggression in adolescents. It is important to emphasize the fact that developmental changes are a crucial factor in developing the ability to regulate their attention and emotions, learning how to control their impulses and use verbal communication to resolve conflicts and express needs [3]. We also need to remember that children's and youth's abilities of expressing anger and coping with aggression are strongly associated with their parents' attitudes towards aggression [10].

2. Identity development

The term "identity" has a number of meanings. For Erikson [5, 6], identity is a normative process enabling people to make their way in the world. It is a subjective feeling of sameness and continuity across time and context [14]. Gergen [8] believed that the concept of identity meant almost nothing because people were constantly changing and therefore their identities could not be defined. Schwartz [13] regarded identity as the organization of self understandings that defined a persons' place in time and in the world, a synthesis of personal, social and cultural self-conceptions. Luyckx, Gossens, Soenes and Beyers [11] introduced a four-dimensional identity model consisting of exploration in breadth, commitment making, exploration in depth and identification with commitment. A year later Luyckx at al. [12] added the fifth factor: ruminative exploration and extended the four-dimensional model of identity formation in late adolescence.

Identity developed during adolescence is not a stable construct like scientists used to believe [5, 6, 13] but it is still vital how a teenager overcomes a psychosocial crisis

of Identity vs. Role Confusion. Findings indicate that identity develops gradually after adolescence [4] and is postponed in time due to social and demographic factors. Women score higher than men in ruminative exploration and exploration in depth – probably both genders use different strategies during identity development [12].

3. Aggression in adolescents

There have been a lot of studies on the relations between aggression and gender stating that either women are seldom aggressive or the female aggression hardly exists thus is not worth studying [7]. Later reviews on sex differences were more cautious [2] and pointed out that the previous studies had some major flaws in the operationalization of aggression mainly as physical aggression.

Researchers have also analyzed different forms of aggression and the likeliness of becoming either the offender or the victim of violent acts [9]. It is also important to emphasize the fact that developmental changes are a crucial factor in developing the ability to regulate youths' attention and emotions, learning how to control their impulses and use verbal communication to resolve conflicts and express needs [3].

4. The aim of the study

The aim of the research was to investigate the relations between the direct and indirect aggression, broaden our knowledge about identity dimensions in men and women and to test the relations between labels (nicknames) and aggression/identity dimensions in both sexes.

The following questions and research hypotheses were formulated:

1. Do men and women differ in the intensity of direct and indirect aggression?
2. Does manifestation of a physical, verbal and indirect aggression associate significantly with identity dimensions?
3. Does being a victim of a physical, verbal and indirect aggression associate significantly with identity dimensions?
4. Do men have nicknames more often than women?

5. Does aggression associate significantly with identity dimensions?
 6. Does aggression associate significantly with having a nicknames?

5. Method

Participants. A Total of 112 people (66 female and 46 male) aged 16 to 18 years old participated in the research. All participants were Caucasian. The participants were first and second year students of IV High School in Elbląg. Participation in the research was voluntary, anonymous and without gratification. No students refused to participate.

Measures. Three research tools were used. The identity dimensions were measured with The Dimension of Identity Development Scale (DIDS; Luyckx et al.) a 25-item self-report scale designed to assess the five identity dimensions: Exploration in Breadth, Commitment Making, Exploration in Depth, Identification with Commitment and Ruminative Exploration. Each dimension is measured by responses to five questions. Responses are scored on a five-point Likert-type scale ranging from "strongly agree" to "strongly disagree". None of the items are reversed-scored. The aggression was measured with The Mini-DIA (Österman & Björkqvist). The inventory consists of six items - three items measure victimization and three ones measure perpetration of aggression. The labels (nicknames) were measured with the self-constructed questionnaire which is a multiple choice test consisting of 11 items designed to assess students' attitudes towards nicknames (their own or the very idea of nicknames). Respondents were asked to select the best possible answer (or answers) out of the choices from a list but they had also the possibility to write their own answer if they could not find the suitable one.

Procedure. The students completed all tests on one occasion during their lesson.

6. Results

The analysis has shown that there are statistically important differences in the scale victim of the verbal aggression ($M = 1,67$ men and $M = 2,13$ women, $t = 2,36$), the scale victim of indirect aggression ($M = 1,71$ men and $M = 2,31$ women, $t = 2,92$) and in the scale physical assailant ($M = 1,41$ men and $M = 0,9$ women, $t = -2,85$). Women obtained a higher result in the DIAS scale in the victim of indirect and verbal aggression and a lower result in the scale physical assailant.

The results show us that there are statistically insignificant weak relations between being a victim and identity dimensions. In a cautious approach, it can be formulated that if the person is verbally abused than she starts to focus on exploration in breadth ($r = 0,22$, $p < 0,05$).

There is a statistically significant medium negative connection between exploration in depth and manifesting verbal aggression ($r = -0,3$, $p < 0,05$). We can also observe the weak statistically insignificant connections between exploration in breadth and being a verbal assailant ($r = -0,22$, $p < 0,05$). There is also a weak connection between commitment making and manifesting indirect aggression

($r = -0,22$, $p < 0,05$). In a cautious approach, it can be formulated that if a person manifests verbal aggression, she does not focus on exploration in depth or if a person focuses on exploration in depth, she does not manifest verbal aggression.

42% (9 men, 38 women) of participants had their own nicknames, for example, Scarface, Leman, Cichy (male) and Dzwoneczek, Kari, Amii, Symfonia (female). There were definitely more women who had nicknames but this result might be connected with the gender imbalance in studied groups. The results show a statistically significant medium negative connection between having a nickname and being an assailant physically abusing their victims ($r = -0,25$, $p < 0,05$). We can observe a weak relation between having a nickname and exploration in breadth ($r = 0,19$, $p < 0,05$).

7. Conclusions

Findings indicate that that there are statistically insignificant weak relations between being a victim and identity dimensions. We can also observe the weak statistically insignificant connections between exploration in breadth and being a verbal assailant, and commitment making and manifesting indirect aggression. The results show us that there are statistically significant connections between nicknames and being assailants or having the tendency to explore in breadth.

The presented research has given us a slight insight into an identity development and aggressive behaviours of high-school youths. It also presents the relations of power and the hierarchy in the students' group. The results help us to better understand how the labeling, nicknaming and bullying can affect pupils' developing personal identity. Future researches of these areas should explain mechanisms leading to the appearance of school bullying's negative outcomes for identity development and must look for factors moderating severity of these outcomes for adolescents. We definitely need more longitudinal studies on larger groups of students including both the victims' of aggression and the assailants' personality characteristics and social context.

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IDEOLOGY IN THE EDUCATION ACT OF 1960

Ilona Mlčáková

Palacky University
Olomouc, 77140, Czech Republic
+420 607 076 131
ilonamlcakova@seznam.cz

Abstract: *This contribution is focused on the outline of the ideology concept and its influence on primary education, especially on Act No. 186/1960 of the Book of Laws (further Sb.) about the system of education (The Education Act). The model of the German sociologist Claus Offe, who ranks economic, political-administrative and socio-cultural categories among pre-political determinants, was chosen as the analysis tool. Therefore, the aim of the article will be to explain the appearance of these categories in the Education Act of 1960.*

Key words: *ideology, Education Act, economy, politics, society*

1 Introduction

The term ideology was first used by Destutt de Tracy in his lecture in 1776, when he was looking for the best name for the new science, after excluding the terms psychology or metaphysics. His "science of ideas" appears in zoology and is intended to bring us better understanding of the intellectual capacity of animals. A derogatory meaning of the term ideology was first expressed by Napoleon, who understood it as the philosophical system of an individual who does not think nor react realistically or pragmatically, but sticks only to doctrine. The recent definition of the term ideology gained importance in the work of Marx and Engels. In Marxism, ideology is understood as false consciousness which refers to reality [1].

A modern definition of the term is also found in a work by Terry Eagleton, who sees ideology as a process of the production of ideas, symbols and values in social life, the grouping of ideas typical for a particular social group or class, as ideas that help legitimize dominant political power, or as a coincidence of discourse and power. Simply, it is a "state ideology"[2]. As Louis Althusser stated, specific tools of state ideology and ideological state apparatus, can also be seen in the educational system, especially school [3]. The relationship between state power and ideological power is mediated by legislative standards, in the case of education, by the "Education Act". The aim of this contribution is to focus on the growing incidence of ideology in the educational system of the Czechoslovak Republic and the Czechoslovak Socialist Republic in the period of educational reform starting in 1960.

In that period, the Czechoslovak Republic and the Czechoslovak Socialist Republic were under the influence of Marxist-Leninist ideology. It was a period when the description of social reality was strongly influenced by the Marxist-Leninist ideology, which has gradually spread into the educational system of the Czechoslovak Republic and the Czechoslovak Socialist Republic through the relevant terms contained in legislation. The goal of communism was to defend the interests of the whole proletariat, and so it creates a class, win political power and overthrow the bourgeoisie. A characteristic feature of communism was the elimination of private property. Another intention of

communists more concern to education was the abolition of the family (according to their premise is a family is based on private profit, on capital). Simultaneously they require replacement of parental care by social nurture. Among the measures that may be used in most advanced countries, it's sorted a free public education of children, the elimination of child labour and connection of education with material production [4].

We approach the analysis of ideological impact on the education system at three levels - economic, political-administrative and cultural, which is based on a systems' theory that conceives every social system in terms of its management centre, which is the political-administrative system. As Jürgen Habermas stated, in differentiated societies, a political system holds (as a separate control centre) a superior position to the socio-cultural and economic system [5].

2 The Education Act

In April 1948, Act No. 95/1948 Sb. on the basic regulation of comprehensive education (the Education Act) was approved. This act "as the biggest cultural act, introduced a uniform education system, providing all youth aged from six to fifteen with a uniform primary general education" [6]. Act No. 95/1948 Sb. expired five years later, when Act No. 31/1953 Sb., on the school system and teacher training, was approved. The new Education Act was far more brief (instead of nearly ninety paragraphs in the Act from 1948, there were only eighteen) and was valid for only seven years. It was replaced, in December 1960, by another Education Act, which was valid until September 1984. The last socialistic Education Act was valid, with numerous amendments, until the end of 2004, when Act No. 561/2004 Sb. on preschool, primary, secondary, vocational and other types of education, was adopted and is still valid today.

For the purposes of this contribution, I am going to analyse just the Act No. 186/1960 Sb., about the system of education (further just Education Act). The research question is how the Education Act was utilized. For a concrete illustration, the above mentioned Act, with economic, political-administrative and sociocultural

categories, is used. Economic categories are the funding of education, the founder, training orientation, etc. Political-administrative categories are the boundaries of school admission, the length of the study, the links to building the socialism and communism, etc. The cultural category represents the orientation of the world view. The growing impact of ideology is apparent in the Education Act from 1960 even at the beginning where it states: "...The building of a developed Socialist society and the transition to Communism requires a universally developed and educated person. His education is matter for the whole society and is carried out under the leadership of the Communist Party of Czechoslovakia. A great role in the education of a new man is played by schools..."[7]

2.1. The Economic Category

Even the introductory establishment of the Act expresses the economic state support of the school system by declaring the school system as free, thanks to the growing productive force and the wealth reproduction of the society. We can see other economic categories in the establishment of secondary and higher education, which states that the support of the education of working men is supported. The law provides different types of educational facilities for those institutions, such as corporate technical schools, corporate institutions, or secondary schools for workers. Furthermore, there are central schools, evening school, evening universities and folk high schools and for the teams there are educational institutions, especially corporate technical schools. The establishment of school founders falls within the economic area, too. We can find this area in the legal paragraph § 30 of the Education Act and it states that: "Schools, pre-school and after-school educational institutions are established by national committees. According to the principles laid down by the government, other socialist organizations can, with the approval of the national committee, set up and partially cover the cost of preschool educational institutions and secondary schools for workers, or even vocational schools and secondary vocational schools" [8]. The founders of the educational institutions of central offices, concerns and associations and other social organizations are also organizations themselves.

2.2 Political-Administrative Category

Organisations of the school system belong to the Political-administrative system. The Education Act states that schools and educational institutions set up one common system. Pre-school education is for children from six years old and is carried out in nurseries and kindergartens that help families with versatile care and help women return to work. Here we can see a Socialist feature. Compulsory primary education is for youth from 6 to 15 and is carried out in primary, nine year schools. The Act assesses the duty of parents to sign up their child for compulsory school attendance and also the duty of regular school attendance. Interestingly, the establishment says that pupils can attend primary school up to sixteen years of age maximum and if they do not complete primary education by this time, they will be led by organisations and

community organizations to study while working. Other institutes are the so called school clubs at lower secondary schools. School clubs were operated then the same as now - at primary school. The Education Act states that "secondary education is the universal, polytechnical and vocational training of various specializations and range, equivalent to its social value, which is obtained in different types of schools after completing primary education and in which all youth is involved in productive work in different ways" [9]. The system of secondary education consists of vocational trainee school, trainee schools, secondary schools for workers, vocational schools, secondary vocational schools, secondary general education schools, corporate technical schools, conservatories and the corresponding classes in music and dance schools and schools for the youth requiring special care. Higher education means higher professional education that provides years of education at conservatories and corporate institutions. For students with completed secondary education there are high schools, which aim at the following goal: "to educate and prepare for industry, agriculture, science, culture and other areas of social activities, the required number of politically and professionally highly skilled professionals. The preparation should be closely related to the life and work of people and capable of creatively scientific and artistic work, and help spread science, art and new technology among people" [10]. The influence of ideology can be seen in the above-mentioned establishments, especially in establishments regarding youth involvement in productive work, as well as the involvement of university-educated professionals into their lives and work with people. Another topic belonging to the political-administrative system is an area related to the curriculum, teaching aids and school syllabus. These topics are entrusted by the Education Act to the Ministry of Education and Culture.

2.3 Socio-cultural System

The importance of a socio-cultural system is irreplaceable. The university has a great influence on transmitting values to and shaping the personality of a young person. This was used by the political-administrative system by incorporating ideological establishment into the Education Act. It is written already in the introductory establishment of the Act that: "Education and training are based on a scientific world view, Marxism-Leninism ..." [11]. In school facilities, a great deal of emphasis was put on the personality of a teacher, as is clear from the Paragraph § 1 of the Education Act. It is stated that the mission of teachers and educators is not only education and training, but also public cultural and political activity. Therefore, "they must be connected with the working class and other workers to educate youth in accordance with a creative effort of the people ..." [12]. In addition the crucial role of the teacher in education and training, a great deal emphasis is put on parents who educate their children to be aware citizens of the Socialist republic in school. Besides school, the influence of ideology was supported by many social organisations, mainly the Czechoslovak Youth Association and its Pioneer organizations, the Revolutionary Trade

Union Movement, the Czechoslovak Union of Physical Training and Sport, teams and concerns. The Act also specifies the cooperation of schools with these organizations. Pioneer groups influenced the content of education, career choices, etc.. Therefore the influence of the ideology was the smallest in this case.

3 Conclusion

The aim of this contribution was to focus on the term "ideology", its features and its incidence in the Education Act of 1960. The model of the German sociologist Claus Offe was chosen for this purpose. He divides the society into three subsystems - economic, political-administrative and socio-cultural categories. Results from the Education Act analysis tell us that the economic system created tools for successful functioning of the system of education as a free one. The political-administrative system created a law frame for the functioning of education, including the organisation of school attendance, curriculum and teaching aids. The socio-cultural system, where the whole system of education belongs, puts an emphasis on the influence of Marxism-Leninism, according to which teachers, educators, parents and others should operate, and which should all uniformly educate Socialist citizens. It is apparent from the above that all three subsystems influence and support each other.

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CONSCIOUSNESS IN THE CONTEXT OF THE DISPUTE BETWEEN EVOLUTIONISTS AND CREATIONISTS

Ewelina Twardoch

Institute of Audiovisual Arts, Jagiellonian University

Łojasiewicza 4
Kraków, 30-348, Poland
12 664 55 07
etwardoch@o2.pl

Abstract: *The aim of the paper is to introduce the problem of consciousness in the context of the conflict between evolutionists (thinkers who based their knowledge about beings on the evolution theory) and creationists (who believe in God's creations and intervention, in accordance with the Intelligent Design theory). The author would not to explain the phenomenon of consciousness, but to show two different philosophical and psychological vision of such special human quality. In the paper are introduced the crucial elements of evolutionists and creationists thinking (in reference to the assumption of Nicolas Humphrey, Antonio Damasio, Richard Dawkins and others) and their impact on the explanation of consciousness phenomenon. What is more, the author in the last part of the paper focus on the crucial point of evolutionists-creationists conflict: the issue of consciousness immortality. Important questions connected with consciousness are in the paper the questions about body and emotions.*

Keywords: *consciousness, evolutionism, creationism, body, emotions*

1. Introduction

Human consciousness has been the topic of digresses, disputes, philosophical inquiries and research. The aim of the present essay is not to juxtapose various concepts explaining the phenomenon of consciousness (especially to cite the rich philosophical tradition), but to take a look at two contrasting approaches which attempt to describe its functioning and the role it fulfills in the lives of human beings. I would not like to delve into the history of the dispute between creationists and evolutionists, into its political context, or to present its subsequent trouble spots. My priority is to show in what way the problem of consciousness fits into this conflict and what doubts are cast by both the theories aspiring to explain the emergence and existence of the world and man.

Nicholas Humphrey notes that although modern biology is able to account for more and more ambiguities connected with the evolutionary design of the world, many scientists believe that consciousness may remain the Achilles heel of the theory of evolution, and its explanation in the context of Darwin's natural selection, which, to evolutionists, governs the development of the world and man, is and will be impossible. It most likely stems from the fact that it is difficult to believe that consciousness may be reduced to a well-functioning system that has evolved for adaptation purposes [11]. As given by Antonio Damasio, a neurologist and philosopher, conscious feeling, consciousness, self-consciousness (One needs to add that the categories cannot be equated as, especially in the context of the ethical problem of treating animals, they have slightly different meanings) remain the last mystery in the functioning of the mind and many researchers believe that this problem is unsolvable. Damasio, on the other hand, recognizes consciousness (which he initially understands in quite a general manner: as awareness of oneself and one's surroundings) as the turning point in the history of life, a stage of evolution, which has opened man

to those fields of existence which remain of the utmost importance to humanity, that is to religion, art, science, social and political organization [3]. Both Humphrey and Damasio belong to those researchers who think that human consciousness is not a coincidence that negates the evolutionary design of the world in favor of the creationistic one; what is more, they both prove that the phenomenon of consciousness, at least to a large degree, remains explained on the scientific ground.

Nevertheless, many contemporary philosophers claim that since we are not entirely sure that consciousness exists, then we probably do not have to do with anything like that [12]. They support their approach by stating that it cannot be deduced from the mere fact of human existence that man has consciousness. It is difficult for me to relate to those notions because they remain in the sphere of speculations (philosophical? scientific?); therefore, I will only add that evolutionists, whose theses I am going to discuss, oppose this approach.

2. The essence of the dispute. Creationism

I will now move to the essence of the problem. Wallace, a co-discoverer of the theory of evolution and close associate of Darwin, ten years after the publication of their groundbreaking work (that is in 1869), said that the mystery of consciousness proved that natural selection was not a mechanism explaining human existence completely [13]. His argument is worth quoting:

“No physiologist or philosopher has yet ventured to propound an intelligible theory, of how sensation may possibly be a product of material organization; while many have declared the passage from matter to mind to be inconceivable. (...) You cannot have, in the whole, what does not exist in any of the parts. The inference I would draw from this class of phenomena is, that **a superior intelligence has guided the development of man in a definite direction** [my emphasis – E.T.]. (...) It does not

seem an improbable conclusion that (...) the whole universe, is not merely dependent on, but actually is, the WILL of higher intelligences or of **one Supreme Intelligence** [my emphasis – E.T.] [15].

In his argument, Wallace refers to the principle of sufficient reason by Descartes, which the philosopher presented in his 1641 *Meditations*. Descartes employed it to explain the existence of the “idea of God.” He believed that man alone would not be able to form the idea of perfection (here God) in human thought, as the components of human thinking are not perfect themselves and a perfect whole cannot be created from imperfect elements. This course of thought allowed the philosopher to reach the conclusion that man could have been imbued with this idea by God only, hence the evidence of His existence. Wallace, accepting consciousness as the counterpart of the idea of perfection, something so exceptional and inexplicable that it becomes “extraterrestrial,” found that it could not come from “terrestrial” elements, thus, some Supreme Intelligence must have imbued man with it [16]. The problem of the passage between the “materiality” of human physiology and the experience of consciousness as an element of the spiritual sphere was even more emphasized by John Tyndall, a physicist to whom Wallace referred. He said that:

“The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought, and a definite molecular action in the brain occur simultaneously, we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning from the one phenomenon to the other. (...) If such there be, and were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem, ‘How are these physical processes connected with the facts of consciousness?’” [14].

Although it has been 150 years now, scientists still struggle with the same problems pertaining to human consciousness. Creationists also approach problems stated in this way. To me, it seems completely improbable to translate the results of research concerning the functioning of the mind into the fact of existence of consciousness, feelings, the experience of corporeality, the need to construct one’s identity. The duality of man, consisting in the division into *res cogitans* and *res extensa*, credited fully to Descartes, seems impossible to question. Creationists accept the fact that man has consciousness (which they equate with the “soul”) as a so-called loophole in the theory of evolution and the mechanism of natural selection [7]. However, there are fewer and fewer such “loopholes” left. Biologists have, for instance, already explained the process of eye adaptation or the existence of a bacterial flagellum [8]. Consciousness is much more difficult to reduce to a biological fact, thus creationists specify it as a product of the Intelligent Design and, through the Intelligent Design theory, which is supposed to have the status of a scientific theory alternative to Darwinism, they elucidate the phenomenon of

consciousness, analogically to other theories, cosmological or biological [2]. In the case of the last two, the so-called anthropic principle is applied, which assumes that any phenomena that cannot be explained by science yet can only be explained in one way: by God’s actions. They treat consciousness analogically. Therefore, we might be closer to the notions of Descartes than we thought. To creationists, consciousness has been given to man by the Creator and thus it remains only in the spiritual sphere, or, in other words, it is the soul, deprived of the material aspect. This conviction has been and will be used by religion a number of times in order to keep the masses of its followers. However, I will return to this issue in the conclusion.

3. The evolutionistic perspective

Evolutionists speak of the Intelligent Design theory scornfully, not accepting it as a scientific theory, simply because it is not subject to counterfeiting (of course, there are many more arguments). Wilson adds also that “if a Divine Engineer designed it [the brain – E.T.], unconstrained by humanity’s biological history, He might have chosen mortal but angelic beings cast in His own image. (...) But we are nothing like that” [21]. Unlike Damasio, Nicholas Humphrey does not support his reflections with evidence of many years’ research; however, I will try to recreate his line of argumentation. He starts with a hypothesis that, from the point of view of science, at some level consciousness must be an illusion. It stems from the fact that if nothing that belongs to the physical world can have the characteristics that consciousness has, then consciousness cannot belong to the physical world. However, Humphrey soon adds that there are many similar “illusions,” e.g. various optical illusions, phantasmagorias, which can be explained on the basis of physiology or physics. He finally reaches the conclusion that such functioning of human consciousness arises not from coincidental causes but from the fact that a human being needs such consciousness to live and create. Therefore, it remains an effect programmed by natural selection. Humphrey even states that, in his opinion, consciousness structured in this way answers the human need for religion, art and culture [17]. He also adds that:

“Without the experience of being conscious we would simply not have the sense we have that there is something substantial at the centre of our psychical existence, something it’s like to be us. But once we do experience it, the Self is there for us. A self that has this at its centre is a self to be reckoned with, a self worth having. And such a self bursts with the potential to become the principle around which we organize our private mental lives.” [18].

Humphrey ends his reflections at the point of departure of Antonio Damasio’s theories. The main thesis that can be derived from *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*, his fascinating book based on his experience as a neurologist, is the thesis of correlation, dependence between our body and mind, between the functioning of the nervous system and the phenomenon of consciousness. Damasio, what he himself notes in his other book, *Looking for Spinoza*,

departs from the understanding of man as a dichotomous creature, which is derived from Descartes in favor of Spinoza's statement that the spiritual and material sphere of man are inseparably connected and that their division is groundless. "Consciousness, as we commonly think of it, from its basic levels to its most complex, is the unified mental pattern that belongs to the object and the self," writes Damasio. He also adds that the brain produces the feeling of the self during the act of cognition; it creates mental patterns that are called images of objects [4]. For the emergence of emotions, feelings or self-consciousness various neuron configurations are responsible.

The scientist also emphasizes that consciousness is not a monolith, a simple spiritual phenomenon, but a very complex matter. Neurological examinations that Damasio cites divide consciousness into core consciousness allowing man to feel oneself at a specific time and place – here and now, as well as extended consciousness, divided into various kinds and degrees, responsible for constructing the identity, the ability to experience the past and to foresee the future, to experience the external world [5]. The research conducted by Damasio indicates that any damage or pathology within the nervous system conditions changes in the "normal" existence of consciousness. Coming down with a neurological disease causes a change in experiencing oneself, interpreting facts, being able to associate, remember or even perceive the reality. Therefore, I will stress it once again, that the feeling of the "self" is, to Damasio, a biological fact, the realization of which is due to biological processes [6].

The continuity of consciousness, in his opinion, arises from biological and chemical processes that are responsible for the emergence of core consciousness. Analogical processes creating extended consciousness are responsible for its more complicated aspects. Damasio proves also that the body and emotions co-create our consciousness, that it is not a creation of the spirit isolated from the matter. To the researcher, there is no problem of transfer or a catalyst, for which Descartes, Tyndall or Wallace looked. He believes that the adequacy between neurobiological processes and consciousness is a natural result of the specific way in which the human organism functions.

Incidentally, conclusions reached by researchers of evolutionary psychology sound similar. As given by Pascal Boyer, the most significant discovery of this psychology is the notion that understanding the structure of the human mind is impossible if one does not take into consideration the role of specialized conditions and systems in which it evolved in the process of natural selection [1].

One should also add, as Damasio, aware of potential accusations, frequently does, that the explanation of the phenomenon of consciousness on the biological basis does not reduce its value. Quite the reverse. Damasio shows that without consciousness human life would be incomplete, that consciousness conditions the functioning of human beings in the sphere of culture, art, science. The fact that it emerged from evolution also provides man with this feeling of the "self," independence, existence of the sphere of the most personal experiences. The researcher does not

aim to advocate the idea of a homunculus, but to prove that spirituality and materiality of man do not have to be separated in order to appreciate the value of what we call spirituality: the ability to experience emotions, understand, create, act.

