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Biological Sciences

Биологические науки

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Bio-ecological Peculiarities of Taxus baccata L. in Decorative Gardening of Eastern Georgia

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Abstract. The article discusses contemporary bio-ecological conditions of Taxus baccata L. in its natural distribution area of Georgia, particularly in Batsara National Preserve. Contemporary bio-ecological conditions of Taxus baccata L. spread in decorative gardening of eastern Georgia have also been studied based on the samples of the collection (47 pieces) of Tsinandali Arboretum.

We have studied the periods of bud opening, vegetation ending, starting and finishing of cambium action, sprout woodening process, time and rate of growing in height, and regularities of accumulation-transformation of storage carbohydrates.

The studies revealed that the Yew growth duration is affected by the snowless winter and frequent droughts increased in the last decades as they cause the lack of water in soils and badly affect the plant growth.

Regularities of accumulation-transformation of storage carbohydrates and the studies of sprout woodening and cambium action peculiarities prove the strong ability of frost-resistance.

In order to conserve this endangered species (Taxus baccata L.) it's needful to introduce it widely in decorative gardening.

Keywords: yew; spread; evergreen; coniferous; vegetation; cambium; life expanse; height growth period; accumulation-transformation of carbohydrates; Conservation.

Introduction.

Taxus baccata L. is a rare relict. Its small groups or unit trees are often preserved or dectaled as natural monuments. It's included in all regional "Red Books", including the "Red Book" of Georgia (1982) and the Red List of Georgia (2006), also in the red list of IUSN.

It is naturally spread in Western Europe, northern Persia, and the Caucasus. In the mountains it elevates up to: 1100-1400 m height in the Alps; 1600 m - in the Carpathians, 1500 m – in the Caucasus, 2300-m - in Asia Minor from the sea level. In Caucasus it occurs in Georgia, Armenia and Azerbaijan. It's spread almost in all regions of Georgia. It's more widely represented in eastern Georgia. The unaffected yew grove is remained in the south slopes of the Caucasus, in Batsara Valley at the sources of the Alazani River, where the preserve was founded in 1935 to protect the yew forest. The preserve area is more than 3000 hectares. Here the beech and yew

groves are spread at elevations of 1000-1500 (1666) meters from the sea level . The yew grave occupies the area of 800 hectares in Batsara Valley; it's the most extensive yew grove in the world [1]. Most of the yew trees existing here are more than 500-1000 years old. 220 000 yew trees grow on the preserved territory, 13 000 of them are 100 years older, and some of them with the height of 25-30 m and diameters of 150 m, reach 1200-1500 years.

Based on its biology, yew is characterized with the very slow updating, productivity and low growth rate that causes the high level of vulnerability from all kinds of negative factors. Mainly two kinds of stem damages can be seen almost at all young plants of the 11th block of the preserve and outside of it. In the first case the wood is eaten by mammals, e.g. roe, bear. In another case it's scratched with fags or claws, in some cases the scratch diameter is 9 mm. [2].

The dendroflora of yew in Batsara Valley includes 60 types of Taxus baccata L. Along with yew, Maple (Acer campestral L.), Ash (Fraxinus excelsior L.), Linden (Tilia Caucasia Rupr.), Chestnut (Castanea sativa Mill.), Cherry- laurel (Laurocerasus officinalis Rome.) and other species, included in the ''Red Book of Georgia", also exist there. All of these give Batsara Preserve the worldwide significance. Yew is an evergreen, conifer plant-tree, often 20-25 meters high, with the diameter of 1,5-2,5 m. The needle leaves are flat, arranged spirally, of 2-3, 5 centimeters length, with short tips. The seeds are hard, 6-8mm length. The needle leaves contain poisonous substances, which are toxic for animals. Lives longer (1500-2000 years).

Its bark is yellowish, doesn't contain pitch and is very hard, doesn't rotten for a long time. The bark is used in turnery, furniture manufacturing and for tool handles. Yew is a valuable decorative tree. It reproduces with seeds and sprout cuttings. The cuttings root easily in the river sand; give stump shoots and maintain this ability for about 300-400 years. The lower branches root easily at the place of touching the ground. In case of the seed reproduction, it springs up difficultly. It is characterized with the better vegetative reproduction.