4. The core part of the conflict: immortality of consciousness

Although Damasio's arguments seem convincing and his research confirms them, there emerges the problem of philosophical and eschatological nature, which is presumably the core part of the conflict between creationists and evolutionists. It is the question of the immortality of consciousness. Evolutionists state that consciousness dies with the body. If our spirituality is inseparably connected with materiality, then if the matter dies, the spirit must die as well. Actually, my applying here any kind of division is a dualistic mistake. I should write that death means simply the end of a corporal and conscious organism. However, can we state it for sure? Do we have any empirical evidence for it? As far as I know, we do not. Leonard Susskind, asked about the problem of consciousness, replied: "How (...) could science prove that consciousness did not survive death? I told them that science could not prove any such thing" [20].

Sociological research, on the other hand, proves that regardless of which of the models explaining the world and man we choose, the idea of immortal consciousness is necessary for many people to live because it gives them consolation and solace [9]. The problem of immortality of consciousness reveals in this way the basic and important role of religion – giving the feeling of stability and safety in the world [10]. The essence of salvation after death is, of course, much more complicated. Some believe it to be perfidious deception or an illusion. The promise of salvation may also be used to manipulate people and religion uses it as a strong weapon because only those who meet the requirements of a given religion can be saved.

Attributing man with the existence of the "soul" and making him or her dependent on the Creator's power is very convenient for religion. In this way, it explains the creation of man, emphasizes human exceptionality and answers the human being's strong needs. Descartes also used this "convenience" to satisfy the spirit of his times [19]. Evolutionists propose a different explanation to the functioning of man. This explanation aims at approaching its specifics through empirical analysis of evidence, neurobiological experiments. It supports the development of neurology and neurobiology, which allow for treatment of nervous system diseases. Evolutionists do not find it justified to look for an equivalent of the promise of immortality given by religion.

5. Conclusion

The ability to explain the phenomenon of consciousness by means of science deprives religion of one of its most important arguments. Evolutionists have proven that they can explain, in an alternative way to the creationistic one, who we are and why we differ from other living species. In accordance with such an approach, the "soul" cannot be an

excuse for racism and speciesism, neither can it be a bargaining card on one's way to salvation. The evolutionistic thinking also prevents the depreciation of corporeality and the existence for "the future life." Religion and science, in this respect, will remain in conflict. The scientific explanation of the essence of humanity makes religion lose its field of affecting its followers. The religious explanation of the phenomenon of consciousness completely opposes the theory of evolution and scientific discoveries. It is hard to reach consilience here. The theory of NOMA by Gould completely loses its reason for being. How can one reconcile the thesis stating that consciousness has been imbued in people by God with the evolutionistic explanation of the emergence of consciousness through natural selection and adaptation processes?

The dispute between creationists and evolutionists concerning consciousness is thus inevitable and ineradicable. Even worse, it will probably never see its final solution.

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EXAMPLES OF USING SOME TEACHING METHODS ON GEOGRAPHY EXTRA LESSONS

Damian Heldak - Kamila Płazińska

Pedagogical University of Cracow

Podchorążych Street 2,
30-084 Cracow, Poland
+48 690 959 960

damian.heldak@gmail.com - kamila.plazinska@gmail.com

Abstract: *Geography extra lessons have a lot of advantages. For example, they let develop students interests and give possibility of additional work with weaker learners. Lessons like that can be arranged by teacher on his own or be co-financed by the European Union (in this case often it is an educational project). It is really important that on extra lessons teacher can use teaching methods, which often he is not able to apply on ordinary lessons. These may include educational videos, poster technique, method of didactic key and exercise with the instruction. Paper show examples of using that's methods on geography extra lessons. They are based on the experience with the implementation of these methods during own professional practice.*

Keywords: *teaching methods, educational project, geography, extra lessons*

1. Introduction

Due to the relatively small number of hours of geography at school, which currently stands at 4 hours in a three-year course of education [1] at the third level of education (in Poland this kind of school is called 'gimnazjum') becoming increasingly important for the teacher having extra lessons in this subject. Generally this kind of lessons are arranged by teacher but sometimes they are implemented by educational projects co-financed by the European Union [2]. This kind of lessons have a lot of advantages. One of them its possibility of developing students interests, another's - chance to additional work with weaker learners and improving own skills in the use of teaching methods. The main problem of this lessons is connected with time of day when the lessons are implemented (early in the morning or in the afternoon, when students are tired after the ordinary lessons). With these observations, it was decided to present examples of using selected teaching methods on these lessons. All of them are proposal that have been proven in practice school by one of the authors of this paper.

2. Examples of applying methods and techniques for extra lessons in geography

By reason of the fact that extra lessons from geography are supposed to serve the pupil and his needs it is worth to establish with the students at least some of the topics of the lessons. It is possible to do both by giving a few suggestions lessons from which students can choose the most interesting topics for them or distribute the sheet of paper, where they would write their own proposals. From experience with the realization of an educational project in 'gimnazjum' it seems that first method is more effective. Below there are presented selected teaching methods which have been successfully used for the 'gimnazjum' stage. These are activating methods, whose efficiency in teaching generally is considered to be better than in the case of traditional methods such as lecture or work with book [3].

2.1. Educational videos

The popular, but not always applied in correct way method is using of educational videos. They have a lot of educational potential because they illustrate perfectly the complicated processes which students have to imagine. In the case of geographical education, a good example can be the meteorological or geological processes. Therefore, on extra lessons, especially in the afternoon, when students are tired after whole day of learning, we can use this method. In the case of a educational project which was realized by one of the authors, students had choice: there were three titles of videos in the field of physical geography - about earthquakes, volcanoes and thunderstorm. They had to chosen one of them. When students decided one of the movie, on the next lesson it was prepared a set of several questions connected with it. Before watching, they had received the questions and read it. After that the video started. During watching, they were answering for the questions. After watching the movie, of course, we have to check students answers. In this way effectiveness of this type of teaching method is growing definitely. In spite tiredness of whole day, students with certainty will remember at least part of the content of the video (because of impact on the students eyesight and hearing). Extra questions which student have to write let you preserve the most important contents.

2.2 Poster technique

Another form of the work, which value was used for the afternoon class is the technique of the poster. In the case of a educational project this technique was used to documented an extreme event in which they reside. In this case, these were the geomorphologic and economic effects of heavy rains in the Czarna Góra village. The necessary materials (photos, a large sheet of paper) was prepared, while the students brought to class colored pens, glue, scissors and other needed gear. Lessons began with a short presentation of the event and its geomorphologic and economic effects. Attention was paid to the basic rules for preparation of posters. Then the students started work (Fig.

1). The results of their work were hung on the walls of the class. The advantage of this technique include teaching how to cooperate (poster was performed in pairs) and the possibility of demonstration a plastically talented students. Apart from knowledge about the effects of extreme events such technique allows students to shaping the manual skills and develop the ability of cooperating with other people.

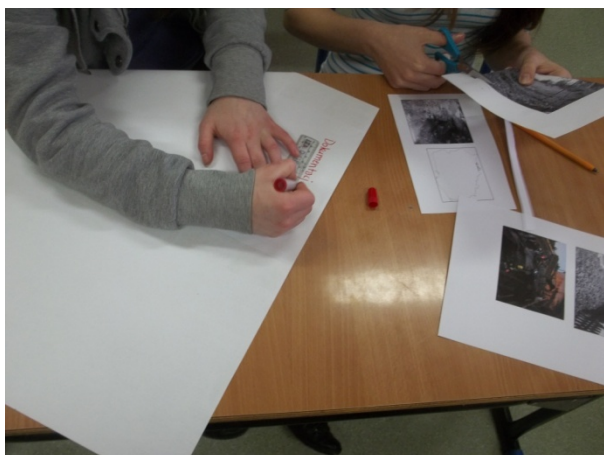


Figure 1: Students during preparation of poster during geography extra lessons

2.3. Method of didactic key with an element of educational game

This is a method of teaching included into the group of activating methods. It is based on recognizing of selected elements of the natural environment based on the description and/or picture of the element. Because this method requires a lot of concentration it is worth to apply it when students are not tired after a full day of lessons (ideally in the morning). In case of an educational project this method was used to recognize the types of clouds. Organization of classes consisted in presenting of the main types of clouds by the teacher. After that students received the keys to their recognition. The next step was to display six different types of clouds on the projector (numbered from 1 to 6). Students had 15 minutes to recognize the types of clouds. In the end students answers were checked. Each students received 1 point for each correct answer. The winner was the student, who received the largest amount of points. Main advantage of this method is self-reliance of students in recognition the basic elements of the natural environment. An additional advantage is the introduction of an element of competition which motivates students to more effective work.

2.4. Exercise with the instruction

This is another method of teaching which requires a lot of work of teacher and student as well. It consists in talking over by the teacher successive elements of work that the students carry out step-by-step according to the instruction. This is quite difficult method, but it gives a quite good results and a lot of satisfaction. An example of its use is the preparation of topographic profile. To do it, it is

necessary to prepare topographic maps, plotting paper, strips of paper, rulers and pencils. Drawing up the profile shall be implemented by subsequent commands of teacher (which he also do on the blackboard). Care should be taken on good preparation for the lesson and a pay special attention to that each step was carried out by all students. As mentioned, it is a difficult method, but the results seem to be worth of the effort, because students in this case are taught by an action which is a very effective form of learning [4]. Apart from the profile, you can mark the additional elements on it such as the geological structure, land use or man-made objects (Fig. 2).

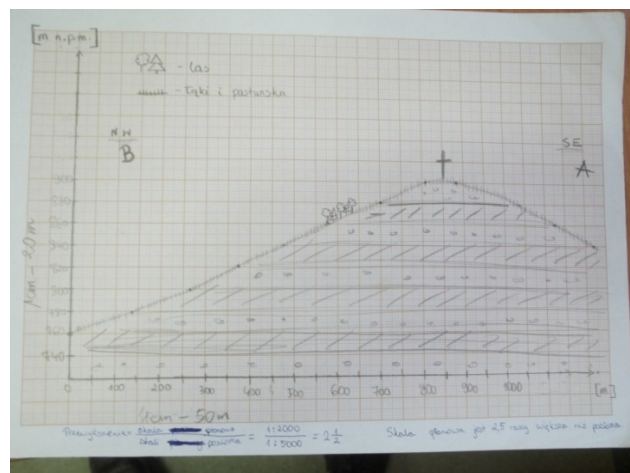


Figure 2: One of the topographic profiles prepared by the student on geography extra lessons (effect of work with method ‘exercise with the instruction’)

4. Conclusions

Extra lessons of geography is a great opportunity for working with students with modern and activating teaching methods. In this paper, due to its limited size, are given only four examples of teaching methods which can be used to these lessons (educational video, poster technique, method of didactic key with an element of educational game and exercise with the instruction). Shall be expressed the hope that they will be used as an inspiration to apply it to their own lessons. They were checked in practice by one of the authors of this paper. So they can be applied in the same form as stated in the article or modify them for your own use.

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STUDENTS AND THEIR ADAPTATION TO STUDY AT UNIVERSITY

Daniela Hrehová - Stanislav Slosarčík

Technical university

Letná 9

Kosice, SK, Slovakia

+421 55 602 4204 +421 55 602 3198

daniela.hrehova@tuke.sk – stanislav.slosarcik@tuke.sk

Abstract: *The aim of the article is to highlight the problems of the transition stage of university students, the problems encountered at the beginning of university education through domestic and foreign theoretical and research work. Theorists and practitioners equally claim about the need for early intervention in the adaptation problems, the effort to improve the adaptation process based on the daily educational practice and the need to prepare an individual to adaptation to the existing environment, but also to self-realization of the individual.*

Keywords: *student, university, adaptation, problems*

1. Introduction

Adaptation is a characteristic of human ability, which under external influences and, depending on genetic heritage can change the life processes. It expresses the internal adjustment process of the organism. Development of rebuilding of the organism affects all components of the bio-psycho-social elements of the organism. According to psychological vocabulary [13] the adaptation is a general feature of the organism to adapt to the conditions of the external and internal environment in which it exists; psychologically it includes adapting the behavior, perception, thinking and attitudes. According to Mikšík [23], the adaptation as a process is not only a function of the new situation, but it also depends on the structure and dynamics of the personality of the individual. Transfer of students from the elementary to college brings many difficult life situations [22]. Good adaptation is achieved by early expectation and preparation for the charge [24]. For their effective encompassment the student and also lecturer and faculty management should actively cooperate.

1.1 Adaptation in the university environment

The career development of each individual is influenced by limitations of society in which student live, jobs opportunity in various sectors of the economy and a range of internal, external and personal, socio-cultural, economic and other factors [20]. All levels of education affect the individual's career development by its content, philosophy of education, social atmosphere, career education and counseling. In this phase is a period of "the emerging of adulthood" designed by American psychologist Arnett [4], located between adolescence and young adulthood. For the adult characters are considered the ability of judgment, commitment and publicly use the reasoning ability, sense of responsibility, which implies comprehension and assessment ability, which in turn implies knowledge of affairs [17]. Langmeier and Krejčířová [19] defining characteristic developmental tasks of this period: independence from parents, consolidation of identity, clarify own objectives, preliminary choice of occupation, the establishment of own family, parenthood. College

adaptation includes processes of adaptation to the conditions of the college environment: formal (organizational) (grades of study, organizational units, form of study a. o.), physical (location of the college, dormitory, library, noise, technologies a. o.), socials (students, academics personnel) and individual demands on the personality of undergraduate (management of finances, knowledge, autonomy, decision-making methods a.o.). Adaptation includes three aspects: preparedness and assumptions of student to master the changes of the external environment (adaptability), the change management process and interactions with the environment (adapting) and the resultant state (degree of adaptation) [29]. However, readiness and student's prerequisites for successful adaptation are individual for each person [26] and it is developed during processes of personality development [25]. In the recent literature [13], [6], [5], [12], [18] it is possible to distinguish several interrelated dimensions, in which the adaptation process takes place in three distinctly different stages: separation, transition stage, complete the process by incorporation. The phases take place individually, time-variably, depending on the specific and individual characteristics of the person (age, temperament, experience, personality equipment). While there may be a different kind of adaptation.

Social adaptation concerns in particular student satisfaction with social life in an environment of college, involves contacts with teachers, classmates and so on. The causes of "failure to adapt" results from a sense of social isolation, feelings of sadness or nostalgia for home, friends and family, etc., from a sense of inferiority of certain personality traits (low level of frustration tolerance, self-esteem, sociability a. o.).

Emotional - personal adaptation includes different personality and emotional factors (hypersensitivity, increased tension, nervousness a. o.) and factors related to lifestyle and physical health (poor diet, sleep disturbances).

Academic adaptation involves various aspects of adaptation to the new system of study and organization of the courses. It refers mainly to performance characteristics,

mostly with study motivation, performance, etc. The causes of study failure are poorly developed self-knowledge and self-regulation insufficient learning techniques and mental hygiene, but also personality characteristics (e.g. distrust, uncertainty in own resources). *Link with the school* is depending on the degree of loyalty to the school.

Identifying the student with the school, which he attend, is the factor for rapid adaptation to new university environment. Causes of adaptation problems are inappropriate choice of university, university selection only as a starting point of a distress, failure to apply in practice and other. Identifying with the role of undergraduate foresees the complex motives such as strong interest in studied branch, the will power and complex skills, appropriate assumptions to deal with this difficult adaptation situation. At this stage, the student must be fully aware and acquired with rights and obligations which results from university study [32].

1.2 View on the issue of adaptation to foreign universities

The issue of adaptation of students for higher education and the problems associated with it, do not belong in our provenance to the most monitored. Nevertheless, this issue is high actual, what is proven by several foreign theoretical and research works. The authors traces how and the extent to which students experience social, cultural and educational problems [28], [15]. From studies [3], [15], [1], [39], [8], [10], [2], [14] results that the first year seems to be the most important for adaptation to the college. Adaptation of beginning students to 'college' is not easy, because each of them has to deal with adaptation to a new form of study, with increased requirements in connection with the change on the organization and the requirements of the discipline, the new social environment, the need for integration to the communities and suppression of spontaneous speech, increased pressure on the results performance of demanding tasks and new ways of learning subjects need to adapt to new teachers and their individual requirements, with the pressure professional orientation, decision-making and many other personality, psychosocial changes. Generated manifestations anxiety, depression, stress, vulnerability, anger, mood, mental illness, indicate a negative adjustment to the student. The four main categories of problems generated by the poor adaptation of students have been found: *academic problems, health problems, financial crisis, social and personal problems*.

Each of them, separately or in combination, can cause serious problems that could lead to failure of the student to graduate studies. The findings was that the most important differences with respect to adaptation are associated with gender (women cope better with academic adaptation, which is related to the field of motivation and understanding the importance of study for the next life also involves creating internal links with schools, determining their own learning goals, attitudes to school - the teachers, study subjects, conditions and organization of educational process; personal and emotional adjustment is better case of men, it is associated with emotional survival, the

expression of different moods, stress, fear, arising in the university environment and creating good interpersonal relationships with members of the study group, a roommate, etc.); age (younger students below 20 years of age, have greater adjustment problems) and resident (adaptation is higher for students of urban environment). In the context of adaptation to embark on university comes to the fore also inability to deal with newly acquired freedom and escape away from parental control. Students of "academic obligations" explore or spend time by exploration and experimentation in other fields and in back reflection of university years admit their unpreparedness for the academic obligations. In the Czech Republic has been empirically documented [7] that each year fight with difficulties resulting from the difficult conditions of adaptation to university also a large percentage of Czech students. These students are selected in different learning paths at a relatively young age, so the adaptation process becomes complicated. Authors Simon and Soukup [30], [31] studied the differences in the transition to university according to type of school in which student completed their secondary education. Differences in the probability of a successful transition and adaptation to high school are not between graduates of different types of secondary schools too striking. Identified differences in the percentage authors attributed to the type of high school graduation. I.e. it can be concluded that this is due to the different nature of the courses at the observed schools (eg. different preparation for entrance exams at university, etc.), different parents support to further study, different power of aspirations and so on. Further research of Fejdova [9] focused on the issues of adaptation of Czech students at the university confirms that 54.32% of students perceived the transition from secondary school to university without difficulty, as the crisis 27.16%, no difference 18.52%; On the other hand, 72.84% of the students expressed their concerns about the new environment, the most problems to adapt comes due to the system of learning 62.96%, 69% due to people (teachers and students), with 12.35% of the school environment; adaptation process was different: "I negotiate with it immediately" said 45.68% of the students, "after half a year" 28.4%, "still adapting" 16.05%, one year 9.88%. Nevertheless, the students agreed that they more closely meet the university system study (59.26%), than secondary system (40.74%). Authors Langmier and Krejčířová [19] concerning the choice of profession indicate that a large proportion of young people starting their professional career with unclear and imprecise and delusions and little detailed information. In the process of profession choice is a lot of random and groping. This leads to inadequate satisfaction of their initial expectations, often do not correspond with reality, which in turn results in a loss of motivation, disappointment and frustration. This leads to deceleration of adaptation process. Reported data may not correspond to the situation at Slovak universities, but it shows that the process of adaptation of university students despite the different conditions of the study is a general problem in European and world universities.

1.3 View on the issue of adaptation of students at Slovak universities

The issue of adaptation in the university environment is systematically addressed by several authors. The author Hargašová [12] uses the terms "matriculation myth", "freshman myth", or "myth of novice" for the adaptation process. Defines it as a degree of disappointment, frustration resulting from the expectations that were registered at first-year students more positively than the actual perception of the school environment and themselves in it. Summarize the results of several years of research of adaptation of students at selected Czech and Slovak universities. She watched the fundamental problems that students encounter in the beginning of the study and further subjective severity of these problems. Her work was based on the works of American psychologists Baker and Siryk [6], the authors of one of the most used questionnaires which detect level of adaptation of students at university - Student Adaptation to College Questionnaire (Sacq), which author modified to conditions of university education in Slovakia. It emphasizes the need of early intervention in the adaptation problems, it means early and detailed familiarity with the environment, the concept and requirements of the university which the student wishes to attend. Another author Žiaková [37] extended the research of adaptation to university education. Her research was focused on the assessment of adaptation process (on the five faculties of UPJŠ). She concluded that students of faculty of education (along with medical students) have highest general level of adaptation. Up to certain point it corresponds with conclusions of Kasáčová [16], who concludes that high school graduates (concerning university study) are better prepared in compare to graduates of gymnasium, and approach to preparation phase is influenced by previous professional orientation.

In newer research, Smida [33] presents opinion, that students adaptation problem is to continuity between high school and university study. For a long term the universities complain about insufficient knowledge preparedness of high school graduates.

1.4 Steps for simplification of students adaptation

Foreign and domestic literal sources provide wide range of of practically tested recommendations and services (which has a long tradition supported by intensive research of problematic) designated especially for adaptation of students at universities, at support of successful graduate and at strengthening of individuals during process of decision about education and career [11], [12], [38], [21], [14], [20], [34], [35]: programs for better orientation in system of study, early support systems, courses for support and development, students information and advisory services, educational and disciplinary law, Freshmen Interest Groups, subject Introduction to university studies, carrier consulting, programs for support of healthy lifestyle, cultural and social campus activities, sport facility, tutorials. These programs are usually mutually connected to one complex system, which purpose is to identify students whose have problems to adapt to new

environment or new study system and effectively help to handle it and eliminate it. However, all students are affected by certain form of support program. Although, not only at Slovak universities are not present complex network of programs which make adaptation for university study easier. It starts to reveal courses, activities, and tutorials for this purpose, at least. These courses is suitable to arrange before the start of the semester, or to the first few weeks of the first semester

2 Conclusion

Theoretical starting points and research investigations (differential and correspondent) brings whole row of impulses to university's educationists, to think about improvement of adaptation. This assume the improvement of organization forms of education, motivation of students, develop their desire for education, self-realization, self-improvement and self-reflexion. However, the pursuit of a successful adaptation of course cannot be just a matter of university, but also a personal matter for each student.

The documents are the opinions of university teachers ... *the student's responsibility is to actively participate in this process, creatively accept the influences of educational activity of school.* He cannot stand at the passive role of the subject (object), which is to be something to do: *So now you've got me and make me an expert.* Without the student's efforts is the teacher's effort useless [27] and adaptation slow. Adapting of beginning students to conditions of university should be implemented as planned process, which is continuously monitored and evaluated. The only way to makes study not only success, but also the overall work and life satisfaction percentage, so it is effective to manage claims and problematic situations associated with this adaptation more than a desirable objective, but also a personal matter, desire and intention of new student. Achieving the general improvement of student's adaptation will require considerable effort, resources and system approaches of colleges and teachers teaching art. Progress will depend on whether and to what extent educational institutions accept the academic adaptation issues more authority than it is today. The result should be a young man ready for education and learning, ready to adapt in the future for a number of different changes in society (politics, culture, economy, science, technology), prepared to effectively perform all life roles, someone who will creative lifestyle through intrinsic motivation, emotional richness, developed intellectual ability, good socialization and value orientation" [36].

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MILITARY METAPHORS IN SPORTS LANGUAGE IN MEDIA

Danica Pirsl - Nebojsa Randjelovic

University of Nis, Faculty of sport

10a Carnojevica str.

Nis, 18000, Serbia

+381 18 256 804

danicapirsl@gmail.com - nesarandjeli2013@gmail.com

Abstract: *Metaphor has been amply described so as to encompass its meaning in stylistics, rhetorics, aesthetics, as a source of new meaning in lexicology, and as a cognition means in logic, philosophy and cognitive psychology. A term metaphor was first used by Isocratus. Its theoretical foundations were set up by Aristotelus in his Poetics describing it as a way of rearranging the meaning of a word missing in language, and where transfer of similarity is represented by lacking words that correspond to certain concept. Definitions of metaphors are entered in many a dictionary, monograph, textbook, article. Charles Bally claims that metaphor is just a comparison where brain becomes prone to tendency to comprise abstract notion and a concrete object into one word. Metaphor has been also amply described in other domain specific languages, or jargons, but in this paper sports vocabulary, and more specifically military metaphors within the Serbian sports literature, are being analyzed.*

Keywords: *sports vocabulary, metaphors, specific domain language, military metaphors, Serbian sports literature*

1. Introduction

Albert Dauzat in the "History of the French language" describes metaphor as a language phenomenon where metaphor represents a new thought impression thanks to which an old word assumes a new conception. Metaphor is a condensed comparison (Dauzat, 1956, 195).

Ullmann claims that for metaphoric transfer to ensue there must be three elements:

1. Incoming object
2. Named object
3. Properties common to both objects making basis for the relation of similarity between them.

Prime focus of interest of the cognitologists is a mental activity of man, manifestations of the essence of cognition. Research on creativity process is a new direction. Creativity is seen as "cognitive activity leading to a new or novel way of solving a problem or situation" (Ullmann, 1959, 475). Contemporary science sees development of intellectual habits and creativity as directly dependent on the level of metaphoric thinking. During cognitive process the author searches his long term memory, reveals two referential notions (sometimes logically non-connective), determines some kind of relation between them, and finally, creates a metaphor. Thus, a form of thoughts finds its manifestation in language – the author creates a metaphor, i.e. a language picture. "Generally, psychologists define language as a basic form of cognitive processes manifestations. More than any other form of human behavior language reflects thoughts, grasping, recollection, problem solving, intellect and learning (Ullmann 1959, 516). Metaphor in Greek is a figure of speech where one notion is replaced with the other one, on the ground of similarity: fox— cunning man, spring of life— youth and the like (RSKJ, 1969, 353).

Research on metaphor abounds concerning its stylistic abilities, semantics and function, laws of metaphorization, etc. Metaphor is common to all languages, in all ages, it encompasses all aspects of language and is to be found in

all functional forms (Gak, 1988, 11). According to Arutjunova, metaphor is a tool of thought used to reach the furthest corners of our conceptual field (Арутюнова 1990, 5-32). Lakoff and Jonson claim that metaphor permeates everyday life and manifests itself not only in language but in thinking and acting, as well (Lakoff, Jonson, 1990, 512).

1.1 Metaphor application in military lexicon in printed media

Communication uses metaphor as an important means of influence on intellect, feelings and will of those it is aimed at. Therefore it has entered published materials of active means to influence the reader. Aristotelos claim that "Most desirable attribute is to be experienced in using metaphor for they can not be borrowed from anyone. They are typical for talent, Aristotelos, 1936, 178) represents a basic principle of the artistic creativity and one of the criteria of the ingenuity of the writers and journalists. Characteristics of the modern media language is a wide use of metaphor in military lexicon. Active metaphor use of military lexicon is most frequent in print materials dedicated to social-political, economic questions, but it is also very present in the language of sport.