Yew is characterized with the strong anti-bacterial features. The substances allocated from the plant leaves destroy the micro-organisms around.

The yew is less demanding from the soil. It perfectly grows on the sour, and weak alkaline carbonate soils. It grows better on the weak alkaline limestone; grows slowly, annual height growth rarely exceeds 20cm; endures shade and dryness.

Yew begins fruit-bearing at the age of 20-25 (in open space) or 60-100 (in the forest) [3]. It easily stands the fungal disease, damages caused by insects, branch cut.

Taxus baccata L. is used in decorative gardening. It has lots of gardening forms. In eastern Georgia, besides Batsara Preserve, Yew trees are often found in the parks and gardens and in the city greenery. For example, in Tbilisi botanical garden Yew trees (introduced since 1950s) aged about 130 years reach 14-16 meters. Well-developed trees of the similar size are in the city greenery as well. Here they maintain normal growth-development and stand droughts quite well.

Yew tree is in groups or individually met in the parks, gardens and town greenery of Lagodekhi, Kvareli, Telavi and other towns of Kakheti region (eastern Georgia). Here they are characterized with a good growth and development in open as well as in darkened places. There are 47 yew trees in Tsinandali Park. One of the 47 yew trees existing here, stands at the entrance of the park, reaches 7 meters and has a strong trunk. The lower branches lay on the ground. Some of them have roots. One plant occupies approximately 10 m^2 space. Here also are trees of 12 m in height and 38 cm in diameter.

Sources and methods

The aim of our research was the study of the bio-ecology of yew specimens preserved in decorative gardening of eastern Georgia that is considered as an issue of a great importance, as, in fact, bio-ecology of yew collection spread in decorative gardening hasn't been fully studied. In order to study the mentioned issue Tsinandali Arboretum and yew specimens existing in the central greenery part of Telavi have been chosen.

The observation has been conducted on the selected specimens since 2001. The penology and penometry has been conducted on the selected plants systematically/ once or twice in the decade/ for ten years. We have observed the periods of bud opening, vegetation ending, starting and finishing of cambium action, sprout woodening process, the time and rate of the height growth.

Besides the apical growth, the cambial growth of the lateral branches has also been studied. For this purpose we took the patterns from the twigs once in every ten days from the early spring to the late autumn, then placed them in 60-70% alcohol [5], [6], [7], and observed the dividing of the

cells of secondary meristem and development of annual cycle through a microscope. Transverse veneer was taken with safranin and the process of new wood cells development was determined; the research was conducted according to the methodical instructions by Iatsenko-Khmelevski, 1954, Lobzhanidze E., 1961, and Tsitsvidze 1973.

We have also studied the peculiarities of accumulation and transformation of storage carbohydrates in the lateral branches with regard to annual development rhythm and overcoming winter frosts. For this purpose in the third decade of each month the analyzing samples were taken every morning. By the influence of chemicals on the diametrical slices we studied carbohydrate content. Starch content was determined by the Potassium iodide (starch stained in blue), sugar – by alpha naphthol, and concentrated sulfuric acid (stained in purple), and fats with the help of Sudan III (color – orange) [8].

Conclusions:

The study revealed that:

The yew specimens existing in the selected area (Telavi, Tsinandali Park) start vegetation at the end of March and in the beginning on April. Apical growth of sprouts ends in August-September.

The bud opening and the beginning of sprout growth in almost don't depend on the changes of air temperature. As usually, the yew pollens at first, and then the sprout growth start. The growth of yew sprout is rapid in the beginning of vegetation, and then stunts. The height growth lasts on average 80-90 days.

The cambium activity in the sprouts begins in 4-8 days after the bud opening. For example, in 2008 the buds opened on April 25th, the needle leaves completely appeared on May 3th, cambium activity started on April 28$^{th.}$ The beginning of cambium action is the earliest marked at the light side of the plant.

Formation of the wood cells lasts 120-150 days in the lateral twigs, and 140-170 days – in the stem. The studies of sprout woodening conducted over the years revealed that the sprout woodening starts instantly after the xylem cells formation, or a bit later, and lasts for a quite long period.

During 2001-2005 yew trees existing in Tsinandali Park were characterized with better growth-development. Since then duration of height growth has decreased till 2013. In our opinion this isn't connected with its age, as, considering the life expectancy, the yew specimens in Tsinandali Park are not so old (not more than 400 years). Probably, the growth duration is effected by the droughts and snowless winters frequented in last decades in Kakheti region, which cause the lack of water in the soil and have a negative effect on the plant growing.

Therefore we suggest that intensive irrigation from the beginning of April would be desirable for development of yew tree specimens existing in Tsinandali Park. So it's preferable to cultivate their plantations on the wet soils.

Accumulation and transformation of carbohydrates in the branches of Taxus baccata L. is equivalent to the cold zone plants. Starch hydrolysis is connected with seasonal development of the plant. Its content in the branches is the maximum by the beginning of vegetation in spring; the amount is decreased in summer, increased in autumn and still decreased in winter. As a result of temperature falling the sugar and fat content is increased. Fat content reaches 3-4 points in December-February and in summer it's presented by a pretty small amount or in the form of track. In the studied plant branches regularity of accumulation and transformation of carbohydrates is correlated with annual development rhythm. The maximum starch content was revealed in September-October and at the beginning of vegetation in April-May.

Regularities of accumulation-transformation of storage carbohydrates in yew branches and the studies of cambium action peculiarities and sprout woodening confirm the strong ability of frost-resistance. Natural renewal of Taxus baccata L. is quite weak almost everywhere, but in the parks, gardens and open spaces it is characterized with a good growth-development.

Its reproduction is possible with seeds or vegetative. Stumps and cut stems often give lots of sprouts. The lower branches make roots easily by touching the ground. It reproduces well with the help of 1-2 years old cuttings and sleeping buds, characterized for many coniferous plants.

In future, it's desirable to pay more attention to its cultivation for different purposes – for forest cultures, parks, gardens, city greenery and etc. in open spaces as well as in darken ones; in groups or individually. This will contribute to widening and conservation of Taxus baccata L. area –

area of endangered species.

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Engineering Sciences

Технические науки

New High-Speed Combination of Spectroscopic And Brightness Pyrometry For Studying Particles Temperature Distribution In Plasma Jets

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Abstract. Up-to-date methods and devices for temperature of dispersed phase control in high-temperature flows are considered. Possibilities of building pyrometric systems using available modern equipment are discussed. The new pyrometric method based on registration of a wide spectral range of radiation is proposed and implemented. Results of particles temperature measurements during plasma treatment of zirconia powders are presented.

Keywords: plasma flow diagnostics; thermal radiation; particles temperature; pyrometry.

Introduction.

Measurement of objects' temperature based on registration of their thermal radiation spectrum is a major challenge in various fields. Similar problems are solved in astrophysics, nano-scale investigations and routine industrial processes. Distinctions in measurement procedures consist in technical details: range of measured temperatures, spectral range of registered electromagnetic radiation, applied radiation detectors.

Materials and Methods.

The range of temperatures measured by optical pyrometry methods is defined first of all by spectral sensitivity range of a detector. Conventional silicon elements (sensitivity range 300-1000 nm) allow measurement of temperatures from 1000 K and above. Recently InGaAs elements (sensitivity range 900-1700 nm, at raised In concentration – up to 2500 nm) became widely available, which provide measurement of temperatures from 250-300 K and above.

All the methods of optical pyrometry are based on implementation of Max Planck's law of

radiation. Most of the up-to-date detectors of radiation are semiconductor systems which count photoelectrons produced due to internal photoelectric effect. Therefore it is convenient to use the law of radiation of black body (BB) in the following form: number of photons irradiated in the semi-infinite space from the unit surface of BB in the unit range of wavelengths in the unit time period is given by formula

$$r(\lambda,T)=\frac{c_1}{\lambda^4}\frac{1}{1-e^{c_2/\lambda T}} \quad [\text{pcs}/(\text{mkm}\cdot\text{mm}^2)], \tag{1}$$

where c_1=1.884·10^{21} pcs·mkm^3 /mm^2, c_2=14 388 K·mkm, λ – wavelength of radiation in mkm, T – temperature of BB. Spectral brightness of real irradiator $b_{\lambda,T}$ is expressed in terms of $r_{\lambda,T}$:

$$b_{\lambda,T}=\varepsilon_{\lambda,T}\cdot r_{\lambda,T}, \tag{2}$$

where $\varepsilon_{\lambda,T}$ – spectral emissivity of a given material at a given temperature T.