Not that we want to set anyone off his guard, we just enumerate but a few of sports specific phrases: changing the rules in the middle of the game, moving the goalposts, two-minute drill, no harm/no foul, franchise player, lay up, knockout blow, on the ropes, quarterback, the best defense is a good offense, three-pointer, at the buzzer, brush back pitch, hole in one, skating to the puck, ground game, blocking and tackling.

The following ones are special treats for war warmers: lay siege, barrage, trench warfare, sniper, collateral damage, surgical strike, campaign, carpet bombing, shot across the bow, frontal attack, unconditional surrender, guerilla warfare.

We all presume that our business culture needs to move past these and similar terms that convey conflict, and

assume a predominately male sensibility. We promote equality everywhere, in sports particularly. That is why we need to develop a new lexicon that is much more inclusive and much less hostile. However, for decades, there has been a working assumption in business that sports—and even war—offers a language of common understanding, and also a language that supports a business culture that values winning above all, and sees it as a zero sum game—our gain is necessarily someone else's loss. Yet, what we are presented with in the printed media is mainly war and fight related language, especially sports language. Serbian printed media could not resist this omnipresent tendency either.

1.2 Classification of metaphors

Metaphorized military terms mainly use nouns and verbs such as: war, attack, headquarters, defense, arms, fighters, base, conquer, torpedoing. etc. Most widespread are two particle metaphors (metaphor plus basic, most frequent word). Also very popular are syntagmas, adjective plus noun. Enormous use of this type of metaphors is explained by the clarity of the mechanism of metaphorization. Metaphor is always binar (having two parts), since basically, it combines the mutual influence of two, information carrying dynamic complexes.

Effective blitzkrieg has diminished tempo in Nadal's game and then with a sure service in less than half an hour, advanced to 1:0 (the Blic - Monday, August 24, 2009)

If lefthanded bombarder stays on Banjica, the club is to pay him 30.000 euros. (Evening news – B. Živancevic, August 31, 2009).

Ukrainian stronghold resists. (The Politika- Monday, September 7, 2009.)

The reason for this is to seek in a defensive formation of the Ukrainians which functioned in the middle with three centerforwards and at moments, the whole visiting team shut down in a classical bunker. (The Politika - Monday, September 7, 2009).

The old Stars squad never spoke out in public to reprimand the shadowing of the whole generation by one man. (The Politika - May, 13, 2009).

Fourth ranking tennis player, as already mentioned, decided to strenghten the headquarters and start cooperating with once very successful American tennis player, Tod Martin. (The Blic- Thursday, September 17, 2009)

Quite often one can discern syntagmatic metaphors, noun plus noun.

Over the alps to the barage visas. (The Day, September 9, 2009).

'Hasis bombarder' ends on a transfer list. (The Blic, August, 8, 2008).

'The Devils' are six miles from the target of 'the gunmen' (The Halo – Saturday – April, 12, 2008).

2. Military metaphors in the language of sports

It can be said that press does not set limits to the coverage of topics and uses all that reflects the social interests. Therefore, sports as an inseparable part of life, is not out of the limelight of the media. Sports news is part of thematic

lines of the news and magazines, but also of the specialized issues devoted solely to sports. The presence of military metaphors in sports publications is not neglectable. Athletes wage *wars* and *battles*, march into *attacks* and *counterattacks*, organize *defense*. Matches are often called *wars*, *battles*, *struggles*, *conflicts*. When describing sports matches, games or competitions it is inevitable to use military terms such as:

Battle (Air battle: Zigic versus Drogba! (The Blic - Monday, September 7, 2009).

Lightning war - Blitzkrieg (Efficient – 'Blitzkrieg' tempered down the tempo of Nadal's game and in just half and hour he used his firm serve to take a lead 1:0. (The Blic - Monday , August 24, 2009).

Bombarder ('Bombarder from Bukulja' emphasizes he is sure to be active for more than seven-eight years, and then transfers to coache's bench. (The Public Voice – Sunday 12, April, 2009).

Bunker (Ukrainian bunker resists (The Politika - Monday 7, September, 2009).

Sniper (A Serb, the first sniper of America (The Public Voice – Sunday 16, March, 2008).

Squad (Blue squad mauls the roosters (The News – Monday, June 7, 2009).

Murging of military lexicon into the sports one is not accidental. Military and sports terminology systems are similar in that they are not isolated from the general lexicon and both systems are extremely popular. Jelistratov (Юрковский, 1988) mentions several causes of the active use of military lexicon in the language of sports. One of them is the frame of mind of different peoples who have war as one stabile architype. Forms of sports were originally a preparation for the battle and wars. Another reason is the increased role of sport which has brought about competition between the athletes. This competition is characterizead by an increased agression, a burning wish to win at any cost. A vital role was also attributed to an everlasting conflict between the capitalism and socialism that was reflected in sports areas, as well.

3. Classification of military metaphors in sport

There are many attempts to classify military-sports lexicon and it is worth mentioning classification of Jurkovski. He devides military metaphors in sports terminology into three groups:

Occasional, metaphorically designed lexical units of military origin that are not used on a regular basis, and their use in sports lexicon is quite accidental. The aim of their use is to increase the expressiveness of language. As a rule, they are used as paradigmatic substitutes of sports terms or to emphasize the emotional impression. For example:

Division, armada, squad - 'team'

Bronze won by the waterpolo players at the Olympics, silver won by the volleyball players in the World league and the second ranking of the rowing team Stojic – Jagar at the Olympics, that is more or less all from the Serbian *sports armada* (The Evening News - December 29, 2008). As usual MIX gives propositions for all *football divisions* from England and Scotland (MIX , December 29, 2006).

Squad (Blue squad mauls the roosters (The News – Monday, June 07, 2009).

Target - ‘opponent’ Target in Turkey– semi-finals (The Politics, September 1, 2009).

II Metaphors widely used and doubling sports terms. These include overlaid military terms that became a part of general lexicon because of their frequent use. They enter the realm of sports use as final product, formed in the general language as emphasizing means (army, originating from the army, combat, fighter, bombardier, maneuver, attack, counterattack, defense, sniper, charge, etc). These words are used to emphasize and give strong language, usually as a substitute for the basic terms. For example:

Fight, Battle - a match against someone

Selector of Serbia, Igor Kolakovic accented that a battle for the semifinals is still the aim of his team (The Blic, Thursday-September 6, 2007).

Another fight for visa for the oncoming championship (The Politics - September 10, 2009).

Fighter - an athlete

After a match where she showed the qualities of a great fighter, that she really is, Jelena Jankovic repeated her life motto (The Public Voice – Tuesday April 1, 2008).

Sniper – efficient striker

Partizan's sniper, Uros Tripkovic confirmed his shooting from a distance reputation (three point shots, 4 out of 5) (The Politics - July 22, 2006).

Charge – attack

Eagles charge to the quarterfinals of OG (The Halo – Thursday, April 12, 2008).

III Words of military origin become specialized sports terms. This transfer is connected with the sharp shift in their content. The term is based on the shift to similarity and ends up as a strong, picturesque metaphor (first group of words). Some metaphors anchor in general language and become widely used (second group of words). Third group of words, sports terms, is made of the terminologized words from the second group. These words are entered into all sports dictionaries and general dictionaries with the entry „sport“. These are the following:

Attack – 3. sport. offensive players, attack. (Dictionary of Serbo-Croatian language, book three, K—O), p. 585. Novi Sad, Zagreb. 1969.

Counter attack (Dictionary of Serbo-Croatian language, book three, Z-K, p. 831.)

Fight – combat, competition (Dictionary of Serbo-Croatian language, book three, A-E, p. 251.)

Defense - v. sport. part of a team that resists the attack of the opponent team. (Dictionary of Serbo-Croatian language, book three, O-P, p. 23.)

4. Conclusion

If we separate just military lexicon from the fixed terms in the language of sport, then we can notice that military metaphor in sports terminology is given a role to describe general concept: *victory, defeat, attack, protection*, etc. Concrete concepts are expressed by special sports lexicon: goal, pass, shot, offside, etc. As a result of the metaphorization of military lexicon, sports language is

enriched by new terms, a group of military terms is used as expressive names, doublets of the sports terms.

Thus the language of sports is most productive for the metaphorization of military lexicon. The use of military metaphors in sports publications becomes a law and is inevitable because of the historical ties of war and sport, because of the similar character of the rules of sports games and combat fights and the wish to create expressiveness when describing sporting events.

As important as increasing the inclusiveness of language is moving past the hostility of so much of the sports, and especially military language used in the workplace. How many times during our working career have we been told to read SunTzu's "The Art of War" as a guide to business strategy? Or "Leadership Secrets of Attila the Hun"? And what does this useful literature tell us about life in general, not to mention our *working life*?

The truth is that business is not a zero sum game. Yes, it is often very competitive, but success does not always have to be measured by someone else's failure. This kind of thinking is toxic, and it is ultimately not beneficial. When people are conditioned to view competitors as the enemy, they are closed off to new ways of thinking, including partnering with competitors where it makes sense, or viewing what they do as growing the pie for everyone, rather than preventing someone else from having a slice. In most fields, and in the field of sport as well, there is enough business for more than one competitor to thrive and taking a broader, less combative approach may serve you better in the long run.

"If you treat people like sports fans, they may end up acting like them — and you know how fickle sports fans are," said retired lieutenant colonel Brendan "Mac" Greeley, a Marine pilot in Vietnam. "Build up their expectations, (and) when we start getting hurt, the sports fans might just lose heart and quit on us."

The loss of public support may not come until the public has suffered what a Detroit-area psychiatrist, Michael Miletic, calls the "traumatic impact" of this conflation of sports and war. "I see how my patients have been emotionally manipulated by the excitement of it all," he said. "They have been lulled into believing that just like sports there will be a satisfying ending. Nothing too bad will happen. But how will they feel, how will we feel as a nation, if we see our troops inhaling poison gas after we've been led to believe it's just a game?"

I doubt that this sandstorm of sports/war words was willfully thrown up to blind us with a language of mass distraction. But it is swirling around out there, clogging our reasoning powers and obscuring the larger questions about — as some of those sports-oriented "war-casters" might put it — an American game plan that might include a long-term commitment to hostile ballpark. The confusion of war reality and sports fantasy already is claiming casualties among the most vulnerable Americans. Miletic was watching CNN the other day when his 6-year-old son ran past the TV, took a quick look, turned to his dad and asked, "What's the score?"

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PHD IN EDUCATION GRADUATES' INITIAL PROFESSIONAL SOCIALIZATION

¹Yanyan Li - ²Jana Poláchová Vašátková

¹School of Education, Henan University
Jin Ming Avenue, 475004 Kaifeng, Henan, China
e-mail: yanyanli@yahoo.com

²Department of Sociology, Andragogy and Cultural Anthropology, Faculty of Arts, Palacký University Olomouc
Tř. Svobody 26, 779 00 Olomouc, Czech Republic
e-mail: jana.polachova@upol.cz

Abstract: *As the primary pursuit of doctoral studies in education, the Ph.D. graduates are supposed to be able to hold the position of academic staff at universities. It has become a necessary qualification to hold the doctorate for a university teacher. However, their readiness for the role of university teachers at the moment of their graduation from Ph.D. studies is rather unknown. The aim of this text is to uncover the effect of Ph.D. in Education on the graduates. The Ph.D. in Education graduates' professional life paths have been explored. Specifically, the novice university teachers' perception of their initial socialization is dealt with. Four life stories of Ph.D. graduates who now work in the position of university teachers have been analyzed. The scheme of adaption to the profession is presented in the concluding part of the text.*

Keywords: *doctoral study of education, Ph.D. graduates, university teachers, professional socialization, life stories*

1. Introduction

The doctorate degree has been accepted as one of the necessary preconditions for teaching position at the university. To track the relationship between the doctorate education and university teachers, the intention of academic degree is rooted within a particular historical context. In the middle ages, the doctorate had been awarded primarily to advanced scholarship as a license to teach at the university (Pedersen, 1997: 242-245). The issue of Ph.D. graduates' preparedness for the role of university teachers at the moment of their graduation from doctoral studies is still powerful. However, the Ph.D. graduates of education are absent from the view of researchers as "the forgotten group" in the Czech Republic (Mareš, 2013). Therefore in this study, two research questions will be inquired into the initial socialization of Ph.D. graduates in education. How are the Ph.D. graduates performing in the role of university teachers? How are they initially socialized, i.e. how have they perceived the change of the role from Ph.D. students to university teachers?

As the primary purpose of the doctoral education, the Ph.D. students are supposed to acquire the knowledge, skill and attitude necessary for their further (academic) professional path in respective occupations. There has been a continuing interest in the preparing process of the socialization to the academic culture (Antony, 2002). In the cognitive dimension, the novice professional needs extensive knowledge as a basis for professional practice and authority (Friedson, 1986). In the research on the graduate students' socialization, Weidman et al. developed a framework with the core of institutional environment of the higher education institutions in which the professional preparation occurs (2001: 55-83). Engaging faculty through the interaction among students as well as the interaction between students and faculty members is distinguished to be the valuable opportunity for their

socialization in the doctoral study programme (Gardner, 2010). Based on her longitudinal interviews with the graduates in various disciplines including humanities, sciences, social sciences and professional areas at three universities, Austin (2002) finds the discrepancies between the preparation of graduates and the realities of both academic work and the academic labor market. Regarding the discipline of education, the journal clubs and list-based examinations are introduced to be adapted to help socialize students into the norms and values of the profession (Golde, 2007). The proper preparation in research methodologies of doctoral students in education has been widely discussed in designing the curriculum (Page, 2001). It has been proposed that the doctoral students' experience should be involved as the evidence in shifting the study programme in the following research (Leonard, et al., 2006: 42).

In the Czech Republic, the doctoral study programme in education has been accredited to be held by five higher education institutions. They are respectively the Faculty of Education and the Faculty of Arts at Charles University in Prague, the Faculty of Education and the Faculty of Arts at Masaryk University in Brno, the Faculty of Education at Palacky University in Olomouc. There were 549 Ph.D. students who had completed their doctoral study programme of education successfully and been conferred the title of Ph.D. from 1999 to 2011 (Mareš, 2013). Still, very few research efforts (as e.g. Mareš, Andů & Svobodová, 2005) have focused on this target group. In this paper, the research is concentrated on the doctoral programme of Education of the Faculty of Education at Palacky University in Olomouc. The result of the qualitative study is assumed to answer the following research question: What are the effects of PhD studies on the graduates' professional path in its initial stage in particular?

2. Methodology

The qualitative approach of life stories is used to discover the initial stage of Ph.D. in Education graduates' professional path and to acquire perception of a change from a Ph.D. student to a university teacher, to academic profession (Atkinson, 1998: 7-19). The specific scheme follows the seven stages in the complete interviewing process including thermalizing, designing, interviewing, transcribing, analyzing, verifying, and reporting (Kvale, 1996: 23-24). The researchers have clarified the purpose of the interviews firstly which is to get their perspective on the role of doctoral study in their professional life of university teachers. In this article, four life stories of university teachers are dealt with. Three main areas have been touched upon to form the graduates' perspective on the effects of doctoral study has been tracked. The accuracy of analysis is verified by asking storyteller repeatedly. On the one hand, the reliability of stories has been confirmed by continuous repeating the words of tellers face to face during the interview and by writing them to check all the stories via email after the interview. Through the in-depth interview, the life stories have brought deeper understanding of the micro differences in graduates' behavior, attitudes, and perspective on core concept. On the other hand, the life stories are an individual point of view mixed with facts. Each of the stories has thus been coded by two separated researchers to create the new stories for each graduate. "Coding is primarily an interpretive act" (Saldaña, 2012: 4). Simultaneous coding is also involved in the second cycle as well in negotiating with each story. Life stories therefore provide a longitude picture of the course of the doctoral study in Education and the effect on graduates' academic career path on the specific position of university teachers. The comparison of different graduates' experience compensates for the weakness of cross-sectional study.

For the aim of study, the group of Ph.D. graduates fulfilling several criteria has been chosen to be the unit of investigation. To be more precise, the members of this group are those who have already finished their doctoral study of Education at Palacky University in Olomouc in the past decade (between 2004 to 2013); those who have been working as university teachers since the graduation, and those whose level in English language ability are C1 at least (to fulfill the requirement of interview implemented by an English speaker). The English language used during the interviews and during the development of life stories can be seen as an advantage. The interviewer (who is not of Czech origin) holds the position of the "socially acceptable incompetent" when interviewing, she or he is "ignorant" and needs to be "taught". This "watcher" might help to capture the quintessential role (Lofland, et al., 2006: 69-70).

Four graduates work currently as university teachers and their stories are the sample used in this article agreed to participate in the research. The process of interview has been recorded into three audio documents for each of the graduates. Life course perspective is identified on the basis of category centered approach supported by the grounded

theory developed by Glaser and Strauss (1967), which links the identified categories into theoretical models (Chamaz, 2006: 133-140). The concepts and perspectives are categorized by axial coding with an organizing scheme including "conditions, actions/interactions, and consequences" (Strauss & Corbin, 1998: 128). The identified categories and subcategories are collected by axial coding within an organized scheme including "conditions", "action/interactions", and "consequences" (Strauss & Corbin, 1998: 128). Finally, the systematic and exhaustive comparison of text segments is used to build thematic structure and theory from a body of text (Guest & Namey & Mitchell, 2013: 9-10).

3. Findings

The study follows the interests in the professional socialization during preparation for the responsibilities of university teachers. From the stories, the overtaking of the responsibilities especially of teaching and research has been identified in the development of graduates' professional path. The scheme of categories is formulated under the framework of "conditions", "action/interactions", and "consequences" by axial coding. Thirdly, the route is interpreted of the professional socialization from a Ph.D. student to a university teacher. The content of interview is written in italic type as follows. As the last step of analyzing, the selective coding has been conducted based on the procedure and result of open coding and axial coding. The model is formulated to describe the adaption from the role as a Ph.D. student to a university teacher with concerns of the route in balancing the teaching and research as two of the main responsibilities in the initial period of professional socialization. According to the assumption that the doctorate is primarily for research training, Labaree (2003) reminds that most doctoral students in education have little formal training in education research before they start their Ph.D. studies, with their undergraduate and master's degrees usually in other fields or disciplines or focused almost entirely on education practice. Therefore, the training in doctoral study is usually concentrated on the Ph.D. students' thesis especially on the research methods applied in their thesis. Either the tasks of publication or participation in the research project provide the Ph.D. students opportunity to learn research methodology in practice. With the fundamental preparation, the methodology has also been applied in writing the dissertation finally. *"The basic education for a teacher is Ph.D. at the university now. Some of my colleagues, who don't have a Ph.D., think that they don't need a Ph.D. but it shows that they should have because they are too quick in considering questions. I think you really need to think for a long time before you do something. And that's the training in doctoral studies. There could not be only one route in doing something but people always try to find the only route as a beginner. It was not so easy to do it in social science which is not objective. Everybody could have their own opinions and every opinion could be right. The truth is very variable and you have to think about it a lot."*

From the role as a Ph.D. student to a university teacher, the professional knowledge and ability is shaped by the training in doctoral study programme of education. The compulsory responsibilities include also the teaching practices and publication tasks. Through the teaching practices, the Ph.D. students achieved the pedagogical knowledge of core subjects and teaching experience for adults. *“I think the teaching experience has helped me teach adults in class.”* The doctoral training in the doctoral study programme of education is significantly needed in preparing a professional university teacher. Firstly, the teaching practice prepares the university teachers psychologically (the self-identification of the role, etc.) and the capability practically in applying the education theory into teaching at the university. *“As a scholarly enterprise, teaching begins with what the teacher knows. Those who have to teach, have to be above all well informed and steeped in the knowledge of their fields. Teaching can be well regarded only if professors are intellectually engaged.”* (Boyer, 1990: 23) Secondly, the examination task provides them the experience to master the knowledge of didactics and self-organizing especially on time-management as a staff working at the university. Thirdly, the cooperation with supervisors and other colleagues improves the cultural involvement in academic community of the higher education institutions. Nevertheless, the route of further “graduation” (i. e. “lecturer”, “assistant professor”, “associate professor (docent)”, and “professor” within the academic staff seems to be “a must” in Czech higher education institutions. *“Regarding the career path in future, I know I should become a docent or professor one day.”* However, it’s hard to escape from the involvement of the academic community and institutional climate. *“Working at the university is quite special and different from other companies. You have to behave well, polite and respective to the people with title of docent or professor in this system. I am the youngest one with only a Ph.D. title and I have to listen to everybody else. You don’t need to listen to anybody when you are a docent. You are a star and you can do absolutely whatever you want when you are a professor. The system works like a ladder and you have to walk step by step without jumping to the position. And you can’t change it no matter how clever you are. It’s a slow moving. You have to understand how to behave in this community.”* For pursuing a higher professional position of the academic staff ranks in higher education institutions, the researches might be devoted more attention by individuals. Newly appointed academic staff gets short-term employment. For junior academic staff, their employment security grows gradually because the permanent contracts are only awarded with the appointment to senior positions. Additionally, there is another financial reason which would be the motivation to improve the research. *“You could get more from your project, supervision and publication besides the salary at the university. The basic salary was for teaching, organization and normal work. It will be a little higher when you get a title of docent or professor.”*

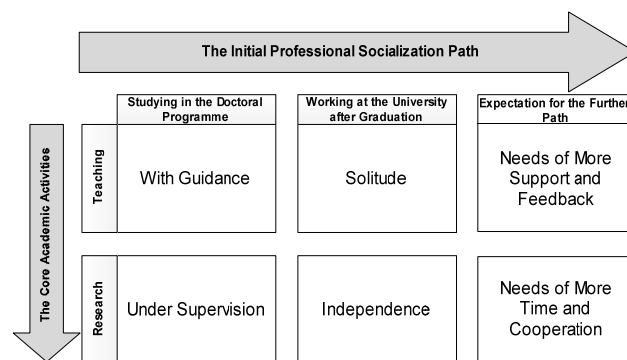


Chart 1: Matrix of Transformation from a Ph.D. student to a university teacher

The doctoral study of education has brought the Ph.D. graduates on the way to be an educational researcher. However, there is a more urgent issue for them that are to become an independent researcher in coping with the balance of teaching and research at the position of university teachers. *“I taught and prepared the teaching for about three or four days and did other organization jobs every day in a week. There was little time for me to do the research. Mainly I am a teacher at the university. I like doing research but I spend majority of my working time on teaching.”* The reality has also been reflected by the academic performance of the Ph.D. graduates in their research outcomes (see Chart 2) that has been identified as a side-effect of the interviews. The amount of publications increases regularly from the first year to the third or fourth year of study. On contrary, it has obviously decreased since the first year of working at universities. The plateau of productivity has been caused by the limit of time as well as the change of needs for their responsibility in different positions especially at the beginning of working experience. However, it becomes the critical point for university teachers to break the deadlock in the professional path. *“One reason legislators, trustees, and the general public often fail to understand why ten or twelve hours in the classroom each week can be a heavy load is their lack of awareness of the serious study that undergirds good teaching.”* (Boyer, 1990: 23) The research lays the fundamental understanding and origin of intelligence for a university teacher to be a qualified educator in class. And the teaching experience could alternatively inspire the academic outputs.

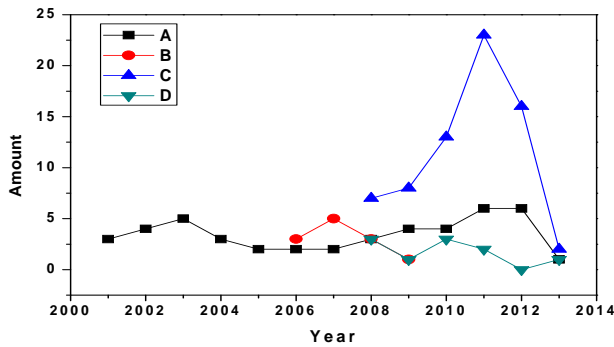


Chart 2: The Academic Outcomes of the Ph.D. Graduates

Sources provided by the interviewees in story-telling.

4. Conclusion

The Ph.D. in Education graduates are supposed to be professionals in their specific field of study, for instance in a specific area of education immediately after their graduation. This article has captured the perception of role changing. It has focused on the initial stage of socialization of four Ph.D. graduates. The academic role is a very complex one: it includes leading in their fields, setting norms for teaching and research, curriculum development, and administration etc. (Kogan & Teichler, 2007). To meet the requirement of faculty, the academics have to overtake multi-responsibilities. The presented research reveals that the novice academics feel overloaded with teaching and administrative work on the contrary to their research activities. Simultaneously, they are in need of more guidance and support to get properly involved in the scholar culture during the initial socialization at the university. The balance between teaching and research becomes a puzzle for university teachers in their professional path, at an early stage in particular. The teaching position at the university and plenty of academic freedom has attracted the Ph.D. graduates to get employed but the realistic limit of time leaves their teaching busy and hard in the first few years on professional path. "The teaching and research could be connected with each other if you teach subjects similar to your research area at the university. It is the best situation. You could teach well because you know well about this area and you could improve your research during your teaching practice. But it is impossible for most of the teachers." The additional organizational responsibility and the communication with experienced colleagues at the university make the academic position even more demanding. Although the academic research is emphasized by any university institution, "the excellence in research should never be allowed to become an excuse for underperformance in the educational tasks" (Ederer & Schuller & Willms, 2008: 2).

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INFLUENCE OF VOLUNTEERING ON THE YOUTH AND HUMAN VALUES

Lucia Cintulová

St. Elizabeth University of Health and Social Sciences

Palackého 1
Bratislava, 81102, Slovakia
+421910228919
luciacin83@gmail.com

Abstract: *Volunteering constitutes one of the most important pro-social activities leading to higher social and human capital in society. It is also clear that levels of volunteering vary a great deal across cultures and countries due to the millions of people involved in helping for free. Helping others is the way to higher individual well-being and better impact on solving social problems. The paper discusses theoretical consideration about why volunteering might influence self-development of youth as well as the results of research aimed at human values forming by doing voluntary service in Slovakia.*

Keywords: *volunteering, human values, youth volunteer, voluntary service, social capital*

1. Introduction

Volunteering can positively affect individuals' development and well-being due to various motivational reasons. People's well-being increases because they enjoy helping others. The reward is internally due to an intrinsic motivation. People volunteer instrumentally in order to receive a by-product of volunteering. Their feeling of utility is increased by obtaining an extrinsic reward from it.