When radiation of a real object at the actual (thermodynamic) temperature T_{act} is registered and measured at a wavelength λ_0 the brightness temperature T_{br} of the object is determined as a temperature of BB at which it has the same spectral brightness at the wavelength λ_0 as the investigated object with temperature T_{act}:

$$b(\lambda_0,T_{act})=r(\lambda_0,T_{br}). \tag{3}$$

Registration of object's thermal radiation at two different wavelengths λ_1 and λ_2 allows to determine a its color temperature T_{clr}, which is the temperature of BB at which the relation of spectral brightness $r(\lambda,T_{clr})$ at wavelengths λ_1 and λ_2 is the same as determined in measurements of radiation of real object with actual temperature T_{act}:

$$\frac{b(\lambda_1,T_{act})}{b(\lambda_2,T_{act})}=\frac{r(\lambda_1,T_{clr})}{r(\lambda_2,T_{clr})}. \tag{4}$$

It is quite obvious that the actual temperature of the object T_{act} will differ from determined values of brightness temperature T_{br} and color temperature T_{clr}, when spectral emissivity $\varepsilon_{\lambda,T}$ of material depends on wavelength. The relation of these temperature values is expressed with the following formulas [1] considering Wien's approximation:

$$\frac{1}{T_{br}}=\frac{1}{T_{act}}+\frac{\lambda}{c_2}\ln\frac{1}{\varepsilon(\lambda_0,T_{act})}, \tag{5}$$

$$\frac{1}{T_{clr}}=\frac{1}{T_{act}}+\frac{\ln(\varepsilon_1/\varepsilon_2)}{c_2\left(1/\lambda_1-1/\lambda_2\right)}, \tag{6}$$

where ε_1 и ε_2 – spectral emissivity of the material at the λ_1 and λ_2 wavelengths respectively.

Traditional pyrometric methods of absolute (brightness pyrometry) and relative (color pyrometry) temperature measurements exhibit high errors related to inaccuracy of radiation intensity registration and presence of dust and fumes in the optical channel. Moreover calculation of the actual temperature from brightness or color temperature requires knowledge on spectral emissivity of the investigated material, which often is unknown for new materials. Typically accuracy of such methods in favorable laboratory conditions is estimated as 10-15%.

Optical sensing devices. Measurement of temperature of dispersed phase particles in plasma flows is complicated because of small size high velocities of the objects and strong self-

radiation of plasma. Present market of optical sensing systems for particles temperature and velocity measurements offers several devices, all of them implement in one or another way two-color pyrometric method: DPV, Accuraspray (Tecnar, Canada), Spectraviz (Stratonics, USA), SprayWatch (Oseir, Finland). Typical errors in determination of average particles temperature make 600 K when measuring temperatures in 2500-3000 K range [2]. Apparently this is methodological limit of this approach. This example clearly demonstrates necessity in development of new diagnostic systems for two-phase flows.

Full (wide) spectrum pyrometry is distinguished by registration of radiation intensity $b(\lambda)$ using several thousands of detectors – elements if CCD array. This feature allows directly during monitoring process make sure that registered spectrum has thermal origin [3]. Even simle implementation of two-color pyrometry method for various pairs of wavelengths in registered spectrum allows to determine statistically most probable temperature of the object with accuracy 3-5% [4]. Even more accurate temperature determination can be achieved using fitting the Planck's function to the registered spectrum. The «laboratory condition» accuracy of this method is approximately 2 %.

Registration of two-phase flows movement with high-speed CCD-cameras allows to combine in a single device tools for single particles velocity control [5, 6] and brightness or two-color pyrometer [7, 8]. In a real technological process with a priori determined optimal regimes implementation of video system provides valuable possibility of a jet geometry and particles trajectory control which indicate equipment state of health [9-11].

Methodology of calibration of brightness and color pyrometers based on CCD-matrices is well developed nowadays [12, 13] and provides mentioned above temperature measurement accuracy values. Integration of spectral devices into monitoring systems should start new period in their evolution. High accuracy of temperature determination of spectral devices allows to use them as autonomous intrinsic calibration systems. However the future of spectral sensors is summation of the signal over the scoping region (in contrast to video systems) which requires to solve a problem of reduction particles temperature distribution from their collective radiation spectra. The approach to solution of this problem is already formulated in [2, 14].