Intrinsic motivation - the motivation to engage in a volunteering arises from within the individual because it is intrinsically rewarding. Volunteer simply enjoys an activity or sees it as an opportunity to explore, learn, and actualize his potentials [1].

1. Pro-social attitude – to produce the good work and useful help might enjoy the outcomes of volunteering even more when the effort is provided by themselves. Involvement in community and organizational life through volunteering) support public engagement; create social norms – shared civic values, norms and social values.

2. Utility of the service - about the benefits of volunteering, more than 55% of volunteers stated that an important source of satisfaction is seeing the results of their work.

3. Supporting environment – volunteers are freely engaging in activities that they find interesting, that provide creativity, novelty and optimal challenge.

4. Helping others gives good feeling and enjoyment – volunteers receive a 'warm glow' from contributing time to the provision of a public good.

Extrinsic motivation occurs when we are motivated to perform a behavior or engage in voluntary service in order to earn a reward or avoid a personal falling. If the reason to do volunteering is based on external motivation, they see volunteering as an investment and expect external benefits or payoffs.

1. Investment in human capital – voluntary work can enhance individual employment prospects, if it is done long term. It helps to improve social skill and competences and obtain new knowledge and experience by providing different type of activities, training and educational programmes.

2. Investment in the social network – Doing voluntary service volunteers can get in touch with authorities or make valuable contacts needed for getting well-paid job or achieving career.

3. Investment in society and active citizenship – voluntary work contribute to increase active involvement of youth in the society, formation of the civic society with prosocial values and interpersonal relations between different people in different regions.

Examining the premise that volunteering is beneficial for the helper as well as the helped, a number of studies have looked at the impact of volunteering on subjective and objective well-being. Positive effects are found for life-satisfaction, self-esteem, self-rated health, and for educational and occupational achievement, functional ability, and mortality. Studies of youth also suggest that volunteering reduces the likelihood of engaging in problem behaviors such as school truancy and drug abuse [2].

Who volunteer during their studies develop more pro-social attitudes and are more likely to volunteer in the future. Volunteering takes many forms, each inspired by a different set of values and on the other hand, it can influence setting life priorities and human values by engaging youth in the active citizenship.

Individuals have unique experiences (trauma, relations with parents, helping others, social networks) that affect their value priorities. Values as desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives. The crucial content aspect that distinguishes among values is the type of motivational goal they express. In the case, value priorities influence decision to be a volunteer and there is point in influence of volunteering on self-development and forming unique values in youth lives.

2. Research methods

The purpose of this research is to develop knowledge about pro-social attitudes of youth volunteers. It provides a framework for understanding how volunteers' values and reasons for volunteering influence volunteers' pro-social attitudes and make an impact on forming values of youth. Research was held in march-may 2013.

Our empirical analysis considers three indices of prosocial values of volunteering, aimed at measuring both the quantitative (number) and the qualitative (degree of familiarity and cooperation) character of human values, and intrinsic and extrinsic motivations to voluntary work and recognition of human values identified by young participants. Indicators: volunteering frequency, religion, university department and studies, human values according to Schwarz Value Survey, factors leading to volunteering (family and education of parents, positive example, social or university environment, a non-profit organization, self belief and self-value orientation);

As the tool of the research we use two questionnaires: 1. standardized questionnaire Schwartz Value Survey (SVS) - Basic Human Value Scale including 21 scales and 2. PVQ The Portrait Values Questionnaire.

The PVQ comprises 40 items. Each item consists of a description of a person ("portrait") with two sentences.

The subjects are asked to assess how similar to the portrayed person they are. Each portrait describes a person's goals, aspirations, or desires that point implicitly to the importance of one of the 10 basic values in the original theory. For example, "Thinking up new ideas and being creative is important to her. She likes to do things in her own original way" describes a person for whom self-direction values are important. For each portrait, respondents answer "How much like you is this person?" on a scale from 1 (not like me at all) to 6 (very much like me).

Table 1 Factorial structure of PVQ

	Openness to change	Self-enhancement	Conservatism	Selftranscendence
Self-direction	,758	-,118	,054	-,194
Stimulation	,694	,551	,528	,429
Hedonism	-,591	-,133	-,449	-,200
Achievement	,958	,884	,103	,183
Power	,199	,951	-,464	-,039
Security	,152	-,497	-,375	,778
Conformity	,212	,125	,868	,018
Tradition	,045	,338	,780	,362
Benevolence	,027	,111	,059	,815
Universalism	,467	,187	,094	,912

- Power: Social status, dominance over people.
- Achievement: Personal success according to social standards.
- Hedonism: Pleasure or sensuous gratification.
- Stimulation: Excitement, challenge, and novelty.
- Self-direction: Independence of thought and activity.
- Universalism: Understanding and concern for welfare of people and nature.
- Benevolence: Enhancing the welfare of people to whom one is close.
- Tradition: Respect and commitment to cultural customs and ideas.
- Conformity: Restraint of actions that may harm others.
- Security: Safety, stability of society, relationships, and self.

2.1 Sample

Responses were obtained in their native language from 1070 adult volunteers from 6 universities: UKF Nitra, SPU Nitra, Comenius university Bratislava, Slovak Technical university Bratislava, UMB Banská Bystrica, Art academy Banská Bystrica, Prešov university UNIPO, Catholic university Ružomberok, Trnava university in Trnava.

The sample is consisted of 51.4% of women compared with 48.6% for men at age of 19-25, total 1070 volunteers. An important indicator of research is religion. 35.2% of respondents identified themselves as people with a firm faith. 25.9% said they practiced the faith and regularly attend church. 25.3% of respondents believe "in something", but do not go to any church. The remaining 13.6% of those without faith, nor do not practice it.

3. Results

The PortraitValues Questionnaire (PVQ) comprises 10 basic values that guide behavior. The Schwartz model postulates that these 10 values build a circumplex structure.

Table 2 Correlation between the values and sex

10 Value Scale	Value	df	P	R
Self-direction	11,208	5	0,057	-0,078
Achievement	17,26	5	0,082	0,119
Security	8,44	5	0,133	0,091
Stimulation	7,22	5	0,204	0,023
Tradition	12,98	5	0,024	0,065
Hedonism	14,06	5	0,015	-0,049
Benevolence	20,80	5	0,001	0,120
Conformity	45,48	5	0,000	0,096
Power	20,80	5	0,001	-0,097
Universalism	36,96	5	0,000	0,162

We indicated values such as power, achievement and stimulation as stronger preferred by men comparing to women. Men increasingly prefer the value of power than women, which results from the overall social status in professional and family life (37.5% to 23.3%).

The results show strong correlation between gender-woman and value scale – benevolence, self-direction and universalism.

We examined zero-order correlations between the two indicators (p = 0.001; r = 0,189) - sex and the value of helping others pointed to an important feature more common in female, such as warmth and related social helpful interactions leading to the strengthening of pro-social behavior.

The value of **benevolence** implies protecting and promoting the welfare of those whom the individual is often in the touch. High score at this value appeared in 26.9% of women compared with 17.8% for men.

The value of universalism as opposed to the value of benevolence applies generally to all people and nature, the person with a high score of this value is more likely to be tolerant, empathic, willing to help and get involved for the good of others. The correlation between sex and value universalism p=0.015, r=0,074.

47.6% of women absolutely think it is important that every person in the world are treated equally compared to men - 39.8%. For 29.2% of men it is important that all have equal opportunities in life, compared with 25.2% of women

Similarly, men and women want to be successful in life and hope that people appreciate what they do as volunteers. 14.4% of men considered it very important to be successful and 14.2% of women also consider success as very important (they want to achieve success while doing voluntary service). A similar view was held by men (19.2%) and women (18.7%) in claims that are deemed to be people who are not covet recognized for what they have achieved.

Young people have many opportunities in life that can be used to achieve career and especially women want to hold important positions as men. Many of young people consider volunteering as an investment in self-development to achieve new skills, as well as the opportunity to help others.

Table 3 Correlation between the values and religion

10 Value scale	Value	Df	p	R
Universalism	89,95	15	0,000	0,178
Achievement	37,84	15	0,001	-0,71
Security	36,96	15	0,001	0,013
Stimulation	67,65	15	0,000	-0,156
Self-direction	69,16	15	0,000	0,197
Tradition	84,51	15	0,000	0,241
Hedonism	47,94	15	0,000	-0,140
Benevolence	36,03	15	0,002	0,069
Conformity	39,46	15	0,001	0,104
Power	74,68	15	0,000	-0,252

The results show correlation between wealth and religion. The stronger the faith is, the less young man longs for tangible assets and money, because faith gives him the necessary spiritual values that stand above the wealth.

Respondents who reported a firm belief are the 31% who cannot covet, and only 9.3% of them are similar to the statement "I have a lot of money and expensive things." The value of money is very important, confirming 43.2% for respondents who do not believe in God. 24.5% of respondents with occasional faith have no significant relationship to wealth compared with respondents without faith, wealth is not important for them (17.4%). On the other hand, those who are craving power and money, represent the total sample 33.8% compared to those for whom this is not at all important - 37.4%.

The study discovered a relationship between the value of hedonism and faith (p <0.001; r = 0,197). The faithful young people appear low level of hedonism. Although the most of them are aware of the importance to have everything in life that one needs from a material point of view, faith in God gives them the belief that hedonism is not priority value in the first place

26.7% of strong believer and 15.5% respondent with faith indicated value the importance to listen to people who are different than them. Although, they dont agree with them, but want to help them.

The level of significance indicates a significant difference in the amount of universalism in various stages of faith p <0.001; that allows us to conclude that the believer has higher scores in social values is more likely to behave prosocial as unbelievers. The person with a high score of universalism and benevolence wants to help others. Volunteering is linked with value priorities such as utility, tolerance, empathic understanding and love of neighbour.

The value of **conformity** is determined by the power of belief in God. The results show statistically significant correlation between the various stages of respondents' belief and the value of conformity (p= 0.001, r=0.104). We can make the argument that the stronger the belief in God is the greater tendency to behave in conformity volunteer do. He believes that people should respect standards and rules even when no one sees them. Only 13.3% of the faithful young people said that the standards of society is not at all important to them. On the contrary, young people without faith (33.7%) consider that person is independent and do not have to respect other people.

Young people without faith or with a poor attitude to religion are individuals who prefer independent lifestyle without feeling guilty for their behavior because strict social rules are not considered as highly important for them.

Table 4 Correlation between the values and volunteering

10 Value Scale	Value	df	P	R
Self-direction	25,73	5	0,000	-0,009
Power	24,642	5	0,070	0,313
Univerzalism	24,62	5	0,000	-0,290
Achievement	13,05	5	0,023	-0,160
Security	10,88	5	0,060	-0,017
Stimulation	3,71	5	0,059	0,075
Conformity	23,36	5	0,000	-0,286
Benevolence	48,87	5	0,000	-0,409
Tradition	9,01	5	0,109	0,025
Hedonism	14,48	5	0,013	-0,130

Young people who are involved in volunteering indicate more social values than power, achievement and money. The value of achievement is important for young people. Volunteers indicate the value of achievement as important because they need to get acknowledgement, what they do. 39.2% of volunteers confirmed that success is very important to them, compared with 60.8% of students without volunteering experience. The opposite view is 37.4% of volunteers for whom success is not significant compared with 50.7% of students who are not engaged as volunteers.

The value of **benevolence** (p<0.001) presenting love, charity and care of others and nature was strongly indicated in people who become volunteers comparing to no volunteers.

68% of students-volunteers said that people should be interested in others, problems and taking care of nature, compared with 32% of students without volunteering experience. Only 35.2% of volunteers think that people should not care about the interests of others and things around them, compared with 64.8% of those who do volunteering.

Value of **conformity** ($p < 0.001$) and universalism ($p < 0.001$) in Analytical Testing data showed statistically significant differences in relation to the field of study. These values appeared in the higher score at students in social sciences (social work, theology, psychology, pedagogy) in compared with another science (technical, natural and agro sciences, economics, law and arts). Women (67.3%) are increasingly involved in volunteering than men (32.7%), and it is more significantly important for female compared to male ($p < 0.01$).

Table 5 Correlation between sex and volunteering

sex		Volunteering			Total
		Short-term	Mid-term	Long-term	
Female	N	79	70	55	204
	%	38,7%	34,3%	27,0%	100,0%
Male	N	82	42	20	144
	%	56,9%	29,2%	13,9%	100,0%
Total	N	161	112	75	348
	%	46,3%	32,2%	21,6%	100,0%

The short-term volunteering is rather typical of the male sex that the results of the analysis confirmed. This is a 56.9% males, compared to 38.7% of women. 32.2% of the total number of respondents do the mid-term voluntary service: 34.3% women and 29.2% men. Long-term volunteering required ability to share your free time and skills with the needs and mission of organization you volunteer for. Female are more motivated by success and recognition of the organization and chance given them to improve their skills in an area where voluntary work. In particular, women are more likely to participate in the volunteer program for a long time, comparing 27% of female to 14% male.

Table 6 Correlation between sex and motivation volunteering

Motivation	Value	df	p	R
Need to help others	3,27	3	0,351	-0,071
Self-development	0,33	3	0,950	0,09
Escape from routine	8,05	3	0,045	0,102
Helping vulnerable	3,10	3	0,037	0,83
Benefits for myself	1,63	3	0,042	0,066
Interesting activity	13,57	3	0,035	0,182
Skills-development	1,52	3	0,676	0,032
New experience, satisfaction	11,12	3	0,026	0,148
Moral obligaiton	10,78	3	0,334	0,159
Love in God	2,85	3	0,420	-0,056
I help now and then another help me	9,85	3	0,020	0,131

These motivational factors which proved significant in relation to sex, categorize hedonistic motives, including the following: escape from the routine ($p = 0.045$); an interesting activity ($p = 0.035$) and satisfaction ($p = 0.026$). Data analysis show significant differences in motivation of students to volunteering and to the normative motives.

This means that with increasing citizens' initiative ($p < 0.034$; $r = 0.159$) women increases the assumption that they will be more likely to engage in volunteering than men for whom the normative motive represented in a slightly lesser extent.

Our results showed that being a younger volunteer is positively correlated with higher levels of values and reasons for volunteering that are self-focused.

Although the findings provide strong evidence on the relationship between values and motivation to volunteering, it is interesting to observe that individualism was exclusively related to the volunteering rate (i.e. the likelihood that an adult was engaged in such activity), but the amount of volunteering time is not important for them, it is need to help others and make a change in the society. It appears that human value orientation is different in the extent to which engagement in volunteering activities is encouraged, yet they seem to have little implication for the energy and effort an individual if his effort is acknowledged.

Table 7 Beneficts and impacts of volunteering

Benefity and impacts	N	Mini mum	Maxi mum	Mean	Modus
My value priorities have changed	548	1	4	2,24	1
I became more active	548	1	4	2,72	4
I find sense of life	548	1	4	2,03	1
I am more empathic and helpful	548	1	4	2,30	2
new social contact and friendships	548	1	4	2,25	1
a lof of beneficts for self-development, more skilled	548	1	4	2,46	2
higher self esteem and self-confidence	548	1	4	2,55	2
it makes me clear in values	548	1	4	2,13	1

There is significant correlation between impacts of volunteering and the changing and/or forming value priorities. The most of volunteers agreed that their value priorities have been changed while participating in long-term voluntary programme. Volunteering helps them to make clear in the value system, they became more empathic and helpful and also find sense of life in doing voluntary service for others. It gives them opportunity to obtain new skills and get new social contacts.

4. Conclusion

We find that the creation of social capital through participation in voluntary associations is not indifferent to the motivations which induced the volunteer to start his/her unpaid activity. In particular, we show that intrinsic motivations enable people to extend their social networks by creating relations characterized by a significant degree of familiarity. By contrast, extrinsic motivations, and in particular the decision to join an association in order to increase the number of acquaintances or friends, promote the creation of networks from a quantitative point of view,

but they do not facilitate the creation of relations based on a particular degree of confidence.

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Session: History, Sociology

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Adamčíková, Danica
Gunišová, Eliška
Hirschová, Marta
Chvosta, Luděk
Pacuska, Maria
Palaščák, Dávid
Rawski, Tomasz
Skřiváčková, Petra
Šantová, Katarína

A FEW NOTES ON THEATER FESTIVALS IN THE CZECH REPUBLIC

Petra Skřiváčková

Masaryk University
 Arna Nováka 1/1
 Brno, 602 00, Czech Republic
 +420 724 310 823
 p.skrivackova@gmail.com

Abstract: *This paper summarizes selected historical and cultural characteristics that illustrate the current state of theater festivals in the Czech Republic. The aim is to provide the reader with an idea of the specific role, status and functioning of Czech theater festivals. The study is based on the results of the author's qualitative research and mapping of theater festivals in the Czech Republic, which was implemented as part of author's studies at Masaryk University.*

Keywords: *festival, theater festival, research into festivals, Czech culture, Czech theater*

1. Introduction

Over the past 30 years there has been an unprecedented increase in the number of festivals of various types. Festivals have become a phenomenon that arouses interest not only among theoreticians of different disciplines, but also among commercial entities and the local government. This paper does not address festivals in general, but summarizes the findings that have emerged from the research into theater festivals in the Czech Republic. What is known is the fact that this is the first comprehensive text devoted to Czech theater festivals, which concerns both their history and an attempt to identify their current characteristics.

The aforementioned research was carried out during 2011 and the first half of 2012. It consists of two parts:

1) Mapping of theater festivals. Its goal was to create the most complete list of theater festivals held in 2011. This list was the basis for further data collection. The required information (such as: duration, frequency, place and date, professionalism, international dimension, organizer, genre) was gradually traced for each festival. The statistics and their explanation originated, based on the evaluation of these data. The mapping of festivals was not easy, because the Czech Republic does not have a source of information on this scene. Only the National Information and Consulting Centre for Culture (NIPOS) pays some attention to Czech festivals when preparing statistics of all festivals. However, this is very incomplete [1]. NIPOS only classifies festivals which are held annually. They generate statistics on the basis of statistical reports that must be sent directly by the organizer of each festival. Other festivals are not included in the statistics. The return of these reports is 68–76%. During my mapping of festivals, the cultural departments of the Czech regions were also approached with a request to provide information about festivals held in their regions. It can be concluded that regions do not keep records of theatrical activities in their territory and, if at all, mostly only the data resulting from requests for financial support. Nevertheless, some of these records added some missing festivals. However, it must be remembered that the list of festivals cannot be

considered as being exhaustive. Without the active cooperation of the organizers themselves, it is almost impossible to trace all festival events held in the Czech Republic.

2) Other important information was provided by qualitative research in the form of in-depth interviews with pre-selected experts from the theater theorists, marketing professionals in culture, experts on arts management, directors/founders of theater festivals, and experts in the evaluation of cultural activities. Six-hour-long interviews were conducted with respondents interviewed on 15 open questions concerning theater festivals in the Czech Republic, their historical development, quality and status in comparison with other countries, as well as surveys of the professionalism of their organizers and funding. Recorded interviews were then transcribed according to Hendl's literal transcription [3], which enabled further work on these conversations. The transcripts gave rise to over 50 pages of text which were later analyzed and interpreted.

Although the text presents the results of research conducted in 2011 and 2012, it is still the only research that has been carried out in this area. There are no other relevant data available for comparison. At the same time, I venture to state that there have been no major changes in the number and characteristics of Czech theater festivals, and therefore the value of the reported data can still be considered as adequate. Detailed information on the methodology, as well as complete data can be found in my thesis [4]. Due to limited scope, this overview study omits the economic and managerial characteristics of Czech theater festivals which could be issued in a separate text.

2. Notes on the history of Czech theater festivals

The Dionysian celebrations are considered as being the first festivals to be held regularly in Athens before 534 BC. In the Middle Ages, celebrations and festivals were organized especially by the Church. Although these celebrations were not festivals, in the current meaning, they foreshadowed some of their characteristics. Let us move forward from these beginnings to the time in which the first Czech theater festivals appeared in the form as

known today – as periodic cultural events dedicated to the presentation and development of the theater.

One of the first festivals in the Czech Republic was Maifestspiele (Prague's May Celebrations). Some mention of this festival dates back to 1906 [4]. The festival was held in the present State Opera. We may say that (since 1993) this tradition has continued in the form of the annual Verdi Festival. Developments in the Czech theater festival scene occurred in the 1930s. In this period, there was the Jiráskův Hronov festival of amateur theater, which was one of the few European festivals to take place during World War II. The first annual festival was held on August 17, 1931. It is therefore the oldest still existing theater festival in the Czech Republic, and simultaneously also the oldest festival of its kind in Europe. Since 1991, the festival has also been attended by international ensembles and remains an important venue for self-reflection by the amateur theatrical scene.

The Spring Festival, organized by E. F. Burian and his D34-41 Theater, originated even before World War II. This festival was held on a regular basis, with the first one in May 1937. The Spring Festival was in particular a presentation of the activities of the organizing theater. But thanks to an international conference, it also became a kind of communication platform allowing for the meeting and confrontation of international avant-garde theater, an exchange of ideas and experiences.

International festivals began to be held after the war. For example, it was the International Smetana's Litomyšl opera festival which has been held annually since 1949. Even before the Soviet occupation in 1969, four seasons of the competition show, Neumann's Poděbrady, had taken place. Also the major Skupova Plzeň biennial festival, devoted to puppet theater, originated in 1967. Another international festival, called the International Festival of Pantomime, was founded shortly after the occupation. The second and last year of this festival was 1971.

Between 1968 and 1989, the theater festival scene was controlled by the power of the State and served as an instrument for consolidating the former totalitarian regime. Festivals were organized by the State and by state institutions, in order to ensure their ideological correctness. In addition to the official scene, however, there was also the unofficial cultural scene based on the initiative of troupes themselves. This scene was really alive and basically created a communication platform for the theatrical network which later evolved in 1989 [5]. In this totalitarian regime, there were interesting projects of street theater that can be seen as a kind of alternative to the official theatrical institutions and their activities. The international Theater in Motion festival was launched in 1973. This festival was organized by the famous "Goose on a String Theater". The festival focused on the presentation of work by the "Goose on a String Theater", but with the participation of foreign guests. Another interesting project of this theater was the Mir Caravane Festival (first held in 1989 in Prague), which was, according to Jan Dvořák, the most progressive attempt to demonstrate the possibilities of street theater [6]. The original project also included the Theater Fair event

(1985), a feast of mime artists, puppeteers and jugglers. The Theater Fair was a great success and therefore it moved to Roskilde and Aarhus in Denmark.

As stated by Szabó [7], the development of festivals after World War II had two highlights. The first occurred in Western Europe around 1968, the second in Eastern Europe in 1989. The second example is typical of the Czech Republic, which under a number of significant socio-political changes during that period – the fall of communism, the euphoria of regained freedom and the start of building a democratic state. A large number of theater festivals of various genres appeared during a very short period after the revolutionary year of 1989.

This was the period of the origin of the most famous and still functioning international Czech theater festivals. The well-known Tanec Praha International Festival of Contemporary Dance and the Movement Theater Festival originated at this time, as well as the Mozart Open Festival (1991). In addition, there were the Next Wave Festival (1994), the Mimoriál (1993), the International Festival Theater in Plzeň (1993), the International Festival Theater of European Regions in Hradec Králové (1995), the Prague Festival of German Language (1995), and 4 + 4 Dny v pohybu (1996). This listing ends, although we could continue. But now we will focus on the characteristics of contemporary theater festivals in the Czech Republic.

3. Typology of Czech theater festivals

NIPOS statistics [1] state that the Czech Republic hosted 120 theater festivals in 2011. My research shows that there were 134 theater festivals.

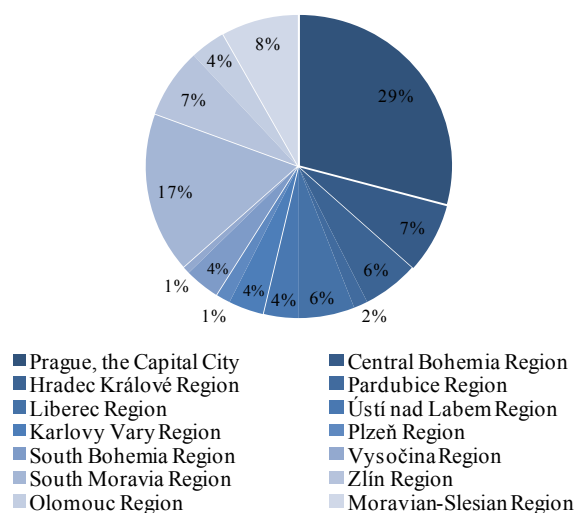


Figure 1: The proportion of regions in the number of theater festivals in 2011

3.1 The intensity of Czech theater festivals

The number of festivals in every Czech region varies. According to all available information, there was only one theater festival held in the Vysočina Region in 2011. In Plzeň region, for example, all attention was obviously focused on the Plzeň International Festival Theater and the first year of the Tanec Praha festival in Pilsen. Conversely,

the concentration of festivals is higher in other regions (e.g. in the Capital City and in the South Moravia Region). The following graph presents the proportion of Czech regions in the total number of theater festivals held from January 1, 2011 to December 31, 2011 (see Figure 1).

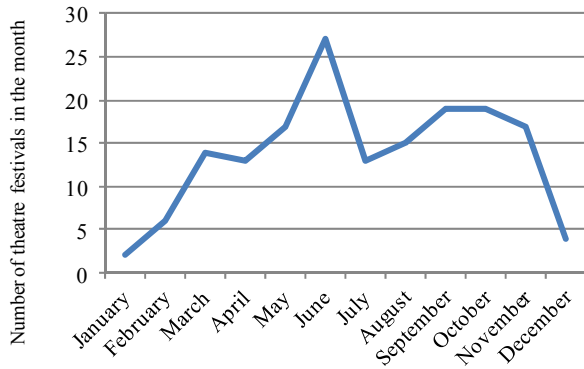


Figure 2: The intensity of the festivals throughout the year 2011

The intensity of the theater festivals in various regions of the Czech Republic is different. While in some regions festivals occur throughout the year, in others a complete attenuation of festival activities can be traced, that are then concentrated in only one or two months of the year. The smallest number of theater festivals is traditionally held in winter. But this is not true for the Capital City of Prague where a larger number of theatrical events occur in all the months, than elsewhere in the Czech Republic. In 2011, perhaps the only exception was that of South Moravia, where three theater festivals were organized. And also the Moravian-Silesian Region, which hosted the Ostrava Festival.