Experiment and discussion. The goal of experimental work was optimization of regime parameters of hollow powder production process [15] and measuring temperature of zirconia particles in various cross-sections of a plasma jet. Plasma gun designed in ITAM SD RAS was used in following configuration: anode 10 mm, nitrogen flow rate 30-50 slpm, arc current 150-200 A, Metco 204 71-80 mkm zirconia powder feedrate 2 kg/h, two-side radial injection of the powder.

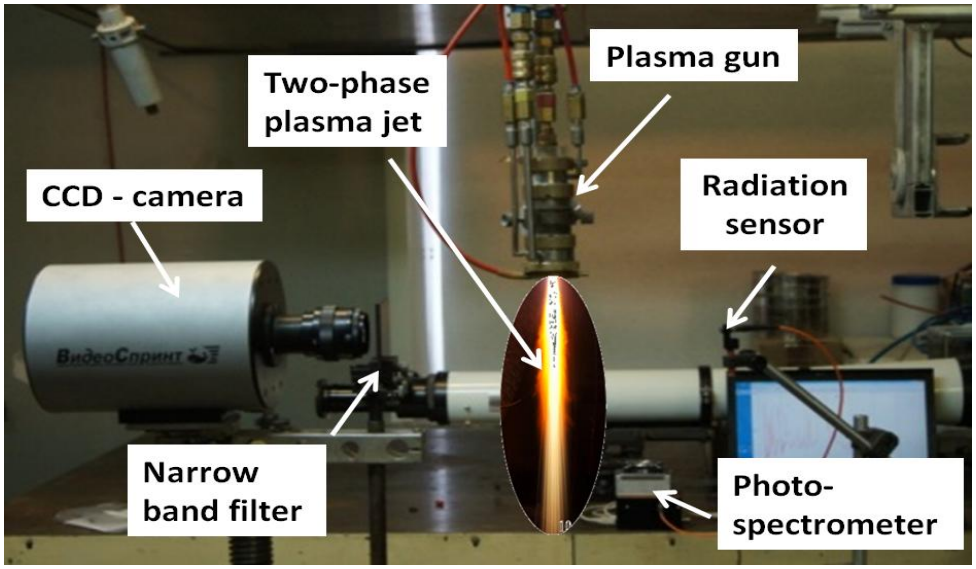


Figure 1. Plasma jet and combined registration system.

Registration of powder particles trajectories in plasma flow was carried out with high-speed

(500-50000 fps) CCD- camera Videosprint (Videoscan, Russia) (fig.1). Narrow band optical filter was used to suppress plasma radiation. Simultaneously the spectrum of particles thermal radiation was registered using LR1-T (Aseq, Canada) spectrometer using cooled silicon Toshiba TCD1304AP CCD array with sensitivity spectral range 300-900 nm.

After the optimal regime for plasma powder treatment was determined and fixed the camera was used as process quality control system. Fig. 2 demonstrates an image of high-temperature flow with tracks of irradiating particles.

Figure 2. Video image of two-phase plasma flow with zirconia particles tracks. Nitrogen flow rate 45 slpm, arc current 200 A, arc voltage 190 V, powder feedrate 2 kg/h. Exposure time 40 mks.

Temperature of the particles was determined using analysis of their collective thermal radiation spectrum. Scoping region of the sensor covered a section of the jet 1 cm long. During spectrometer sensor exposure time (12-100 ms) hundreds of particles are crossing the scoping region and each of them has its own temperature. Considering all the particles have the same size, cross-section area (71-80 mkm powder was used) and dwell time, the registered spectrum can be expressed in the following form:

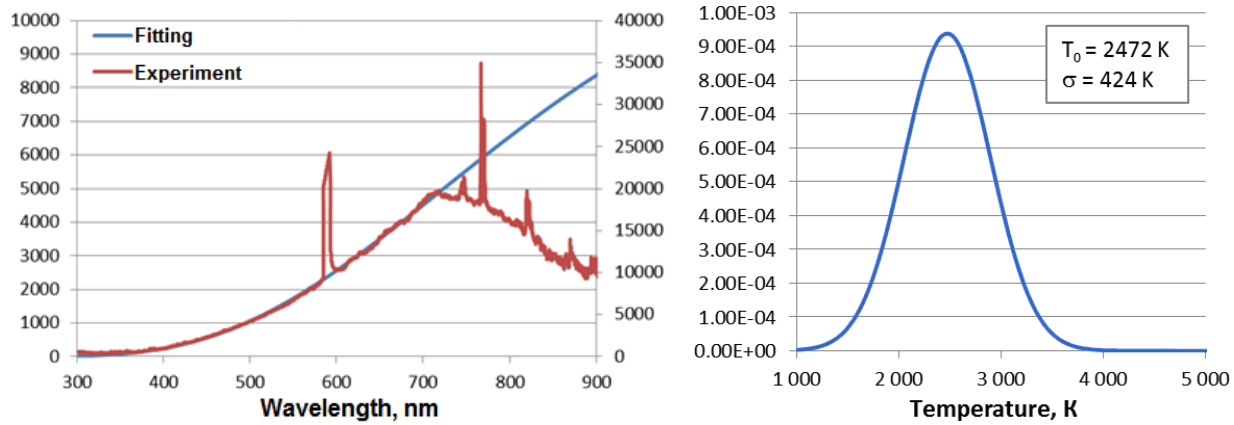
$$N(\lambda) = K\int_0^\infty r(\lambda, T)\cdot f(T)dT\,. \qquad (7)$$

Here $f(T)$ - particles number distribution function over the temperatures, K - scaling coefficient taking into account all the geometrical properties of the optical path. The spectral emissivity of zirconia is unknown, therefore it wasn't considered in calculations.

It is known from the practice of thermal spraying that particles distribution over the temperature (as well as over the velocity) has Gauss shape. Therefore the following formula was used:

$$f(T) = \frac{1}{\sigma\sqrt{2\pi}} EXP\left(-\frac{(T-T_0)^2}{2\sigma^2}\right), \qquad (8)$$

where T_0 - is the average temperature of the distribution, σ - width of the distribution. Fig. 4, *a* shows the spectrum registered at the distance of 15 cm downstream from the nozzle and the calculated best-fit curve corresponding to parameters of the distribution T_0 =2472 K, σ =424 K (fig. 4, *b*).



a *b*

Figure 3. Registered and calculated collective thermal radiation spectrum (a) and calculated temperature distribution of the particles ensemble (b).

Similarly parameters T_0 и σ where found for various cross-sections of the plasma jet. Additionally «maximum» temperatures for each cross section of the jet where found by fitting the Planck's function to the 350-420 nm range of the registered spectrum. Fig. 4 shows evolution of measured average and maximum temperatures along the length of the jet. Error bars near average temperatures (circles) correspond to the values of parameter σ in determined distributions. As one can see average and maximum temperatures of the particles decrease from the distance 5 cm downstream from the nozzle. Fig. 4 also presents results of particles temperature calculation using theoretical model [16] and plasma jet profiles calculated with CFD software Ansys Fluent. All the calculations were performed for spherical zirconia particles with diameter 75 mkm and porosity 50 %. Radial injection velocity of particles was varied in calculations: 4, 6, 8 m/s. The dynamics of calculated temperature change along the jet length corresponds more closely to the maximum measured temperatures.

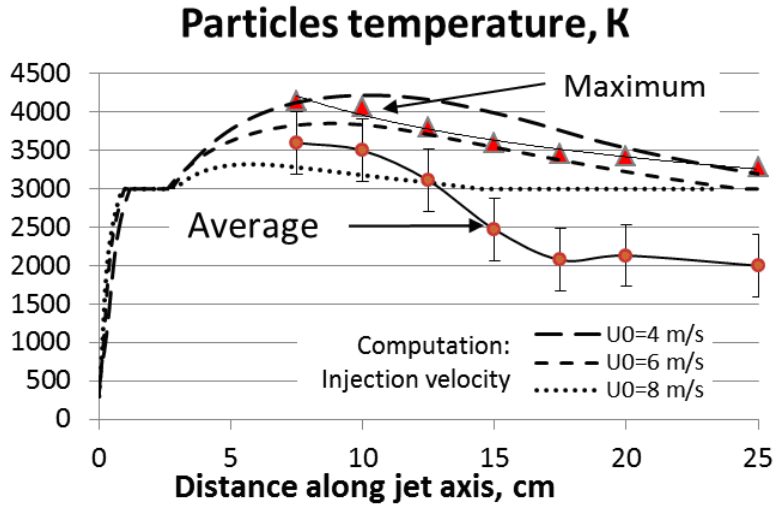


Figure 4. Comparison of zirconia particles average temperature (circles) and maximum temperature (triangles) measurements with calculation results (dash lines).