Czech theater festivals are mostly concentrated in two main seasons. The first season occurs in the fall and in the period between the months of September and October. The second more intense season takes place at the turn of spring and summer, when the school year ends, and the holidays as well as the theater holidays begin. From the end of the month of May, there was a rapid increase in the number of festivals in 2011, which peaked in June.

These seasons are quite logical. The fall stage of theater festivals opens the upcoming theater season. It is also the end of the summer, when the weather still allows outdoor performances, many residents return to cities from summer vacations and students return to their places of study. The spring season is associated with the improving weather, which allows for the expansion of festival activities. It is the time of the end of the school year, which increases the period of leisure time for the population, who, however, still remain in the cities. This season is also the result of the fact that a number of Czech theater festivals present a theatrical production that has been evaluated by professionals (Festival Artistic Directors, reviewers, and theater critics) as excellent during the previous year.

In addition, the festival management has the ability to monitor theatrical production throughout the year, attend

performances and then negotiate the performance of specific theatrical groups at the festival. Such an approach is also typical of festivals that take place within the framework of the fall season. This program strategy applies to several Czech theater festivals (e.g. Plzeň Theater and Dream Factory). The strategy is partly restrictive because it does not allow for the more advance planning of the festival. And, of course, it also affects the possibilities of strategic planning of the festival, the creation of an adequate budget and grant applications, etc.

3.2 The genre variety of Czech theater festivals

Czech theater festivals are dedicated to all genres of theater. However, drama still prevails in the majority of programs.

Drama is currently one of the most popular and most staged theatrical genres in the Czech Republic. It also dominates the main programs of most festivals. There were 54 theater festivals devoted to drama. This means that 40% of all Czech theater festivals were focused on drama in 2011.

It can be generalized that festivals dedicated to dance (from classic to modern and contemporary dance) and physical theater are of high quality. This is associated with the significant emancipation of dance that started in the Czech Republic mainly in the 1990s, after a relatively long isolation from the world dance scene due to the Soviet occupation. It was the Tanec Praha International Festival which significantly contributed to the opening of the Czech dance scene to the world and to the establishment of international cooperation. Besides this festival, the Czech Dance Platform functions remarkably today. Smaller festivals, such as Tanceesse based in Brno, are also important. As the research results show, there were 20 festivals devoted to dance and physical theater in the Czech Republic in 2011. This comprises 15% of the total number of Czech theater festivals.

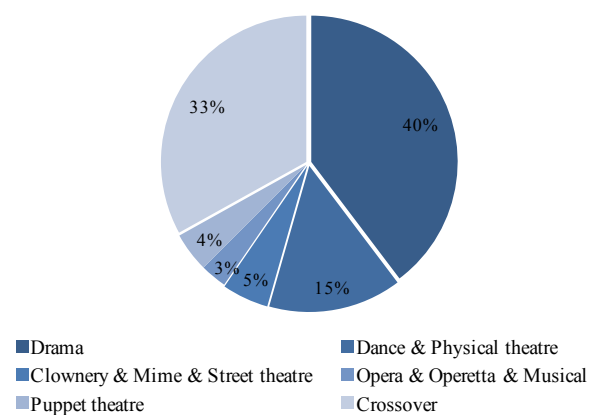


Figure 3: Genre specialization of theater festivals in 2011

Musical theater (opera, operetta, musical) has a long tradition in the Czech Republic. Despite this, the statistics show that only four festivals focused on musical theater took place in 2011. All of these were dedicated to Opera and were: The Opera 2011 (City of Prague), Voskovec'

Sázava 2011 (Central Bohemia Region), Smetana's Litomyšl (Pardubice Region) and Teatrum Kuks (Hradec Králové Region). This number reflects the fact that the survey was conducted only for the 2011 year, in which some festivals were not held (e.g. the International Janáček Brno biennial festival). Another reason for fewer festivals devoted to Opera may be its financial demands and also a smaller target audience. Despite these factors, new Opera festivals continue to arise (e.g. NODO Biennale). NIPOS statistics report only 2 festivals of this theatrical genre in 2011.

Puppet theater also has a long tradition in the Czech Republic. NIPOS statistics recorded five puppet theater festivals in 2011 and six such festivals in 2010. My mapping of theater festivals revealed six puppet theater festivals in 2011. The area of these festivals seems to be stable in comparison with other genres of Czech theater festivals. At the same time, these festivals are very concentrated, with more than half of them held in Prague (a total of four).

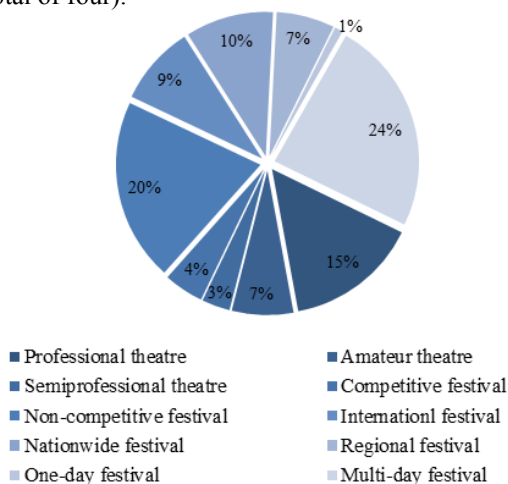


Figure 4: Characteristics of Czech theater festivals in 2011

An interesting result of the research is that 5% of the main programs of festivals is dedicated to clowning, pantomime and street theater. This percentage corresponds to the total of seven festivals. In this category of theater festivals, international festivals with continuous international cooperation dominate (e.g. Behind the Door Festival, International Letní Letná Festival of New Circus, Teatrotlač mini-festival, International Festival of Mime and Theater of the Deaf). Like puppet theater festivals, also street theater festivals are concentrated mainly in the Capital City of Prague.

As may be seen in Figure 3, crossover theater festivals dedicated to more theatrical genres have a significant representation. The reason for the extension of these theater festivals could be the blurring of boundaries between different kinds of theater, and often the implementation of the elements of one genre occurring within another genre. At the same time, these festivals have more options for choosing the main program, as well as more opportunities for reaching different audiences. Among these are established and well-known festivals

such as the Next Wave Festival, Praha Fringe Festival, ProART Festival, and others.

3.3 Some other characteristics of Czech theater festivals

In addition to the divisions on the basis of theatrical genres and types, there are several features whereby theater festivals are categorized. Figure 4 shows the proportion of individual characteristics in the total number of theater festivals observed in the Czech Republic in 2011. Professional theater festivals with a total number of 80 festivals predominate. But even the proportion of amateur theater festivals is not negligible (37 such festivals in 2011). This is the link to a long tradition of amateur theatrical groups in the Czech Republic.

The remaining 17 festivals represent professional theater and amateur groups. Non-competitive theater festivals outweighed competitive festivals. There were only 24 competitive theater festivals in the Czech Republic in 2011. At the same time, there were a greater number of multi-day theater festivals, than one-day festivals. There were 129 multi-day festivals held in 2011. This means that only five theater festivals were of a one-day character. The differences between international, nationwide, and regional festivals are not significant. Forty-eight theater festivals with international participation and international status were traced, representing less than half of the total number of festivals. Most festivals were nationwide (a total of 50), the least number of festivals were regional (a total of 36).

4. Conclusion

This paper provides a brief excursion into the history of Czech theater festivals which were greatly influenced by several years of the communist regime. Nevertheless, the number of festivals and genre diversity do not lag behind foreign festivals.

The paper also presents the results of research into theater festivals in the Czech Republic in 2011. Besides the division of festivals according to theatrical genres, festivals were sorted by their location and duration, and according to the focus on amateur or professional theater. Therefore readers have obtained some basic information on the theater festival scene in the Czech Republic.

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THE MISCLASSIFICATION OF BLENDED FAMILIES: AN ILLUSTRATION OF PROBLEM

Marta Hirschová

Institute of Sociological Studies, Faculty of Social Sciences, Charles University in Prague

U Kříže 8

Prague, 158 00, Czech Republic

00420 - 251 080 216

martahirschova@email.cz

Abstract: *The paper focuses on the measurement problems of family structure. In the case of family structure identification, there is reasonable suspicion that the applied measurement will erroneously put some blended families into standard categories (Gennetian 2005, Ginther and Pollak 2004). The source of bias is the detection of kinship only between parent and child without control the relationship between siblings. The problem is illustrated on example of blended families with half siblings and step siblings living in the same household. Given the current variability in family structure, it would be a mistake to assume a priori that siblings living in the same household have shared both biological parents. The Information about kinship between siblings eliminates the misclassification of blended family as a biological family. Further advantage is the ability to show the history of changes in family structure.*

Keywords: *family structure, misclassification, kinship between siblings*

1. Changes in family structure and measuring

For a long time, the standard complete family with two biological parents has been considered the best type of family structure for the development and success of a child (Blau and Duncan 1967, McLanahan and Sandefur 1994, Ermisch and Francesconi 2001). However, fewer and fewer today's children will live out their entire childhood and adolescence in this ideal family structure. Given the number of families with one biological parent in the last thirty years, it is estimated that half of today's children will spend time in the one-parent family structure (Bumpass 1990). But for many of these children this family structure will be only temporary. It is very likely that these children will be part of other types of families during adolescence. For example, if a parent gets a new partner, he or she then becomes the child's step parent. If this new partner brings own biological child, the family structure becomes more complicated for all involved. We also need to consider the possibility that the new pair will engender a child, thereby increasing the family structure complexity by another level.

In response to changing norms regarding childbearing and the recording of the family structure variability, the extent of determining factors for a family has been reevaluated. The standard dualistic distinction between complete and incomplete families (Blau, Duncan 1967) has been extended by another type, called the blended, extended, supplemented or reformed family. The methods (perspectives) of measuring family structure remain unchanged, however. The values of the family structure variable correspond to the usual forms of family structure. Less common family structures are either omitted or are classified as other or alternative family types. Until these family structures become statistically interesting, they will be of marginal interest to researchers, for obvious reasons.

2. Causes and consequences of misclassification

A problem can occur where existing standards are not able to detect an increase in the number of blended and

alternative family types and they thus continue to escape the attention of researchers, even after their numbers had become worthy of attention. In the case of family structure identification, there is reasonable suspicion that the applied measurement will erroneously put some blended families into standard categories (Gennetian 2005, Ginther and Pollak 2004). This leads to standard types of family structure being overstated and leaves less common types understated. The problem with the classification (in general) suggests the need to find new ways of measuring the family structure, for only through the use of proper tools can nonstandard family structures become visible (Bowker and Star 1999).

More specifically, Ginther and Pollak (2004) and Gennetian (2005) cover the topic of underestimation of alternative family types and alert to the possibility of blended family misplacement in the standard family category. The cause of family type misidentification is the applying of one-sided metrics, which measure the degree of biological kinship only between parent and child and but not between siblings (Ginther and Pollak 2004, Gennetian 2005, Steelman et al. 2002). While biological kinship between parent and child can have only two values – own (biological related) or step (without biological relationship), we can distinguish three kinds of relationship between siblings: full, step, and half sibling. What type of relationship between siblings it is can be determined on the basis of questions ascertaining whether the siblings share both biological parents, one or none. If both have common biological parents, they are full siblings. If each has their own biological parents, they are step siblings. If they have one parent in common, these are half siblings.

3. Illustration of problem

The following example illustrates how misidentification may occur and how detecting sibling kinship can be used to eliminate it. For the first child, we discover that it is living with both biological parents (Figure 1). Further, we determine that the child has one sibling (Figure 2).

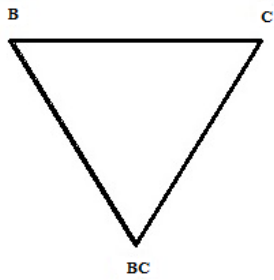


Figure 1: Family structure without information about siblings

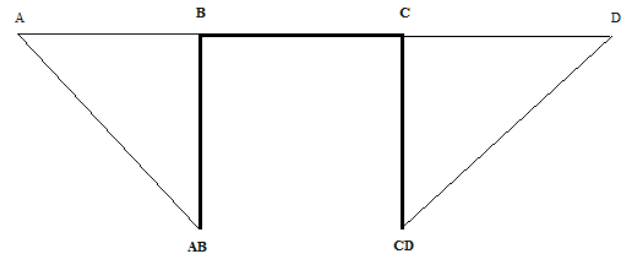


Figure 4: Family structure with information about number of siblings and kinship between siblings (Blended family with step siblings and with one biological and one step parent)

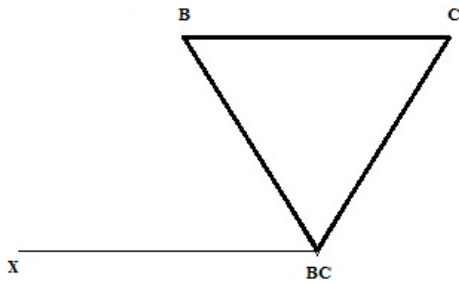


Figure 2: Family structure with information about number of siblings, unknown kinship between siblings

If the siblings are biologically related through only one parent, it is then one of the blended family types. From the measured child's perspective, it may be living with both biological parents, but from the perspective of his or her sibling, it is living with one biological and one step parent (Figure 3). This suggests that the identification of such a family structure as a complete family would be wrong.

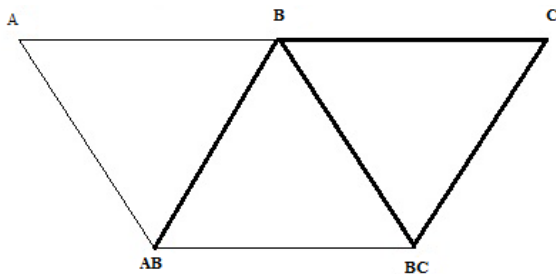


Figure 3: Family structure with information about number of siblings and kinship between siblings (Blended family with half siblings and biological parents/one biological and one step parent)

Another type of blended family is where the siblings have no common biological parent. Unlike the previous type of blended family, the siblings are both in the same situation. From the both perspectives – the measured child and his half sibling - is a coexistence with one biological parent and one step parent (Figure 4).

4. Conclusions

Given the current variability in family structure, it would be a mistake to assume a priori that siblings living in the same household have shared both biological parents. The measuring of relationship between siblings is a tool through which family structure misclassification can be eliminated. In addition to providing a more accurate identification of the siblings' relationship, this also creates an approximate map of the historical changes in the family structure. This can thus achieve a more granular model of family structure. Perhaps the greatest significance of this approach is in distinguishing between different types of blended families that may have a much more complex structure.

Acknowledgements

This paper was supported from the Specific University Research 2015, Institute of Sociological Studies, Faculty of Social Sciences, Charles University in Prague. Project: The analysis of social trends, public and social policy in the Czech Republic and in the global context.

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POLISH NATIONAL CINEMA AND THE SYMBOLIC RESTORATION OF ELITISM

Tomasz Rawski

University of Warsaw
ul. Krakowskie Przedmieście 26/28
00-927 Warszawa
+48 609450053
rawski00@gmail.com

Abstract: *The paper claims that there exists a clear tendency to symbolic restoration of social elitism within the latest wave of Polish national cinema (being interpreted in terms of an ideological production that implements the assumptions of state-led politics of memory into social practice). The analysis, based on Polish feature films made after 2006 and embedded in the Second World War reality, reveals the complexity of symbolic strategies that could lead to the production of wide social acceptance for the existence of an elitist, undemocratic society in Poland.*

Keywords: *national cinema, social elitism, politics of memory, symbolic politics*

1. Introduction

During the last decade, Polish cinema has been experiencing a spectacular renaissance of the ‘national cinema’ – a stream consistently ignored by home film researchers as well as by social scientists[1]. However, one should definitely consider taking a closer look at Polish patriotic filmmaking after 2005 as a specific segment of cultural space – a segment subordinated to state-led politics of memory strategies[2]. From such a perspective, this particular cultural production turns out to be a wide-range attempt at symbolical redefining contemporary Polish national identity. Analysing patriotic filmmaking from the viewpoint of social structure could be particularly productive, as it reveals one of the fundamental assumptions of Polish politics of memory, namely, striving for the symbolic restoration of social elitism.

2. The ‘national cinema’ concept

In the debate over the ‘national cinema’ concept[3], the researchers share only a general belief, according to which, this concept should stand for the cinema that articulates particular national identity. However, attempts at finding more precise definitions are much more various – they extend from the demands of using the widest possible definition (according to which every single film produced in a given state is an articulation of national identity itself, see White 2004), through definitions searching for particular aesthetic criteria determining the national specificity of given cinema (see Hill 1992), up to relatively narrow postulate of perceiving ‘national cinema’ as an ideological production – a stream calculated on proclaiming a coherent vision of national identity, promoting a stable set of founding values and meanings and backed by state institutions (see Higson 2002: 53-54). Later in this text, the last way of defining national cinema has been adopted. It seems that it is the best way to capture and expose the ideological potential of this particular cultural production.

3. The context

Polish cinema has long been functioning on the margin of a fierce public debate that has been repeatedly expressing

an urgent necessity of reviewing the national past after 1989. To Polish cinema, the 90s were rather a period of struggle for survival. The lack of a coherent state cultural policy that could provide at least partial funding to the cinema, as well as rapid decentralization and privatization of film production made it difficult for artists to find themselves in the free-market reality. Due to the necessity of competing with the new and attractive popular Hollywood cinema, Polish filmmakers started to make genre films that could be best described as crime thriller. Such films dominated over Polish cinema in the 90s[4].

In result, Polish national cinema could have arisen only in political circumstances that took place after 2005. This was the year when: (1) Polish political Left was eventually marginalized, (2) law on cinematography (the first since 1987) was adopted, thus bringing to life Polish Film Institute (a public institution responsible for taking care of Polish cinema) and (3) the significance of politics of memory was recognized and appreciated by Polish political Right. The latest Polish national cinema – a stream that, apart from war film and historical film, consists of film adaptations of literature as well as of educational film directed to children and young people – seems to be one of this politics of memory’s main pillars. Thus, at least since 2005, Polish national cinema attempts at cutting Polish national memory off the heritage of Polish People’s Republic’s (PRL).

Apart from the internal diversity of the latest Polish national cinema, the following analysis is based only on films set in the realities of the Second World War[5], since the war period, together with early post-war years continue to be a key point of reference for Polish politics of memory after 1989.

4. Symbolic Restoration of Elitism

As it seems, at the roots of the symbolic restoration of social elitism pursued by Polish national cinema, there can be found a specific conjunction of romantic national Messianism (in its latest incarnation) and uncompromising anti-communist sentiment – the last one being a simple result of a complete negation of the period 1945-89 by official (public) memory of contemporary Poland[6]. The

first element predominates in the war films concerning struggle with Nazi Germany, whereas the second one – on the occasion of Polish-Soviet relations.

The analysis of war films produced between 2006-2013 [7] clearly shows that Polish national cinema identifies Polish nation solely with the social elites [8]. By picking the positive characters only from among the elites and clearly contrasting them with members of lower classes [9], filmmakers consistently make up a coherent picture of upper class that solely stand for a depositary of the essence of Polish nation, the essence identified within the triad 'God – Honour – Fatherland'. In result, the national cinema grants the symbolic dignity exclusively to the elites and values they actually represent, thereby excluding other groups out of the national community.

In the analysed films, the Polish elite appears as a coherent group with clear boundaries, the backbone of which consists of the mythical pre-war elites, raised up in the Second Polish Republic (1918-39). These are mostly descendants of Polish landed gentry: professors, doctors, architects, lawyers, officers of the Polish Army and, of course, Catholic priests – all of them testifying for the splendour of the Second Republic. Non-accidentally they are mostly men – fathers enjoying respect (recurring theme in almost every movie), respected superiors, sometimes statesmen of high social sensitivity – such as Emil Fieldorf, the main character of *General Nil* by Ryszard Bugajski or marshal Józef Piłsudski of *Bitwa warszawska* by Jerzy Hoffman. Each and every of them appears as a model of moral virtues, irreplaceable individuality and a unique man. Their innocent death – for they usually get killed – is being interpreted as a deathblow to the essence of Polish nation (just like in Andrzej Wajda's *Katyni*).

Simultaneously, Polish national cinema homogenizes the representatives of the people. Although Polish peasant, generally, has a name, his face is almost impossible to remember. He is supposed to represent only a homogenous rural mass that remains insensitive to any patriotic feelings, though. At best, the peasant stays aside the bloody armed struggle, and at worst – he acts as a persecutor in the service of the communist system.

Although noble pre-war officers eventually die in prison, get killed in executions or (at best) withdraw from active participation in armed operations, the whole patriotic struggle can still continue, thanks to the well-born young Poles, deriving from the milieu of urban intelligentsia. They all seem to despise their own biological existence and experience the most beautiful moments of spiritual ecstasy (secret teaching, calf love, working in conspiracy) while struggling for the homeland. Polish national cinema exposes their heroic death as a noble sacrifice that could have been suffered only by those spiritually beautiful children of the Polish nation.

The elites' dedication to preserving national idea is usually contrasted with the negative picture of a peasants' strive for biological survival pursued at any cost. By describing the peasant as a politically indifferent, small-minded, mercenary and calculating animal, jealously guarding the crumbling remnants of his small farm, Polish national

cinema states that his actions are not only improper, but also detrimental to the endangered nation.

Furthermore, the national cinema willingly uses the figure of Polish communist as a reverse of the patriotic soldier. Not only do the filmmakers present Polish communists as cruel torturers, blindly obeying orders commanded to them by Soviet authorities, but they often try to additionally discredit them by exposing their peasant origin. Thus, they express not only the aversion to the previous system but also their grievance to the lower class itself. In such an interpretation, the man 'of the people' is the only one who can commit treason. If this happens to an elite representative, he would always be so troubled by his internal, moral conflict, that, most probably, would ultimately commit suicide.

The well-born women – presented in their traditional roles of mothers, wives and beloved ones of Polish officers – are those who supplement the national pantheon with additional values. Constantly humiliated by the enemy soldiers – both German and Soviet – they remain steadfast, always calm, proud and boundlessly loyal to patriotic values practiced by their husbands. On the other hand, they continue to humbly fulfil their traditional roles of hearth-guardians.

Folk women are those who pose a contrast to them. Usually, they are equally ill-mannered, absent-minded and noisy as their husbands are. They evoke either antipathy or laughter and – most of all – pity, just like careless mother of Antek from *Czas honoru* recklessly offering her Jewish friend a slice of pork during breakfast. Positive valuation of folk women characters – if it occurs at all – seems to be based on exposing the highest sense of duty towards the elites.

Polish national cinema symbolically reinforces elite's privileged position by presenting them as guardians of the people. Jerzy Hoffman in *Bitwa warszawska* suggests, i.e., that Polish 1920 victory over Bolsheviks was possible only thanks to the nationwide common agreement of all social layers based on the existence of the 'natural' – that is, according to him, strictly hierarchical – social order. The director seems to be stating that the Bolshevik revolution (which is equated to plague resulting from reversing this 'natural' order upside down) has been halted owing to professional cooperation between the people and the elites, under the initiative and leadership of the latter. In one of the last battle scenes, Aurelia Więclawska (the noblewoman-hospital volunteer), facing her death, asks her fellow for taking further care of her maid (a folk woman Magdalena), thus showing the highest concern for the 'ordinary people'.

In result of assigning the whole social agency to the elites, the peasants appear as helpless individuals who are not able to take care of themselves. They cannot make the right choices alone, they need to be constantly instructed and disciplined, their obedience must be continuously verified. The last words of Aurelia Więclawska suggest that the peasants would not survive on their own unless they are allied with the elites. And those part of the folk layer who actually is allied with the elites, is usually reduced to the role of a harmless, funny mascot – as in the

case of Janek Markiewicz from *Czas honoru*. Because of his ribald humour and the ridiculous gaffes he constantly makes, he is always treated condescendingly by his well-born colleagues from the troop squad.

The social elites of Polish national cinema are accompanied by the aura of holiness. They are obviously sanctified by being constantly surrounded by the Christian symbolism (crucifixes, chaplets, mother-of-god paintings etc.), but apart from that, filmmakers make saint relics out of the symbols of belonging to the upper social layer, such as photographs and portraits of illustrious ancestors which are usually presented to testify on the noble origin of the film characters. Exposing characters thoughtfully staring at the images of their ancestors, thus gaining strength to make tough but morally right patriotic decisions, seems to be the most symptomatic. Other sanctified objects include i.e. a piano (as a material manifesto of high cultural competence, present at every home) or an antique furniture (as a proof of continuous living in wealth and having a high taste).

Another interesting way of elite-sanctification is introducing a poet-soldier character who is to embody the romantic cultural code most explicitly. This spiritual guide of Polish nation combines, of course, the features of a model patriot with a unique sensitivity and delicacy which fully compensates his deficiencies, such as lack of shooting skills (as in *Baczyński*). A poet-soldier has to fulfil a historical role – he is to immortalize an armed struggle of the Polish soldier in a tender and pompous poetry-writing. According to Polish national cinema, this should be the ultimate way of idealizing and immortalizing social elites.

In contrast, the folk layer invariably remains within the profane order – the peasant, a man either without any past or symbols of class belonging, equipped, at most, with hayfork, axe and a group of barefooted children, consistently remains an interchangeably negative point of reference.

5. Conclusion

Being observed through the lens of war film, the recent Polish national cinema grants the highest symbolic honour to the social elites, simultaneously marginalizing and often disparaging the folk layer. This symbolic restoration of elitism can be achieved by contrasting interchangeably positive representatives of the upper layer to negatively assessed representatives of the ‘ordinary people’. In result, Polish national cinema contributes to reproducing in popular consciousness an elitist vision of the national community. In such a vision, the monumentalized elites are the sole representatives of the collective ‘us’, and the values they represent are to be the only dominating values. In consequence, Polish national cinema seems to contribute to the production of social acceptance for elitist society that is definitely far from the ideals of democracy.

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[1] The first group seems to be discouraged by low aesthetical value of these film, whereas the second group,

in general, does not recognize film as an important source of information about society.

[2] If we assume (following Barbara Szacka) that collective memory is a set of representations about the Past of a given group, we should take into account that it is constantly being produced, standardized and negotiated on several, mutually interpenetrating levels of social life (see. Barbara Szacka, *Czas przeszły, pamięć, mit*, Warszawa 2006, s. 44); given that, ‘state-led politics of memory’ means a set of actions being undertaken by institutional subjects on the level of nation-state which influence the shape of actually dominating vision of the past by the process of selecting information intentionally (see. Lech Nijakowski, *Polska polityka pamięci. Esej socjologiczny*, Warszawa 2008, s. 20).

[3] Such a debate continues in the Western social sciences since the 80s (see. Andrew Higson, *The concept of national cinema*, [in:] *Film and Nationalism*, ed. Alan Williams, Rutgers: London 2002, s. 52-68; John Hill, *The issue of national cinema and British film production*, [in:] *New questions of British cinema*, ed. Duncan J. Petrie, London 1992, s. 10-21; Jerry White, *National belonging: renewing the concept of national cinema for a global culture*, [in:] *New review of Film and Television Studies*, no. 2(2)/2004, s. 211-232); only recently it has come to Poland as well (see. Tadeusz Lubelski, Michał Stroiński, *Kino polskie jako kino narodowe*, Korporacja ha!art, Kraków 2010).

[4] Apart from the author’s cinema made by the greatest Polish artists, already recognized before 1989 (i.e. Andrzej Wajda and Krzysztof Zanussi), crime thriller turned out to be the only film genre which could have endured the competition with Hollywood films, see. Michael Brooke, *Resolving a crisis of identity: how Central-Eastern European cinema adjusted to the changes of 1989*, [in:] *Polish cinema now!*, red. Mateusz Werner, Indiana University Press 2010, s. 29-31.

[5] The papers concerns, above all, full-length feature films; the only exception is *Czas honoru* by Michał Kwieciński et al., a TV series shown in Polish public television (TVP2) since September 2008; another exception is *Bitwa warszawska 1920* (2011) by Jerzy Hoffman, which – despite happening in the realities of inter-war Poland – faithfully reproduces anti-Soviet rhetoric present in the analysed war films.

[6] In result, Polish cinema has not reckoned also with the People’s Republic’s period; although few films problematizing this period were made in the 90s ((jak *Ucieczka z kina wolność* (1990), reż. Wojciech Marzewski, *Przypadek Pekosińskiego* (1993), reż. Grzegorz Królikiewicz), this trend hasn’t developed further, see. Andrzej Werner, *Cinema and history*, [in:] *Polish cinema now!*, red. Mateusz Werner, Indiana University Press 2010, s. 74.

[7] The analysis is based on the following films: *Katyń* (2007) by Andrzej Wajda; *Czas honoru* (2008-2013) by Michał Kwieciński et al.; *General Nil* (2009), by Ryszard Bugajski; *Bitwa warszawska 1920* (2011), by Jerzy Hoffman; *Sierpniowe niebo. 63 dni chwały* (2013) by Ireneusz Dobrowolski; *Baczyński* (2013) by Kordian

Piwowarski; *Był sobie dzieciak* (2013), reż. Leszek Wosiewicz.

[8] That is, in fact, an obvious negation of feature schemes well known from the cinema of socialist Poland that were focused, most of all, on character originated from ‘the people’.

[9] As far as war film is concerned, they are, most of all, peasants as the representatives of the folk layer.

[1] Brooke Michael, *Resolving a crisis of identity: how Central-Eastern European cinema adjusted to the changes of 1989*, [in:] *Polish cinema now!*, ed. Mateusz Werner, Indiana University Press 2010

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THE HISTORICAL AND SOCIAL ROLE OF THE FIRST SLOVAK WOMEN'S PERIODICAL „DENNICA“

Eliška Gunišová

Masaryk university
Joštova 13
Brno, 602 00, Czech republic
+420 722 758 497
egunisova@gmail.com

Abstract: The first Slovak women's periodical “Dennica” has had a very important place in Slovak literature. The author of this paper does not want to point out the literary importance of “Dennica”, however it was a periodical where a lot of significant writers published their literary outputs. This article attempts to present the role of this periodical for women in its historical and social conditions. It explains what Terézia Vansová (female editor of “Dennica”) main aims were and what “Dennica's” biggest merits for Slovak society were.

Keywords: women's periodical, women's emancipation movement, Slovak literature

1. Introduction

Applying the strict expert attitude of literary researchers or literary aesthetes, we would probably find many imperfections in the literary output of Terézia Vansová (1857-1942). Her early works are justly labelled as very unsophisticated, even naive, massively influenced by contemporary fancy, but not aesthetically valuable sentimentalism, which was brought to the Slovak literary environment mainly from German literature. Nevertheless, Terézia Vansová was still one of the first female writers officially publishing in the Slovak language. And not only her time precedence, but also her personal characteristics make Terézia Vansová the significant individual in Slovak literature at the turn of the 19th and 20th century. The Slovak literary female historian, Marcela Mikulová, provides a fitting description of Vansová's artistic quality, when she characterizes her as a female author „without the willingness to submit to any style or genre dictate“ [1] and this characteristic is easily applicable to her personal life, too. Probably just her dislike to blend with the crowd, vigour and her resolution to accept new challenges caused Vansová, at the age of 40, to become the editor of the first Slovak women's periodical „Dennica“.

In this period Terézia Vansová was already an established and well-known Slovak female author and had been the correspondent of all relevant Slovak periodicals as „Slovenské pohľady“(Slovak perspectives) and „Národné noviny“ (National news) for more than 15 years. For the general public she is still remembered as the author of the first Slovak written women's novel „Sirota Podhradských“ published in 1889. Even her extraordinary position in Slovak public life did not satisfy her. Terézia Vansová, who lived in the country, outside the centre of the Slovak social and cultural movement in the town of Martin, already expressed the desire to participate more intensively in events and work as the editor of the influential periodical in 1884, when she wrote an explicit letter to Svetozár Hurban Vajanský, contemporary editor of “Slovenské pohľady”: „Hire me as the co-worker to Slovenské pohľady!“ [2] Her wish was unheard at that time, but as it has already been mentioned, a new chance came in 1898 and Terézia Vansová used it after Elena

Maróthy-Šoltéssová refused the editor's position of the first specialized women's periodical.

2. The social conditions of the formation of „Dennica“

In the 19th century the issue of women's emancipation became much discussed in Europe, and it gradually spread even to less liberal parts of continent like Austria-Hungary, where the present Slovak territory still administratively belonged during this period. It is necessary to remind the reader that in the contemporary Slovak social environment, the situation for women's self-realisation was deeply marked by a generally complicated political, cultural and economic situation.

The standard Slovak language had been codified by Ľudovít Štúr in 1843, only several decades before. The quite new idea of identity and ethnicity of the modern Slovak nation (represented mostly by its language) was supported by Slovak intelligentsia and many efforts like the publishing of Slovak written books (mostly the „high art“) and periodicals were made, often in opposition to obstructing acts of official Hungarian authorities advancing the idea of a united political Hungarian nation. However, after promising development in the 1860s, only imperceptible progress had been reached in the area of forming a higher boys' and girls' education system in Slovakia, as well as in forming Slovak educational societies.



Figure 1: The front page of Dennica in 1898 and in 1899.

It is understandable that the impact of these activities to the common Slovak women were marginal. Taking into consideration the contemporary position (political, economic etc.) and typical education level of common women in Hungarian (Slovak) society, it is not hard to guess correctly that the regularly reading minority of women would have preferred the popular genres, which in our geographical territory was mostly represented only by German, Hungarian and rarely available Czech written sentimental novels, almanacs containing short fictional works of a similar nature and women's periodicals. Upper class women usually mastered minimally one foreign language and consequently consumed the corresponding national literary production.

The above mentioned facts bring us to the reasonable conclusion that many cultural efforts focused on the Slovak women's audience, which could be considered the output of Slovak regional women's emancipation movement, were at the same time attempts to strengthen the Slovak national idea by propagating the Slovak language in all social classes and demographic groups including the female population. The natural synergy of these mentioned activities was in fact often the effective argument that helped to overcome the prejudices of Slovak representatives, mostly men, against any women's cultural initiatives.

The urgent and increasing need of a women's periodical written in Slovak and based in Slovak specific conditions was realized, which should have been able to compete with similar foreign periodicals dedicated to women in the late 19th century. The first more serious attempts were connected with the above mentioned significant, public-active female representative of the not very numerous Slovak intelligentsia, Terézia Vansová. In her preserved correspondence we find notes about her personal initiative to begin publishing an almanac for women "*Kalendár pre hospodyne*" (*Almanac for housewives*) in connection with the women's society "*Živena*". The purposefulness of her idea is proved by a detailed project of the new almanac submitted by its author, Terézia Vansová, and vice-chairwoman of "*Živena*", Elena Maróthy-Šoltéssová, to its chairman, Ambro Pietor, who however refused this proposal (partly because of worries about the financial vitality of the project and the possible negative impact to society's fragile budget).

Slovak female authors attempted to replace the continuous absence of a Slovak women's periodical by intensifying activity of contributions to Czech women's periodicals also distributed to the Slovak territory. They also used the space provided to them on pages of established periodicals like "*Slovenské pohľady*", "*Národné noviny*" to propagate and publicize Czech women's periodicals, which were the only female-dedicated periodicals publishing its content in Slovakia, too.

Paradoxically it was a man and Czech, slovakophile Karel Kálal (1860-1930), the publisher successfully guaranteed the publishing of the first Slovak women's periodical "*Dennica*", who offered the position of its editor firstly to Elena Maróthy-Šoltéssová and after her refusal, to Terézia Vansová in the last years of the 19th century.

Terézia Vansová used this opportunity and held the post of editor for almost the whole period of its existence, often fighting with unfavourable circumstances such as lack of finances or authors' interest, even Slovak representatives' verbal attacks questioning the *raison d'être* of "*Dennica*". Nevertheless "*Dennica*" as the monthly magazine, whose subscription cost 1 "zlatý" (Gulden) or 2 Austro-Hungarian Krone (a very reasonable price acceptable even for the lower classes), persevered for more than 15 years (1898-1914) and it became a well-established, popular and influential title.

3. Language issue

As already mentioned in this paper, Slovak women's emancipation efforts were timely and functionally related to the Slovak national movement which was, in compliance with the definition of the ethnic nation, focused mainly on spreading and strengthening the use of the "young" standard Slovak language in all social classes. Contemporary Slovak society linguistically sundered according to the social class and territory, when particular groups used an adopted cultural language like Hungarian, Czech, German (for example part of the intelligentsia, aristocracy, public servants) or their folk dialect (lower classes living in the country). Slovakia was intended to be unified as an independent cultural nation with its own codified, full-bodied language. Slovak periodicals supporting these efforts in fact had an effect primarily within the conscious representatives of the middle and upper class; on the contrary, Terézia Vansová wanted to focus the new women's periodical on all classes of women, including women with elementary education and a non-established habit to read. The content, but also the linguistic difficulty of published texts, had to be subordinated to aim the readability literally to every woman able to read, in comparison to difficult and linguistically complicated articles in "*Slovenské pohľady*" or "*Národné noviny*".

"*Dennica is intended to teach to read*"[3] Terézia Vansová wrote in a letter to Ľudmila Podjavorinská in 1898 and really obeyed this principle in her editor's work. She preferred attractive, but simple and simply written texts and despite several conservative Slovak intelligentsia representatives' complaints expecting the use of Slovak language for more noble purposes, the common women's audience consequently appreciated the adequate content and form of texts in "*Dennica*", which is manifested by the fact that after a hard first year of the periodical's existence, gradually more numerous editions were regularly sold out (400 copies of "*Dennica*" were printed in the first year, in 1901 the number of copies had reached 1 400, and in 1906 "*Dennica*" had approximately 3 000 subscribers). Terézia Vansová, who was also the author of most of the texts at the beginning of publishing "*Dennica*", was trying to find equilibrium between her contributions' attractiveness and formal difficulty to motivate the different female readers to regular reading in their native language. Vansová repeated this fundamental principle of publishing in "*Dennica*" in her appeals to new young female authors who were to publish in the

periodical: “Write primarily for our *Dennica* (...) anyway write in the way, that every woman could understand that, even the simplest one.” [4]

Basne	Strana	Strana	
Nada mali Janko Cajak.	3	Právo sa zapomenúť? E. Soltesová.	83
Muzička Ludič.	7	Pravá vďačnosť. E. Soltesová.	49
Adam Ludič.	29	Dumy. E. S.	65
Eva Ludič.	23	Matkinio poradenstvo. T. V.	96
Matkinio poradenstvo. L. Podjaverčanská.	34	Nada Živena. E. Soltesová.	113
Naroda náuky. Ludič.	58	Zeny na ďalekom Východe. T. V.	129, 146
Paulečka. Julia Botová.	58	Vasovská.	145
Liatosť a pamätanka. V. V.	70	Vence. T. V.	161
Nada obča. L. Podjaverčanská.	81	Narodiť sa v čem Spasiteľ.	177
Nada devy. Horal.	88		
Náhodná kvetka. Horal.	116	Poučenie.	
Za Pavučkou. Ludič.	131	Čo matky vydatej dcére.	39
Janek. Horal.	164	Čím bude náš chlapec?	55
Liska. A. R.	171	Závit.	68
Roža o jazyku. Milana Zochová.	181	„Jáke chcem matky“, dňa Gausserova. L. S-áky.	71, 85
		O pomôc.	92
Povesti.		František Palacký o vädách st. národa. A. K.	90
„Když se narodí děvče.“ Ludič.	2	Pytagoras o nádhern.	103
Paule. T. V.	19	O sdružení.	125
Babka a učitel. T. V.	32	Úcta děti pitavému poradení.	133
Vona a třeť. T. V.	49, 56	Čo matky vydatej dcére.	62
Vyškviť sex. A. H. Husová.	15		
Najeme a všim spokojení. Lu. Ják.	101, 117	Aforistické.	
Johannek ryzec. T. V.	87	Z aforismů Boheny Nemcovéj. T. V.	11
Bádky sa kruty Mlka Sr.	87	Peričky. Šbiera J. V.	13
Z zapomeniek sa Jána Botu.	134	Iskrický. So sbierky knažny Ka. redy.	75
Julia Botová. 136.	147, 165, 182	Aforismy. Eleny Soltesovej.	41
Juliana. Nezabádia.	152	Iskrický. L. Podjaverčanská.	51
Smutný svätorec. T. V.	178	Aforismy. E. S.	51
		Zvěčka. K. Ruppeldtová.	110
Uvodne clanky.		Aforismy. Anna R. Husova.	122
Nový rok, nový krok. T. V.	1	Iskrický. T. V.	133
Naše sú to truská čerepy? E. S.	17	Zlatá truska. Šbiera Bedruka Poličkova.	182, 169, 188

Figure 2: *Dennica's* table of contents in 1898.

4. Educative function

In accordance with the required attractiveness of published content and contemporary sentimental fiction’s fashionability, the vast majority of “*Dennica*” content consisted of popular prose or poetry with the main purpose of entertaining. However, Vansová, as the editor, obviously did not want to limit the aim of the periodical to entertainment and she regularly incorporated some educative and informative articles, despite the occasionally manifested disagreement of several readers. Their themes were naturally determined by the characteristics of the target female readers, their interests and also by personal intention of Vansová, the prominent representative of Slovak women’s emancipation movement.

In “*Dennica*” we would have normally found contributions dealing with the issues of foreign customs in exotic countries connected to women’s life or presenting famous, successful women and events in the emancipation movement, which should have strengthened the Slovak togetherness with world-wide femininity: *What is the procedure of engagement in China? How are the children babysat in different countries? Queen Elisabeth the Great;* in other issues there were published articles dedicated to practical advice in etiquette, educative methods, health care, cosmetic counselling, cooking etc., which was intended to broaden the knowledge and skills of lower class women with often restricted access to education and up to date information: *How to make face cream at home? About good manners, Letters from mother to married daughter, Mother's lesson, What children we want.*

The recipe collection published in “*Dennica*” is relevant and up to date even now, the recipe book was published in reissue in 2001.

We could have also found a very popular regular informative series containing general knowledge and partly supplying the absent higher education (series explaining meanings of foreign words, series about European cities etc.) in “*Dennica*”.

A regular part of issues was also the advice column (surprisingly dealing with very similar matters to columns in present women’s lifestyle magazines) enabling the sharing of experience and knowledge and at the same time making relationships among the reading female audience.

General amiable acclaim of female readers to educative attempts in “*Dennica*” demonstrates their interest in self-education and the successful contribution of the periodical in this area.

5. “*Dennica*” as the means of propagation of women’s emancipation movement

As we mentioned, the educative and informative activities of “*Dennica*” were primarily focused on themes close to women, so information related to women’s emancipation movement could not have been omitted, especially if the editor was its active representative and propagator. On the other hand, Vansová was fully-aware of the political and social reality in the largely traditionalist and conservative men-controlled Slovak society and pragmatically abandoned the push for radical feminist demands on equalization.

With a realistic attitude, she made efforts to support gradual social change by improving the women’s position in their everyday community life by increasing their self-sufficiency, level of education and general knowledge and also their participation in the developing national movement. “*Dennica*” regularly informed about the activities of “*Živena*”, the first Slovak women’s society with nationwide reach and it published disputation about the appropriate position of a woman in a national movement, about the importance of education in the Slovak language, information about attempts to found institutions for women’s practical education etc. Among the notification, “*Dennica*” tried to motivate Slovak female readers to participate in public activities and to self-educate by highlighting examples of successful women in the world or in the closer, and in fact more developed Czech environment.

5. The propagation of Czech-Slovak interdependency

In late 19th century the link between the Czech and Slovak national movement was very strongly propagated, mainly by the Slovak party. In multinational Austria-Hungary, which generally did not offer favourable conditions for small nations’ emancipation, the idea of Czech-Slovak interdependency was created on the bases and historical tradition of Pan-Slavism. In fact, Czechs though formally in one state with Slovaks, administratively separated from them in Austria with better development opportunities, for Slovaks often represented the cultural inspiration and

support in the national battle with the growing assimilation tendencies from the “state-making” nation of Hungarians. The influential role of the Czech element in many Slovak cultural and political activities is illustrated by the role of the above mentioned Karel Kálal, the Czech slovakophile in the formation of “Dennica”.

But that was not all. The cultural achievements of the more developed Czech representation by its quality and quantity in the field of literature, published women’s periodicals and women’s emancipation, were for Terézia Vansová source of inspiration, reflected in the content and form of “Dennica”. Vansová did not hide this inspiration, but openly confessed its influence: “*Our kind Czech sisters have surprised us with the new work. They, tireless in the work on the field of literature, do not abandon the effort in the battle for equalization of women, they do not stand at the same place, but they walk step by step forward to the set destination. At the field of the women’s work and education they have reached so many achievements, that they have not just fallen behind, but they have got ahead of women’s world of many states!*” [5]

Despite the fact that Vansová intended to publish “Dennica” mainly in Slovak, there were often texts in Czech, by Czech female authors, dealing with Czech news. Thanks to the spread Czech-Slovak bilingualism and the intelligibility of articles written in Czech for Slovak readers (simultaneously, in this way Vansová supplied the shortage original Slovak written texts), Slovak female readers were familiarized with Czech female writers and their production, the progress of the Czech women’s emancipation movement etc. The importance of Czech-Slovak women’s contacts to Vansová is illustrated by the planned project to establish letter exchanging between Czech and Slovak women readers of “Dennica”.

That is how the sense of the Czech-Slovak close relationship and interdependency, which, in the extreme form of Czechoslovak national unity (Czechoslovakism), was one of the prerequisites for the successful foundation of the independent Czechoslovak republic in 1918, on the bases of femininity strengthened by “Dennica”.

6. Conclusion

Despite Slovak literary historiography has the tendency to attach importance to “Dennica” particularly because in early 20th century it introduced the production of the incoming young generation of talented Slovak writers such as P. O. Hviezdoslav, I. Krasko, V. Roy etc., who later formed the new modern literary stream called “slovenská literárna moderna” (*Slovak literary modern art*), this paper was intended to present “Dennica” from a different perspective, focusing on the social and cultural dimension of this first women’s periodical in the contemporary context and pointing out its relevant role in the process of national and women’s emancipation. “Dennica” as well as its first editor, Terézia Vansová, was a “pioneer” in this field and we hope we have sufficiently expressed its merits to the Slovak cultural environment.

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THE POSITION OF THE CHURCH TOWARDS LIBERALISM AND SOCIALISM IN THE SECOND HALF OF THE 19TH CENTURY

Dávid Palaščák

University of Presov in Presov

Ul. 17. Novembra č.1
Presov, 080 01, Slovakia
+ 421 918 969 499
david.pal.kan@gmail.com

Abstract: *The contribution deals with the attitude of the Church towards liberalism and socialism. The contribution is divided into two chapters. The first chapter, including two subchapters deals with programmatically set liberalism and Church Through analyzing these settings, we may understand the attitude of the Church towards the Modern Movement very well In the second chapter, also divided into two subchapters we analyze the state of society on the basis of philosophical and scientific directions. My writing provides a definition of the status of church and state companies. At the same time, through the analysis of documents such as Syllabus errorum, The first Vatican Council we can understand the response of the church towards the new age deeply. Moreover it is important for the better understanding of social situations in the 19th century. Finally, we evaluate what was the position of the Church through its position in society and what assumptions have been created for her next action. The aim of this paper is the analysis of the second half of the 19th century, analysis of the position of the Church as well as the impact of these attitudes on the social status of the Church. On the one hand, we are examining the relationship of political and theological position of the Church and also the essence of what the church reserves. On the other hand, we are using the analytical method, inductive method, and the method of probes in order to make a good analysis.*

Keywords: *Church, Liberalism, True, Pope, Freedom*

1. The nature of the conflict of the Catholic Church with liberalism on the basis of definition programming issues.

1.1 The Philosophy of program issues connected with liberalism

The essence of liberalism, socialism, the Catholic form of Christianity and philosophies of the nineteenth century is an expression of the philosophy connected with the operation of the society. If we want to define the nature of the conflict between the "philosophies" of social order, we must define the program issues. We can infer the causes of conflict between the Catholic Church and liberalism and also socialism.

The question connected with Enlightenment and rationalism from the time of Thomas Hobbes is the following: What kind of principles connected with the operation of the society are people determining among themselves? It is essential to recognize that the principles of the society work on defining values. These values function as a measure of what is the best for the society, what is permissible. On the other hand, what is wrong and intolerable is also important. The result of evolution of human thought during the Enlightenment is clear. *Liberte et egalite*- freedom and liberty and equality as the highest value on which gradually built Western civilization. Freedom and equality as values that define the Western civilization have their evolution. Nowadays, the Euro-Atlantic area is facing the issues connected with understanding and defining the problem specifically for 21st century. These values as creators of western civilization brought to public life and gradually as the standard operation of states, particularly the emergence of the United States. Moreover adoption of the US

Constitution, the processes associated with the Great French Revolution. All of these events in relation to religion did turn. The system based on the conclusion of the social contract expressed the values of freedom and equality is connected with religion. Religion has its place in the society.

We can find the cause and attitudes of the Catholic Church towards liberalism and the subsequent reasons for the content of the most important documents and encyclicals. Encyclicals and documents appeared in the second half of the nineteenth century in church environment. The programmed question connected with the social order of the Catholic Church stands exactly opposite to the program question connected with liberalism.

1.2 The philosophy of the program questions the Catholic Church

It is not allowed to build a philosophy of program issues in the same way as it was built in the Enlightenment. This applies to the Catholic Church and also to any community based primarily on the philosophy of religion.

What principles is determined by society and what values found for your operation?

Christianity, Judaism and Islam, are seen in their theology as revealed religions.

The result of social order and values is not an agreement within the Community but it is a specific order and values given by God.

In the Old Testament, Judaism stands in the political, economic status of the people of Israel to faithfulness to the values and rules given by God. The Old Testament success for leaders in Israel personal relationship with God, not just empty obedience to the law of religion. Christianity focuses on the individual's

relationship with God. The concept of Nation is not decisive. Christianity and Judaism represent the system of values that can not be based on a social contract, because it is given.

The essence of religion is the belief in the absolute knowledge of the truth, that the religion of their own. Christianity became the state religion in 380 (Emperor: Theodosia I) In this time the religious truth has become the only true value for the state, under which organizes social life in the country.

Based on this fact, we can state the following: The society and the State should be arranged in accordance with the values and principles connected with the Absolute truth. The Catholic church is the bearer of the Absolute truth. But how is it possible to create a specific order where the society and the state will be arranged in accordance with above mentioned principles?

The position of the Catholic Church towards liberalism respectively all the movements and intellectual direction of the company can be expressed through compatibility with the above mentioned question. Aspects of the wearer's knowledge of the truth in this case are important. Program Reformation did not build the question of arrangement differently. It questioned the understanding of revealed truth, consequently the faith.

2 The attitude of the Church towards liberalism and socialism in documents

The reaction of the Church to social development in the second half of the 19th century was the same as in the 16th century to the Reformation. The Church was governed by the same scheme and use the same style of language. In the theological field, it was the Council of Trent in the period 1545- 1563.

Educational Decrees required Rome, decrees of Scripture and tradition of Justification, sacraments, purgatory and indulgences. The reform decrees sometimes led to a renewal of pastoral care, missions, catechesis and care of the poor and the sick. [1]. In general, this church council debated the supporters of the Reformation. The church responded in the documents of the Popes and II. Vatican Council in the second half of the 19th century. The Church's relationship to modern science, modern state and liberal tendencies was determined largely by Pope Pius IX. (1846-1878). His real name was Giovanni Maria Mastai-Ferretti was born 13 May 1792 in Senigallia, Italy. Initially, the Archbishop of Spoleto, considered to be liberal. He defended the organizational changes in the Papal States. He initiated the modern movement from the scientific field to political and social opinions relying on rationalism, liberalism, socialism, and so on.

The first important step was the proclamation of the dogma of the Immaculate Conception of the Virgin Mary. (8.12.1854) Catholic theology today Pope Pius IX. praise for this step. This step contributed to this day the popular Marian cult. On the other hand, it was connected with the second dogma which was considered to be controversial. The Pope proclaimed the dogma of the Immaculate Conception of the Virgin Mary himself without the council. It was a serious step, sending a

political signal towards the inside of the church. The Church was forced to face this new situation. It was something new.

2.1 The role of the church in society

In the second half of the 19th century in European countries grew stronger positions Liberals.

The society was restructured in each country towards civil. The most striking laicization process undergone France. The French Republican leader Léon Gambetta in 1872, welcomed the political arena "new social layer", which could provide the basis for a new order. New Regulations means, regulations consisting of doctors, lawyers, statesmen, businessmen occupying Republican position. Liberalism and anti-clericalism was typical for them. Leon Gambetta even in Lille in 1879 spoke of the graduates of Catholic education as expressly dangerous when he said: *Catholic students hate modern France and the principles of justice, they feel as immigrants in a foreign country, rather than in his, are against the principles of freedom..*

This statement Gambetta on education was not unusual. Education was the site of one of the heaviest clashes Catholics and Anti-clericalists. According to Ernst Renan - national revival should ensure, in particular education reform, which was the real key to the future. The state tried to secularize the school through the introduction of subjects civics and ethics. Republicans saw the strengthening of future generations of patriotism and respect for civil rights and freedom. Catholic schools were called private. Catholics in turn resulted in their schools and students in the spirit of conservative traditions. Both schools often competed among themselves and within the same municipality. Subjects as history, at the end of the 19th century and science were enriched with new knowledge, which brought for example Darwinism. The interpretation of history in public schools peaked in the Third Republic, which represented as the culmination of the development of freedom and equality. France, once a first-born daughter of the Church as it is called by Pope John Paul II. during his visit in Paris brought the church a sort of positivism, whose creator was Auguste Comte. Comte published his most important ideas summarized in lectures at work *Cours de philosophie positive*. Comte's ideas influenced the Christianity. It was an overcoming way of thinking. Comte thus lead to the view that modern society stands on rationalism, science, ethics is not built on religion.

Let's talk about Comte deeply. He created three stages of development of human society in his philosophy. Comte's stages may be interesting from philosophical, theological, sociological or historical point of view. His philosophy contains the following stages: The Theological stage, The Metaphysical stage and The Positivity stage which is determined by rationality, trade, scientific knowledge. According to the above mentioned stages, we are able to understand the social development and the position of the Church better than in the past.

The social development was largely determined by science, intellectual currents, political philosophy mainly

in the most advanced countries in Europe in the 19th century. The most motivated groups are a sort of indicators of the social development. Darwinism, in other words the beginning of critical-scientific examination of the Bible was also important. It was a theory of political thinking that created the civil society, the gradual development of industry, commerce, economics, laid the foundation for a company built on rationalism, economy. According to Comte's philosophy we can think about the 19th century. Was the 19th century also the early stage of post-Christian era? The change in the structure of society, the promotion of liberal theories into practical policies created something what we might call "market" philosophy. The market philosophy is connected with countries such as Great Britain, Prussia, France, USA. This "market philosophy", now operates in every state based on principles of liberal democracy. Christianity became the denomination of one ideology that can citizen, a wider group of citizens may acquire. The theory of liberal market, which includes the social Darwinism survives the one who has the best deal is a good example. The best "sold" offer creates consequently the strongest market position. Similarly, the "market ideology" generates the strongest position of organizations based primarily on how many individuals, groups will learn a given "philosophy". Secondly, the power of "philosophy" is crucial to how many individuals and groups will adopt a given philosophy. The church had to take a stand against liberalism and socialism as the main "market" competitors.

2.2 Attitudes and reactions of the church to the intellectual movements of the second half of the 19th century

In ancient times the Church had to cope with in terms of theology called. Christological heresies. These terms were discussed with the councils and their resolutions. The main splice line Councils was mostly a strong supporter of the theory and a strong opponent, who managed to convince the council of the truth that the council later acknowledged the truth of faith. The problem of the second half of the 19th century, stands on the fact that opponents of the church are the intellectual elites. Let's talk about the term "opponent"

Understanding the opponent always depends on the objectives. Liberalism did not have to necessarily be understood as an opponent of the church. It is difficult to see the problem from the opponent's point of view. For example, the efforts of the Hungarian Lajos Kossuth, are not recognizable as directly contrary to Christianity. It is important to say that he tried to liberalize the conditions under Habsburg monarchy. French anti-clericalism, secularism in public life, the feminist movement - it is not a theological challenge, it is the political challenge. Darwinism, which undermines the creationist understanding of the origin of the world, researches and works of the biblical scholar David Friedrich Strauss or Comte's positivism became scientific challenges.

The term challenge is not necessarily to be identified with the term opponent. It is a term that evokes the need to take convincing counterarguments. Necessity for the church was

to find a response, based on how you define the challenges. Challenges can be interpreted as a need for adversarial. An important person connected with the problem was the above mentioned pope Pius IX. In 1864 Pius IX published *Quanta Cura*, Annex *Syllabus errorum-Syllabus omylov*. It was ten years after the adoption of the dogma of the Immaculate Conception. The document has become crucial for the definition of religious attitudes towards the modern intellectual and scientific knowledge. It was prepared for five years. Pius IX. has defined 80 errors, divided into 10 paragraphs of which are directly named as delusions. Pope thus built 80 claims and modern times and their holders directly to the opposing church. For example a whole paragraph is only about liberalism.

Let's look at the content itself paragraph. They can be divided into two groups. Politically perceived delusions and scientifically perceived delusions. Science has become a theological opponent. The first section is about pantheism, naturalism, and absolute rationalism. This paragraph we could be categorized as the Church sees the Church as a theological opponent.

For example, the seventh heresy says: The prophecies and miracles set forth and recorded in the Sacred Scriptures are the fiction of poets, and the mysteries of the Christian faith the result of philosophical investigations. In the books of the Old and the New Testament there are contained mythical inventions, and Jesus Christ is Himself a myth. [5] Such formulations directly define what the Church perceived conflict with Catholic theology. Similarly, in the theological category we can include sections § II. *Moderate rationalism*, § III. *INDIFFERENTISM, LATITUDINARIANISM* § VII. *ERRORS CONCERNING NATURAL AND CHRISTIAN ETHICS* § VIII. *ERRORS CONCERNING CHRISTIAN MARRIAGE*. The church could not take effective argument position. People such as Thomas Akvinský and Basil the Great were needed.

Subsequently paragraphs § IX. *ERRORS REGARDING THE CIVIL POWER OF THE SOVEREIGN PONTIFF*. § X. *ERRORS HAVING REFERENCE TO MODERN LIBERALISM*, § IV. *SOCIALISM, COMMUNISM, SECRET SOCIETIES, BIBLICAL SOCIETIES, CLERICO-LIBERAL SOCIETIES* § VI. *ERRORS ABOUT CIVIL SOCIETY, CONSIDERED BOTH IN ITSELF AND IN ITS RELATION TO THE CHURCH*. The Liberals and the relationship of the church to the state was a particularly controversial § X. *ERRORS HAVING REFERENCE TO MODERN LIBERALISM*. Focus on the following: 77. *In this nowadays is no longer appropriate to the Catholic religion was regarded as the sole state religion and to all any other cults were secreted.* 78. *Hence, it is laudable in certain Catholic counties to provide by law for the people immigrating thither to be allowed publicly to practise their own religion of whatever form it may be.*

79. *For it is false that civil liberty for any kind of cult and likewise the full power granted to all of proclaiming openly and publicly any kind of opinions and ideas easily leads to corruption of the minds and morals of nation and to the propagation of the plague of indifferentism"*

80. *The Roman Pontiff can and should reconcile and harmonize himself with progress, with liberalism, and with modern civilisation*"

Controversial was mainly an error under number 41 in § VI. expressing to respect civil, constitutional rights ecclesiastical. According to the Pope, the fact that constitutional and civil rights were more important than church, was a nonsense.

The first Vatican Council was important. (June 1867) The Pope published intention of convening the council, which had to take a position on the modern era (with 96 consultors) The council opened Dec. 8, 1869 and began discussing the essence of what is already defined Syllabus errorum and therefore rationalism, modern times. [7]

The council adopted the dogma of papal infallibility in matters of morality contained in the Constitution Pastor Aeternus. Meanwhile, proponents of infallibility wanted to include the negotiation of the infallibility of the Pope to the programme of the Council. The result is the following::

A pope has full and direct power so the bishops and the faithful throughout the world, not only in matters of faith and morals, but also in matters relating to discipline and leadership of the Church The Bishop of Rome, when he speaks ex cathedra, that is, when in the discharge of his office as shepherd and teacher of all Christians, and by virtue of his supreme apostolic authority. [8]

Another petition appeared consisting 136 names of delegates. In the morning, when the petition was signed 55 bishops left the Council in protest. It was in the morning, July 18, 1870. A two-hour storm appeared over Rome exactly at the time of the vote on the adoption of the constitution. [9]

What was the reaction of the church? Protests, as a result, especially in today's Germany, led by Ignatius Heinrich von Weissenberg and Dollinger, the emergence of the Old Catholic Church, centralization of management of the church. [10]

Conclusion

The topic consisting of the attitude of the Church towards liberalism and socialism is wide. The Church responded to modern times especially during the pontificates of Pope Pius IX. and Leo XIII., who responded mainly to social stimuli. As I already mentioned, the church needed powerful people. I am talking about ecclesiastical fathers, important figures connected with religion. The first Vatican Council defined, Syllabus errorum. Popes entered the church from the world, because they put emphasis on the defensive than on reasoning and dialogue. The II. Vatican Council meant a huge change.

Angela Roncali became Jan XXIII in 1963. The Church passed to the community through the second Council held at the Vatican. The Bulgarian philosopher Tzvetan Thodoris says that we are now children of the Enlightenment. According to the above mentioned theories, we can see that the philosopher of our century are also dealing with serious issues. Not only philosophers, historians, sociologists but also theologians shall define the

term "children of enlightenment" It is not easy to explain this term. Especially in 21st century.

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SOCIAL OUTCOMES OF EDUCATION

Maria Pacuska

University of Warsaw, The Robert B. Zajonc Institute for Social Studies

ul. Stawki 5/7, 00-183 Warszawa, Poland

tel. (+48 22) 831 51 53

mpacuska@student.uw.edu.pl

Abstract: *How does education influence social outcomes in terms of employability, social capital, subjective well-being and health? Regression analysis on ESS data reveals that education induces many social outcomes, that is, not only enables individuals to perform better in the labour market, but also increases social capital and helps to improve people's overall health and life satisfaction. Yet, education does not predict in significant manner frequency of social meetings with friends, relatives or colleagues. Besides, the higher the education level, the less people are satisfied with the balance between time they spent in work and time spent in other activities. Similarly, although it can be suspected that the higher educated will pay more attention to physical fitness, there is no significant relation between the level of educational attainment and being physically active. These less obvious findings suggest that educational social outcomes may be more complex than assumed.*

Keywords: *education, employability, social capital, well-being, health*

1. Introduction

Early philosophers, such as Aristotle and Plato pointed out that education was central to the moral fulfilment of individuals and the well-being of the society in which they live. In the past few decades, research has supported this conventional wisdom: higher education generally generates positive returns to the public in general, as well as to the people who obtain degrees. The available analyses in this regard focused mainly on the economic higher education effects (e.g. the analysis of the wage return to education)[12]. This is a very limited perspective. Analysis presented in this paper will shift from the economic impact of higher education to the societal one. For education is supposed to induce other social outcomes, that is, not only to enable individuals to perform better in the labour market, but also to promote active citizenship, to increase social capital and to help to improve people's overall health and life satisfaction [8]. A small number of analyses, however, have been devoted to identification of educational effects in all these areas simultaneously.

The purposes of this paper are as follows: to analyse social outcomes of education with regard to employability, social capital, subjective well-being and health, as well as to identify potential areas in which educational effects are more complex than assumed. The impact of education is studied based on regression analyses on individual-level data from the European Social Survey.

2. Questions and hypotheses

The central question of the paper is: how does education influence social outcomes in terms of employability, social capital, subjective well-being and health indicators? It is possible to put forward many hypotheses in this respect.

When it comes to employability, previous research suggests that the higher educated perform better in the labour market in terms of employability indicators: employment rate and salary in particular [9,10,16]. It can be also hypothesized that the higher educated get better employment in the meaning of more stable contracts (of unlimited duration).

As far as social capital is concerned, it is worth taking into account its both dimensions: the formal and the informal one. Formal social capital refers to participation in formally constituted civic organizations and voting. Empirical evidence suggests that educational attainment, increases formal social capital [11]. Informal social capital refers to social ties between individuals and their friends, families, colleagues, and neighbours [2]. The relationship between educational attainment and informal social capital evidence is less consistent than in case of the formal one. Some studies found a negative relationship between educational attainment and contacts with family members, and a non-significant relationship between educational attainment, and contacts with friends [13]. Finally, there is a large and persistent association between education and subjective well-being. Education is supposed to improve people's overall health and life satisfaction [8]. The better educated are perceived as more prone to make health-wise decision and the effect of education increases with increasing years of education [4].

3. Data and Measurements

In this paper, the impact of education on employability, social capital, subjective well-being and health is studied using individual-level data from the European Social Survey (ESS), by means of estimating linear regression models. ESS Round 6 data, which covered 29 countries in 2012-2013, were used. The survey involves strict random probability sampling, a minimum target response rate of 70% and rigorous translation protocols. Interviews were conducted face-to-face (European Social Survey 2014). Analysis is based on a sample of around 52,820 respondents in productive age of 18-64 years. ESS design and population size weights were applied. In Round 6, apart from core topics repeated from previous rounds, two modules were developed, from which indicators concerning Personal and Social Well-being were taken into account in the analyses.

3.1. Dependent Variables

Dependent variables consist of indicators concerning: employability, social capital, subjective well-being and health.

The selection of employability indicators relies on four questions on: performing paid work (for the last 7 days, answer “no” coded as 0, “yes” - 1), having ever been unemployed and seeking work for a period of more than 12 months (0-no, 1-yes), type of employment contract (0 - no contract, 1-of limited duration, 2- of unlimited duration), being satisfied with a job (on a scale from 0 to 10, 0-extremely dissatisfied, 10-extremely satisfied). In ESS there is an absence of questions about salary (respondents are only asked about their feelings concerning general household income), that is why relationship between earnings and education has not been analysed, even though it is also an important indicator of employability [9,10,16].

Afterwards, formal and informal social capital variables were taken into account. Informal: trusting other people - on a scale from 0 to 10, where 0 means “you can’t be too careful” and 10 means that “most people can be trusted;” the frequency of “meeting socially” with friends, relatives or work colleagues coded as: ‘never’(1), ‘less than once a month’(2), ‘once a month’(3), ‘several times a month’(4), ‘once a week’(5), ‘several times a week’(6), and ‘every day’(7). The formal social capital variables were as follows: voting last national election, working in a political party or action group in the past 12 months, working for voluntary or charitable organisations in the past 12 months (in all 3 of them 0-no, 1-yes).

Finally, subjective well-being indicators contained 7 selected questions concerning: subjective general health (recoded as 1-very bad, 5-very good), satisfaction with life as a whole and satisfaction with work-life balance (on a scale from 0 to 10, 0-extremely dissatisfied, 10-extremely satisfied), being optimistic about future, feeling very positive about oneself, feeling free to decide how to live one's life (for the latter three: 1-strongly disagree, 5-strongly agree), being physically active for 20 minutes or longer during last 7 days („no days“ - 0, „one day“ - 1, „two days“ - 2, etc. till „7 days“ - 7).

Being interested in the empirical question whether the relationship between education and different indicators alters, I purposefully refrain from creating dimensions through factor analysis. *A priori* clustering of the indicators would disable testing for possible differential effects within these three areas: employability, social capital and well-being.

3.2. Independent Variables

The central independent variable in the study is the educational attainment measured as the age at which the

respondent terminated full-time formal education. The following independent variables were included as well: gender (1 is female, 0 is male), age, urbanization (1-big city, 0 - the rest), As they might be seen as common determinants of both education and the analysed indicators [11], including them should lead to reductions of educational effects.

4. Findings

As expected, educational attainment has a significant influence on the most of employability, social capital and subjective well-being indicators (see regression results, Table 1). The higher educated scored significantly higher in terms of employability indicators: the higher level of education, the more often people perform paid work, have an employment contract of unlimited duration and are satisfied with their jobs.

As far as social capital indicators are concerned, the results generally confirm the assumed hypotheses. The higher educational attainment of respondents, the more they were prone to trust other people, vote last national election, work in a political party or voluntary organisations in the past 12 months. However, it is worth noticing that education does not predict in a significant manner frequency of social meetings with friends, relatives or colleagues.

In regard to the last group of indicators concerning subjective well-being and health, again most of them score higher with the increase of education. Higher educated people better evaluate their health, they are more satisfied with life as a whole and they hold more optimistic attitude about future. They feel also more positive about themselves, and are more convinced of their freedom to decide about their own lives. On the other hand, the relation between education and satisfaction with work-life balance is negative. The higher the education, the less people are satisfied with their balance between time spent in work and time spent in other activities. Another possibly surprising result is that, although we may suspect that the higher educated will pay more attention to physical fitness, there is no significant relation between the level of educational attainment and being physically active.

5. Discussion

The results confirm most of the hypotheses. Similarly to previous research, findings confirm that the better the education, the better job prospects of respondents. It may be related to the fact that education equips students with the ability to generate new ideas and companies benefit from hiring graduates with knowledge and research skills [7].

Table 1. *Employability, social capital and subject well-being regressed on education, individual level control variables (gender, age, urbanization), B- unstandardised coefficients*

		Years of full-time education (B)	Standard error	p	Age (B)	Female (B)	Living in a city (B)	R-squared
employability indicators	doing paid work	,016	,001	,000	-,004	-,019	-,049	,057
	unemployment and work seeking lasted 12 months or more	-,015	,001	,000	,002	-,069	-,051	,030
	employment contract	,021	,001	,000	,006	,007	,012	,033
	satisfaction with a job	,024	,004	,000	,012	,103	-,104	,006
social capital indicators	trusting other people	,103	,003	,000	,005	,087	-,226	,027
	meeting socially with friends	-,002	,002	,405	-,013	,035	-,096	,022
	voting in last national election	,017	,000	,000	,005	,005	-,049	,055
	working in a political party	,005	,000	,000	,000	,018	-,003	,011
	working for voluntary organisations	,071	,002	,000	,004	,040	-,382	,035
subjective well-being and health indicators	subjective general health	,031	,001	,000	-,017	,126	-,136	,163
	satisfaction with life as a whole	,069	,003	,000	-,001	,139	-,349	,017
	satisfaction with work-life balance	-,012	,004	,003	,015	-,006	-,069	,007
	being optimistic about future	,015	,001	,000	-,005	,059	,031	,017
	feeling very positive about oneself	,007	,001	,000	-,002	,083	,059	,009
	feeling free to decide how to live one's life	,006	,001	,000	-,001	,058	,033	,002
	being physically active	-,002	,003	,413	-,004	-,091	-,342	,004

Source: own calculations based on ESS data.

Moreover, the higher educated score higher on all indicators of social capital. From socialization perspective [5] higher educated, in comparison with lower educated people, are more likely, in adolescence and adulthood, to internalize the dominant norm of dedication to the collective good, so they are more likely to be stimulated to participate in formal and informal social activities. On the other hand, another explanation is possible, since the higher educated are prone to social desirability bias - to hold attitudes seen as socially desirable that diverge from their actual behaviours. For example Silver, Anderson, and Abramson [14] report that respondents who have completed college are the most likely to overreport voter participation. It is worth taking into consideration that the results may be because of that somehow distorted.

As far as subject well-being indicators are concerned, the results confirmed positive educational effects. It can be mostly explained by the fact that education affects life satisfaction indirectly - through income and labour status. That is, people with a higher education level exhibit higher income levels and a higher probability of being employed, and thus, report higher levels of happiness [3]. Still, similarly to social capital, measures of subjective well-being based on self-reports may be subject to social desirability biases. In regards to subjective health assessment, its causal relationship with education is generally an object of controversies, for it may proceed in two directions: the higher educated have more income to

take care about their health, they are also more health-conscious [4] and therefore, they are more healthy. But at the same time, healthier children have bigger chances of attaining higher educational levels [8].

Furthermore, even more interesting than the confirmed hypotheses are the findings revealing potential areas in which educational effects are not so obvious, especially that – thanks to a large sample – almost all the results proved to be significant.

Firstly, the results suggest that the lower educated participate less in all types of formal and informal activities, except when it comes to meeting socially with friends. One possible explanation – according to the resource perspective – is that the higher educated might (wish to) perpetuate their status by investing in the publicly visible collective good (formal social capital), while the lower educated, as a result of a lack of human resources, compensate by investments in informal social circuits. It would be in accordance with Coleman's theory [2] that forms of capital—physical, human, social—can be seen as resources that—to a lower or higher degree—are available to individuals, to be utilized to achieve certain goals. When people lack one form, compensation is possible by investing in other forms. The presented data confirm that it can be the case that the lower educated invest more in affectionate informal ties.

Secondly, the higher the education, the less people are satisfied with balance between time spent in work and time spent in other activities. It confirms the results of other studies stating that better educated persons perceive more work-life imbalance [15]. It may be related to the fact that higher educated work more than the lower educated, including more often full-time occupation [6]. Therefore, they have less time for outside-of-work activities and consequently, even if satisfied with their jobs, they are less satisfied with work-life balance.

Thirdly, although it was hypothesised that the higher educated will pay more attention to physical fitness, there is no significant relation between level of educational attainment and being physically active. It may seem surprising because the better educated are perceived as more prone to make health-wise decision [4]. Still, other studies demonstrated that insufficient activity was related to being in good health [1] and the higher educated usually show good health [4], so they may decide to spend less time on exercising. That may be reinforced by the fact mentioned above that the higher educated work more and have less time for outside job activities (including the physical ones).

6. Conclusions

This contribution was aimed at increasing our knowledge of the effects of educational attainment on employment, social capital and well-being by performing analyses on ESS data. Results confirmed that education induces many social outcomes, that is, not only enables individuals to perform better in the labour market, but also promotes active citizenship, increases social capital and helps to improve people's overall health and life satisfaction. Thus, having a highly educated population has enormous economic and societal impacts. Policy makers should take into account these wide social benefits of education when allocating resources across public policies.

Notwithstanding, it is worth noticing that education does not predict in a significant manner the frequency of social meetings with friends, relatives or colleagues. In accordance to resource perspective, the lower educated, as a result of a lack of other resources, may compensate by investments in informal social circuits. Besides, the higher the education, the less people are satisfied with their balance between time spent in work and time spent in other activities. It may be related to the fact that the higher educated work more than the lower educated and have difficulties finding work-life balance. Another possibly surprising result is that, although we may suspect that higher educated will pay more attention to physical fitness, there is no significant relation between the level of educational attainment and being physically active. It may be connected to better health of higher educated people (and no need for exercises) as well as time deficiencies to do sports. These less obvious findings, which are even more interesting than confirmed hypotheses, suggest that educational outcomes may be more complex than assumed.

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AESTHETIC EVALUATION OF THE FOUR ELEMENTS OF NATURE: WATER IN DESIGN ART

Katarína Šantová

University of Prešov in Prešov

Rubínová 4

Košice, 040 11, Slovakia

00421948917036

katka.santova@gmail.com

Abstract: *Water, as a subject of cultural analysis, can be found in some theoreticians (Eliade, Neubauer, Jung), but this topic is a part of analysis of art works of more authors (Bachelard, Kalnicka). Methodological approach used in this article is inspired by the publication *Aesthetics of the Four Elements* (ed. Wilkoszewska) in which various forms of the relation of art and particular elements (fire, water, earth, air) are used. Artifacts presented by the author in this article, have the character of utility object, or *Design Art*, one of the last movements appearing in modern design. What is the form of water in the works of selected authors? Is it its presence and the use of physical and symbolic character? Water is together with earth considered to be the element of female character. Do women designers work with water in different way than men designers? The article finds various parallels towards theoretic interpretations of water, particularly in the works of Japanese artist, Slovak designer and Scandinavian designer's studio.*

Keywords: *water, design, aesthetics, Design Art, gender studies*

1. Introduction

Water is either of its physical form (river, steam, running water, lake, snow, ice, pool, rain) or is an inspiration at symbolic or particular level. Many authors connect water with metaphoric symbols: oyster, sea shell, pearl, fish (Eliade), woman (Eliade, Kalnicka), peacock feathers, butterfly (Eliade, Bachelard), mirror (Bachelard), swan (Bachelard), passion (Jung), moon (Eliade), pot (Heidegger, Kalnicka) and other. Water is characterized by endlessness, depth, obscurity, inscrutability, variability, catharsis ability, can be a symbol of life, but also of death. Ancient philosophers considered water as metaphor of constant change [9]. Kalnicka [7] similarly analyzes Dewey's text in which she describes aesthetical experience with the help of sea waves and water flow metaphor. Kalnicka [7] writes that water represented "shapeless material" in ancient mythology. Jung [6] considered water as the most common symbol of unconsciousness and Eliade [5] states that water disposes incompetence of the existence itself.

1.1 Design art objects and their interpretation

Let me quit categorizing the design into particular, traditionally understood sectors (industrial, graphic, interior, textile etc.) and omit even the craft production. Let's focus our attention on the Design Art objects' search that could be classified among production design under certain circumstances. I would like to compare the views and opinions of the water theme processing and its usage (as a technology, inspiration or concept). We insist on author's approach of designer for its personal addition in Design Art. Terragni [14] states that actual internet generation of designers is inspired by nature in their works. Authors who come under the characteristics of Design Art are inspired by the water because of its aesthetic valorization. Thus, we analyze the images of water in three chosen objects. All three selected examples are of interior element character. Young [16] describes in

her text the relation that symbolically exists between hometown and woman. Chair becomes a symbol of interior. Young [16] imagines a sitting woman next to the fireplace, sitting alone. Seclusion of a woman at home environment is shown e.g. by picture *Melancholy* (Laura) from 1899 made by Munch. Brady – Haapal [3] are describing this phenomenon as a contrast between shining bright walls of the room and dark clothes and the expression of the face of the model. Woman has often been connected with home, its maintenance (household jobs), and the chair is an image that can represent interior. First two selected examples are chairs (or armchair and chair) and the third example is a table with unknown parameters. We can only suppose that its smaller desk could be easily used even for sitting. All three examples are connected by water element and the existence of first two is dependent on water. The last example shows the water symbolically.

1.2 Water as technology: *Venus – Natural Crystal chair*

Water can pass even through the most solid structure. Water dropping in one place can make a hole into the rock (for instance, the caves represent the ability of water to create objects). Water can shave sharp edges of the stones. Unlike the fire, juggernaut water is continuous, lasts longer and is indiscernible [11]. Eliade [4] states that water is able "to kill par excellence: diffuses, damages all the forms. That is the reason why it consists of many seeds and is creative". However, there are objects in Design Art where the interaction with water is a part of work creation.



Figure 1: Tokujin Yoshioka: Venus – Natural Crystal Chair
(Source: <http://static.dezeen.com/uploads/2008/10/05-venus-small-prototype.jpg>)

Japanese artist and designer Tokujin Yoshioka presented various processed natural elements and materials in his exhibition *Second Nature*. One of the objects of this exhibition was an armchair *Venus – Natural Crystal chair*. This object was made just of the skeleton (substratum of chemical compound) at the beginning and its overall final image has been formed in water environment of large aquarium during one month. Crystal structure has been continuously made of the skeleton live in front of the viewers who could follow a chair creation during exhibition duration. If we add the words of the author said in order to describe his objects, we would know his intention not to use computer technologies as other colleagues. His aim was to find effective natural resource for the production of the chair. Nature stimulates our imagination and defines us as human beings [15]. Author does not hide his inspiration from nature; moreover he named the armchair *Venus* according to Roman goddess, born of water environment, as well as his armchair. It's not just a coincidence that S. B. Ortner [12] compares (dis)proportion between the nature and the culture to (dis)proportion between the woman and the man. The aim of Yoshioko was to let take the course of nature and *water – woman cycle* and honor it. Yoshioko's work can be considered as an exemption in designer's approach and as we are not able to name this state according to standard theorems, we call it Design Art. However, we cannot ignore the fact that author gave "the woman" hand in the form of indicated shape. "Male" culture deals with itself in its own way. Nature is not violent, neither water. Chair *Venus* originated in slow; let's say peaceful process, without rough author intervention. His intervention into the work was present just at the beginning when he indicated the way where the crystals should grow. Water took the role of the creator. The man watching the creation of the chair can be surprised by weird feeling caused by invisible presence of something that he does not know, numen, existing without human intervention [6]. However, we would interpret the chair based on its name even as female act. Venus was born naked from mermaid. Moreover, female act fascinates the artists for several

centuries. Water itself, according to Bachelard [2], evokes nakedness, innocence and desire: "A being getting off the water is an optical image that's slowly substantiating". Crystal chair got off the water that as if took the form of substance. As Bachelard [2] states, water is able to materialize. Let's check if we could use this chair from its functional point of view. Once we could maybe sit on it in the area of gallery to check material stability, but sharp crystal rims would scrub our clothes and cut into the skin. Is it (un)comfortable sitting lasting for a few seconds? However, Kalnicka [8] cites American philosopher A. Berleant who describes water environment as a world in which we cannot find sharp rims. Indeed, crystal chair originated in water environment, has the capacity to flat down the rims. Its surface is made of sharp structure. Author, in spite of his art focus of activity, got with this object into the utility sphere, into design. Why? What connectivity did the artist find in "useless" object? If he had an effort to show the technology and material of utility object, why he rather didn't choose bowl which structure wouldn't hamper? Chair is an entrance gate into design for designers; it's some kind of ritual where they can verify the relationship between the object and the man. It's the object being in direct confrontation with human body, thus, its parameters are limited by its ergonomics. The most of designers try to show themselves in designing the chair regarding technical limits and parameters.

1.3 Symbol of water within utility object:

Kelpy by Marián Laššák

Kelpy is an installation of Slovak designer Marian Lassak from 2010 and is located on the water surface in Kolarovo. Curator Viera Kleinova [10] described it as follows: "Marian Lassak put his famous object onto the water of the river. Meditative objects – chairs balance on the water surface or emerge from the water (or maybe sink). Empty water surface becomes a scene full of expectations, somebody has just left it or it becomes the scene of some story immediately, on the contrary". Bachelard sees the continuity between dreaming and watching the water surface as follows: "I always fall asleep into the same melancholy, very special melancholy, in case of sleeping water, having the color of rain forest puddle, into the melancholy not too depressive, but dreamy, snoozy, calm" [2]. Lassak's chairs are maybe designed for painter, e.g. Madnyánszky, who depicted water in form of rivers and lakes in his pictures. Kiss-Szemán [9] states that water represented an inspiration to contemplation on infinity and distance for this painter. Mednyánszky observed the life and the move in water, he thought of predators and other creatures in his paintings that he sought in the waves or in the nature under the snow. Name of the installation – *Kelpy* – translates the designer Lassak as *Waterman* that is an equivalent of sea creatures that are named as *Kelpie* in Scotland. Are *Kelpy* chairs Lassak's watermen? Or are they determined for observation of the sea creatures by waterman? Curiosity of *Kelpy* chair is the missing seat that makes the object useless for sitting, such as in case of crystal armchair. Moreover, the existence of this chair is dependent on water. Its floatation on the water surface is

subject to invisible construction. This object would look differently without water and would not meet author's idea, mainly because of spare construction. Wooden chair fits into the natural environment. The most of wooden objects stay on the water surface, continuously change its shape, and decompose (they change into the driftwood). Water looks like a "hard" part in the *Kelpy* installation. Not to mention that Bachelard [1] considers the water as universal joint of the world.



Figure 2: Marián Laššák: *Kelpy*
(Source: http://www.marianlassak.sk/space_projects/sk/kelpy.htm)

1.4 Water in designers' production: *Melting table* by Studio Front

The third example of the water use in Design Art is the object *Melting table* from design studio *Front design*. This studio consists of three women working in Sweden. Their production is connected with experimentation with materials and *Melting table* has been created in a similar way. It's a project, not the mass-produced object. Parameters of this table is not stated by the authors, we can just presume that it's just the table of smaller parameters, stool – "small chair", used even for sitting. The aim of authors is to achieve slow change in interior, when the object will "melt" after several months of the use, or fall in under its own weight. Authors chose the word "melt" in the title, but the truth is that the object won't even steam away or change its volume. The only thing that will change is its form – legs will sole. However, such a process of decay is long-lasting. Selected material is similar to the jelly or heavy, dense water. We can observe the symbolism in this object. Maybe the female designers refused to create solid stool, classic chair, where the woman would sit as a representative of home environment. Authors introduce us the piece of furniture that has nothing in common with tradition. It's another example of "useless" object for sitting, inspired by water (melting snow, ice), that, however, unlike the first two examples, does not present solid uncomfortable crystal structure, neither fixed chair with no seat on the water surface, but presents the object that would not resist sitting on it, even would crash by itself under the material heaviness. Authors by their vision of self-damaging furniture violate

the idea described by Young: "Picture of Penelope sitting at the fireplace, weaves, protects and keeps home place, whereas her husband travels around the world and experience many adventures, was one of the basic idea of feminity character in Western culture for thousand years" [16]. Perera [13] adds that women are considered to be the one who are able to suffer silently in their isolation from home, filled by patience and submission.



Figure 3: Studio Front: *Melting table*
(Source: <http://trends.archiexpo.com/people/designer-spotlight-front>)

2. Conclusions

Interpretational character of the article aims to set the questions regarding possibilities within the design itself. Thus, we ask, if it is possible to interpret design as art work or if Design Art objects are art or design. Primary aim of this article was to reveal the aspects of water in selected design objects, or Design Art, through observation – "looking" at the object in the gallery (*Venus* – crystal armchair), reflection ability and stargazing (installation *Kelpy*) and the simulation of one of its forms (*Melting table*). Water is physically present as a part of manufacturing technology, or as necessary part of general installation, or gets the form of dense or soft material. Study emphasizes feminine character of this element. Furniture type selection was voluntary because a chair symbolizes interior, household and is represented by woman according to many studies (Young, Perera). We can see malfunction, uselessness, even self-destruction of these objects and, thereby, we tried to add symbolic level of understanding them as an artistic objects.

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LOOKING FOR INSPIRATION TO “UN WOMEN” AND “WHO” WHEN TREATING EATING DISORDERS.

Danica Adamčíková

Prešov Univerzity in Prešov

17. novembra 1

Prešov, 08001, Slovakia

ady.ml@hotmail.com

Abstract: Sometimes when curing clientele with eating disorders we get to spot we cannot see way out. This paper presents the possibility of looking for inspiration that we can find in studies, documents and statements presented by trans-national institutions. The biggest one is the United Nations. When looking at UN as umbrella organization first of all we can look at World Health Organization (WHO). Second institution that comes to my mind when thinking about clientele with eating disorders is UN-WOMEN. UN-WOMEN is section of UN focused on issues of girls and women around the world. UN-W representatives focus on issues like health issues, violence or discrimination in workplace. Members of UN-WOMEN are experts from all around the world. When working in Slovak NGO as social worker I sometimes find myself wondering how to help my clientele. Focusing on treatment of unhealthy eating habits during therapy and aftercare I look up to the latest studies and UN-Women and WHO recommendations. I would warn you that although I have tried to prepare proportionally balanced paper, I can present things only as they appear to me.

Keywords: eating disorders as noncommunicable disease, social work, gender aspects, UN-WOMEN, WHO

1. Introduction

During the past few decades UN started to pay attention to women's issues by organizing series of word conferences on women. In July 2010 UN member states took „historic step“ and created UN WOMEN – the United Nations Entity for Gender Equality and Empowerment of women. This UN section merges and builds on the works of four previously distinct parts of UN, which focused exclusively on tender equality and women's empowerment. The main roles of UN WOMEN are supporting governments in their formulation of policies, global standards and norms; helping member states to implement these standards and to hold the UN system accountable for its own commitments on tender equality, including the monitoring of system-wide progress [1].

Theory of social work reacts to changes in our society and the changes in both of them are very dynamic. Thanks to *International Federation of Social Workers (IFSW)* we now have new *Global Definition of Social Work Professions* [2]: „*Social work is a practice-based profession and academic discipline that promotes social change and development, social cohesion, and the empowerment and liberation of people. Principles of social justice, human rights, collective responsibility and respect for diversities are central to social work. Underpinned by the theories of social work, social science, humanities and indigenous knowledge, social work engages people and structures to address life challenges and enhance wellbeing.*“

Even taught we have newest definition of social work and international organization working toward the same goal we still face serious problems when it comes fulfilling our clients' needs. Social workers who do not use gender sensitive approach may add to clients' marginalization by not reflecting their own stereotypes and prejustice. Also oppression of clients might be present or they might lack sensitivity against discrimination by not knowing wider structural context [3].

2. Eating disorders

Every day there are expectations for men and women to achieve stereotypical ideal of perfect body. This pressure and social penalties arising from not fulfilling this ideal have very damaging effects in all aspects of life. Problematic relationship with food presents big restrictions in social activities, which can lead to social isolation, frustration and depression. At the same time it is connected to everyday feelings of anxiety in time for breakfast, work-lunches or during family celebrations. Girls and boys react to eating habits in their surroundings by their reproduction or by trying to be exact opposite – by controlling the food intake they demonstrate the need to have control at least over something in their lives. These unhealthy eating habits have huge impact on choosing partner, deciding whether to have/ how many child/ children. Issues of how to handle pregnancy or returning back to the before weight are suddenly a topic, as well as the idea of intimate relationship.

When looking at global picture, only a small minority of people suffers from eating disorders. Furthermore, eating disorders are not spread evenly through any population like other fatal diseases [4]. Does it mean problem is in our culture?

Clientele with eating disorders is not a homogenous group - in many cases the problems may be seen as diametrically opposed. The symptoms for eating disorders may differ depending on type of illness:

- The idea of gaining weight might be connected to intense fear of it.
- Negative self-image or excessive exercise might be present.
- From refusing to eat and denial of hunger to eating until the point of discomfort pain.
- A feeling that you cannot control your eating behavior.
- Dieting despite being thin and concerns over tiny fluctuations in weight.

- Using diet pills, laxatives, and diuretics or throwing up after eating.
- Feeling tired and not sleeping well.
- Changes in food preferences or obsessive rituals-preoccupation with „healthy eating,, or replacing meals with fluids.

Interestingly the relationship with food itself presents a lot of things that relate with it only indirectly with it.

When it comes to eating disorder clientele [4] in principle, a classification should comprise a set of categories that are distinct and mutually exclusive and which together cover every case. In practice, an important proportion of people presenting to clinicians with significant eating and weighting problems do not have disorders, which fulfil criteria for any of the main syndromes.

Depending on the situation, clients health and insurance possibilities we – as social workers can choose from several options of treatment. But no matter what I believe that the treatment requires the focus on these 3 aims:

- Treatment of long-lasting malnutrition and somatic problems caused by this way of life.
- Client must understand the cause of the disease and the role that it takes in her life.
- Focusing on change of risk habits or life style [5].

3. Shift in defining eating disorders

Understanding the eating disorders takes a long time. Professionals all around the world are always trying to find some effective method. While doing so, the illness itself has diversified – from anorexia nervosa and bulimia nervosa we now have binge eating disorders, orthorexia, bigorexia, pregorexia, alcorexia and very popular EDNOS (eating disorder not otherwise specified).

Many people have theorized that the current obsessive cultural focus on weight and thinness -and on celebrities and their appearances - is likely to promote anorexia and bulimia. But that doesn't entirely explain the conundrum of eating disorders. The overall prevalence of anorexia and bulimia, combined, is about 4%. But if they're largely caused by societal pressures, there should be a lot more of this.

The definition of eating disorders has gone long way as well. At the moment we can look at this illness from several angles. For example WHO talk about *noncommunicable diseases*. We can see from the title that what they mean is long term disease based not on the infection. Among five main noncommunicable diseases we can count diabetes, cardiovascular diseases, cancer, chronic respiratory diseases and mental health disorders. This prestigious organization legitimizes turning attention to noncommunicable diseases because of the simple fact, that in Europe 86% of death is caused by it. It also represents 77% of overall health burden of the European population [6].

On the other hand researchers from WHO have discovered biological evidence of a *genetic underpinning* to anorexia nervosa. (genetic linkage on chromosome 1 for the complex psychiatric disorder). Linkage refers to the greater-than-chance likelihood that two separate DNA sequences will be close to one another on the same

chromosome, supplying biological evidence for a genetic trait if seen among two or more family members [7]. The findings add a new dimension to a field that has posited mainly psychological, family and socio-cultural roots to the disorder. Although it may take years to develop a genetic profile for anorexia nervosa, some therapist believes the new development should ultimately be seen in terms of its potential for prevention and therapy. Who knows - maybe in close future we are going to count on gene-replacement therapy.

The genetic research seems to indicate that some people - mostly, though not all, female - may have a latent vulnerability to eating disorders, which might never be "turned on" if they weren't exposed to particular influences, just as a predisposition to alcoholism can remain latent unless the person takes a drink. Information about the inheritability of anorexia and bulimia will also be important in prevention. For example, it could help parents and doctors to intervene early with young people whose family history and psychological profile may put them at particularly high risk. Ultimately, of course, the investigators hope that this research might suggest new possibilities for treatment. Studies have shown people at highest risk for anorexia or bulimia tend to have five personality traits [8]:

- Obsessive
- Perfectionist
- Anxious
- Novelty-seeking
- Impulsive

Many experts also hope that the growing evidence for a genetic component to anorexia and bulimia will help make the case for better access to treatment of these disorders, and improved insurance coverage of such treatment.

5. Conclusions

The aim of this paper was to present the possibility of inspiration we can find in the latest studies, documents and statements presented and recommended by WHO and UN-WOMEN representatives. Social workers must combine the knowledge from their own practice and area of latest research. However nowadays in situation when the researches contradict themselves it is up to social workers to choose and decide. I believe in personal responsibility of social worker. I believe in the responsibility toward our clientele, toward other professionals and to the field of study. And for that pressure of responsibility it is also great to look up to global institutions which are here to guide us. From my experience and looking at wide range of tools we can use in social work profession one can only hope that they will be used effectively and gender sensitively in everyday practice.

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INTO THE MADHOUSE: THE SECTION 38 INVOLUNTARY PSYCHIATRIC COMMITMENT PROCEEDINGS IN THE CZECH REPUBLIC

Luděk Chvosta

Charles University – Faculty of Law
 Nám. Curieových 17
 Prague 1, 117 49, Czech Republic
 +420 606 512 939
 lchvosta@gmail.com

Abstract: *The article provides a brief legal overview of the principle and most prevalent method of involuntary psychiatric commitment currently utilized in the Czech Republic and the major legal and sociological issues concerning such procedure's susceptibility to error, misuse and ultimate miscarriage of justice. The article concludes with identifying the major positive and negative aspects of the involuntary psychiatric commitment procedure in the Czech Republic.*

Keywords: *Czech Law, Civil Procedure, Involuntary Psychiatric Commitment*

1. Introduction

Involuntary commitment to a psychiatric hospital carries with it both an inherent fascination and stigma as well as far-ranging legal and socio-economical impact. The deprivation of personal liberty inherent to involuntary commitment is comparable only to incarceration regardless of whether it is conducted as an emergency medical procedural or within the scope of broader civil or criminal legal proceedings.

Because the range of persons involuntarily committed may include anyone from individuals indicted for criminal offences on one end of the spectrum to senior citizens or other vulnerable individuals framed by feuding family members on account of perceived inability for self-care on the opposite end of the spectrum, various safeguards must be in place during all phases of the proceedings to minimize the chances of unwarranted commitment.

Unlike incarceration, which is the result of due process, proper trial and at least one round of appeals where guilt of the perpetrator needs to be proven beyond a reasonable doubt, involuntary commitment can in theory happen within in an hour, with no wrongdoing or other transgression on the affected person's part.

2. Socio-historical Context

Before the fall of the Iron Curtain and the Velvet Revolution in 1989, the pseudo-diagnosis of "*sluggish schizophrenia*" was used in the former Eastern Block to artificially diagnose and designate those individuals whose political and social positions and ideas were incongruent with the then prevailing officially sanctioned ideology. Dissent or disagreement was classified as a mental illness necessitating hospitalization.

Involuntary psychiatric commitment was therefore used as an instrument of Punitive Psychiatry – an extrajudicial method of quieting dissent and making critics of the government disappear for various intervals of time.

Thankfully much has changed in the Czech Republic after the fall of Communism. Although abuse of the involuntary commitment procedures may still be theoretically possible, it is no longer systemic or government-condoned.

Nowadays, when such abuse of the system does occur it is generally based on purely private motivations of individual malefactors, such as the need to sideline a competitor, exact revenge in the form of character assassination and social stigma or attain a material benefit, such as custodianship over the property of a committed individual) The processes and safeguards described below are in part designed to minimize the success of such (predominantly private) abuse of the system.

3. The Roads to the Madhouse

Emergency hospitalization without the patient's consent (i.e. involuntary commitment) is a contingency procedure established by the Health Services Act, with further procedural rules contained in the Special Judicial Proceedings Act.

The Health Services Act provides an exhaustive and definitive list of cases where involuntary hospitalization is permissible (any other reason cannot constitute grounds for involuntary hospitalization).

These five cases are where: a court of law orders inpatient medical care as part of a Protective Treatment Order, Isolation or quarantine is required due to a public health emergency, an evaluation of mental health is ordered in accordance with the Criminal Procedure Code, emergency healthcare is necessary but consent of the patient cannot be elicited due to the patient's present state of health or the patient poses an immediate and severe danger to himself and/or his surroundings and he concurrently either presents with symptoms of a mental illness (or is in fact afflicted with such mental illness) and/or is under the influence of a controlled substance, in any case provided that the danger posed cannot be alleviated by any other method than through involuntary hospitalization.

By far the most widely used of the five methods named above is the final method, which is also known as a Section 38 (of the Health Services Act) procedure. Section 38 provides for a general process applicable in cases where an individual poses an immediate and severe danger to himself and/or his surroundings and concurrently either presents with symptoms of a mental illness (or is in fact

afflicted with such mental illness) or is under the influence of a controlled substance.

Therefore, if either the element of immediate and severe danger to oneself or to others or the element of symptoms of mental illness or substance abuse is not met concurrently (i.e. is not existing at the same time as the other element), a case for involuntary hospitalization cannot be made.

Furthermore, a case for involuntary hospitalization only exists if, in addition to the elements mentioned above, the danger posed by the patient cannot be alleviated by any other means than through involuntary hospitalization, i.e. if no less restrictive method of securing the patient is available.

4. The First Phase

4.1. Initial Admission

Under the Section 38 procedure, both non-criminal and potentially criminal cases can and frequently do end up “in the same waiting room”. This is because Any police response to a disruptive situation (vandalism, battery or assault, trespass etc.) where the perpetrator is suspected of showing a mental health issue (either due to acute substance abuse, delirium, or through displaying signs of psychosis) is generally followed with a police-escort ambulance transport directly to the nearest psychiatric hospital.

Once in the admissions office of the psychiatric hospital, the local doctor on duty – in his or her sole discretion – makes the preliminary determination of whether the actor should be involuntarily admitted, applying the a “immediate and severe danger” and “concurrent symptoms of a mental illness” test while also taking into account the “least restrictive measure” test as mentioned above.

It should be noted that this doctor is not pre-selected or vetted in any way – he or she is simply a random attending physician who happens to be on duty at the time of admission. Once the doctor decides on inpatient hospitalization, transport to one of the high-security acute psychiatric care pavilions is made (although, depending on the specific situation and capacity issues, a low-security “open” pavilion can be used as well). At this moment, the police escort is usually dismissed. It should be noted that the admitting on-call doctor is not a court-appointed expert and makes no court-sanctioned review of the patient’s state – the role of experts only comes later in the proceedings.

4.2. Preliminary Evaluation

Under the relevant provisions of the Health Services Act and the Special Judicial Proceedings Act, the psychiatric institution into which the perpetrator/patient was involuntarily admitted must within 24 hours of such admission inform the nearest District Court (or, in certain areas, the nearest Circuit Court) of such hospitalization.

The only exception to this rule is if the perpetrator/patient provides an ex post facto consent with such hospitalization of his own free will and on his own accord within 24 hours of admission. There are apocryphal reports of considerable pressure being placed on patients to “voluntarily” admit

themselves for observation as that way the paperwork and administrative resource-intensive Section 38 proceedings can be avoided altogether.

If the Section 38 proceedings are triggered, however, then after notification of involuntary commitment is served on the respective court, the court has seven days in which to schedule a hearing to determine the legality of the involuntary hospitalization.

Under the Special Judicial Proceedings Act, such hearing is a low-threshold informal evaluation that generally takes place in the psychiatric institution where the patient is being held. The primary actors of such hearing are the judge, the patient, his guardians ad litem or custodians (if applicable), his attorney-at-law (if hired or appointed) and the patient’s attending physician.

The court hears the testimony of the patient, his attending physician and any persons who the patient reasonably designates and decides on the legality of the involuntary hospitalization.

If the court finds that the reasonableness, immediate danger and last resort tests mentioned above were not met, the court will order the release of the patient, such release to be effected immediately once the decision of the court is formally delivered to the psychiatric institution where the patient is held.

Should the court find that the involuntary hospitalization was in fact legal, the proceedings will continue with a proper full-fledged court hearing.

It should be strongly emphasized that that pursuant to the Special Judicial Proceedings Act, no expert witness is required during this phase of the proceedings – the attending physician of the patient is the only healthcare professional providing expert medical testimony at this stage. This is admittedly a weak spot in the whole procedure, as in-house staff carries out all medical evaluations up to and including this point with no independent outside oversight.

5. The Second Phase

No later than three months after the special court hearing described above is held, the court is required to issue a full meritorious decision on the legality of the continued involuntary hospitalization of the patient and the length of such commitment. Pursuant to the Special Judicial Proceedings Act, a court-appointed expert needs to be commissioned to write an expert opinion on the mental health status of the patient. This is the first time in these proceedings that the appointment of an expert is mandatory.

The conduct of court-appointed experts is governed by the Experts and Interpreters Act, which provides rather demanding requirements for court-appointed experts. It should be noted that the Special Judicial Proceedings Act explicitly prohibits the appointment of an expert who is employed by the same psychiatric institution in which the patient is held – therefore the expert must be formally independent.

In real life, there are a limited number of court-appointed experts in the field of psychiatry and a limited number of psychiatric institutions, so although formally independent,

the chance that the attending physician and the court-appointed expert have at least a passing familiarity with each other is relatively high. This too might be deemed a weakness, although not directly attributable to the system but rather to the small sample size of the population.

Although the court-appointed expert should recuse him or herself on grounds of conflict of interest, in practice this obligation can neither be effectively monitored nor enforced.

During the commitment proceedings, testimony and documents may be admitted into evidence and witnesses may be interviewed.

However, the patient does not need to be invited to join the proceedings if his attending physician states on record that attendance at the proceedings would be severely detrimental to the patient. This is one of the rare holdovers of the Communist-era authoritarian approach to psychiatric patients where, once deemed unfit to comprehend the meaning of the proceedings, the patient was stripped of all procedural rights related thereto. It is perhaps the single greatest area for abuse or misuse of the system – the mere possibility of not being a part of the proceedings and having a decision made without the effected person is a potential problem area that requires further attention.

7. Disposition of Commitment Proceedings

At the conclusion of the commitment proceedings, the court may either rule that no legal reasons for the continuation of the hospitalization (commitment) exist, in which case the patient is released, or that legal reasons for the continued commitment do in fact exist, in which case such commitment may be ordered to continue for up to one year. If a commitment for a period longer than one year is ordered, an automatic re-evaluation hearing must take place no later than one year after the date of the original ruling. If no such re-evaluation is held, then the commitment ruling automatically extinguishes one year after its promulgation.

Finally, it should be noted that the psychiatric institution may at any time and at its sole discretion reverse its decision on involuntary hospitalization and discharge the patient without the need for court approval. This discharge may take place during any phase outlined herein.

8. Conclusion

As demonstrated above, Section 38 of the Czech Health Services Act provides for a robust, generally well-balanced procedure for deprivation of personal liberty mostly in line with modern Western human rights standards.

On the plus side, the deadlines for mandatory hospital reporting and court decisions on acceptability of confinement are generally short and rigidly adhered to. The system, including the subsequent appointment of experts, provides for generally broad professional oversight in the later phases of the proceedings. Furthermore, the attending physician is always at the liberty to discharge the patient at any time whatsoever should the physician decide that hospitalization is no longer warranted, i.e. any of the prongs (danger to self or

others and concurrent evidence of mental illness or substance abuse).

On the negative side, the involvement of outside court-appointed experts comes relatively late in the proceedings (they are not involved in the first phase at all). More seriously, the patient can still be excluded from the Commitment Proceedings phase if deemed not able to understand the situation by his attending physician. This is perhaps the single greatest fault and inherent danger in the present system and as such should be abolished altogether even despite the associated rising costs of accommodating unresponsive or otherwise un-cooperating individuals at court hearings

In general though, the Czech Republic has come a long way since its Iron Curtain past and the road to the madhouse is no longer a one-way street.

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Proceedings | Research Track

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Published in March, 2015 by Sciemcee Publishing, London.
Proceedings document published in collaboration with SCIEEMCEE - Scientific
Conference Platform.

The proceedings with all papers are available at www.sciemcee.org.

ISBN 978-0-9928772-6-2

ISBN 9780992877262



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