Conclusion. The conducted analysis of various optical pyrometry methods demonstrates that wide spectral approach allows not only to increase accuracy of temperature measurements but also to provide information on particles temperature distribution. In the present work an example of combined implementation of high-speed video system and visible range spectrometer is given. This system was used for control of zirconia powder temperature state during hollow powder production process. Development of the described monitoring complex will evolve into integrated system for particles temperature and velocity measurement based on widely available CCD-

sensors.

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Новая быстродействующая комбинация спектральной и яркостной пирометрии для изучения температурного распределения частиц в плазменных струях

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Аннотация. В статье рассмотрены современные методы и устройства для температуры контроля за дисперсной фазой в высокотемпературных потоках. Обсуждаются возможности создания быстродействующих систем пирометрии, используя доступное современное оборудование. Показана реализация нового метода исследования температурного распределения частиц, основанного на регистрации широких пределов спектра излучения. Представлены результаты измерений температуры частиц во время плазменной обработки порошков двуокиси циркония.

Ключевые слова: плазменная диагностика потока; тепловое излучение; температура частиц; пирометрия.

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Natural Gas Container Transportation: the Alternative Way to Solve the World's Energy Transportation Problems

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Abstract. The container gas transportation for low and medium level consumers as an alternative to pipelines is considered. The options for gas supply schemes, based on road and rail transport are given. The advantages and disadvantages of both types of gas transporting are described, the areas of their effective using are separated in the article. Promising implementations of technology in environment of economic crisis and also considering world trends of energy development are presented. The most advanced organization of compressed gas condensate transportation of unprepared gas fields in large diameter universal cylindrical balloons (up to 1000 mm) are reasoned.

The problem of compressed gas sea transportation are well disclosed, but the alternative ways of gas transportation by land are not investigated enough. Compressed Natural Gas (CNG) Technology - is new promising technology for natural gas transportation by specially designed vessels – CNG-vessels. The feature of this technology is that natural gas can be downloaded directly near gas deposits and unloaded - directly into the customer's network. This eliminates significant capital investments in underwater pipelining or gas liquefaction plants. The main objects of investment are CNG-vessels themselves.

The most attractive places for implementation of CNG-technology are sea (offshore) natural gas deposits. Numerous international experts estimate the natural gas transportation by CNG-vessels in 1.5-2.0 times more cost-beneficial in comparison with offshore pipelines transportation, or in comparison with LNG (Liquefied Natural Gas) shipping with natural gas transportation volume between 0.5 and 4.0 billion cubic meters per year on the route from 250 to 2,500 sea miles. This technology makes possible to provide gas supplement to the mountain and abounding in water areas, remote and weakly gasified regions. Described technology deserves special attention in the case of depleted and low-power oil and gas deposits development.

Keywords: gas production industry; compressed natural gas container transportation; technology; construction.

Introduction.

Natural gas quickly becomes the basic fuel of the world. It provides relatively ecologically clean combustion, it is cheap, occurs in abundance, gradually retrievable and could be obtained from the organic feed.

Currently, about 25 % of the world energy balance is formed by natural gas consumption. Natural gas is used for heating homes, cooking, electricity production, as fuel for cars and trucks, as a raw for chemical processing plants. Only in single industry sector - natural gas for vehicles (NGV) - natural gas consumption grew by 20 % last year and will grow by at least 10 % per year for the next 10 years. A lot of analysts predicted that in 2020, 30 % of the world energy will be obtained from the natural gas.

The gas production industry progress is closely linked not only with the history of the discovery and development of gas deposits, but also with the formation of gas consumption markets, creation of new transportation and consumption technologies.

In the early stages of the gas production industry the main consumers of natural gas were domestic sphere and production facilities which were located near the gas deposits. The pipelines diameters were small - Ø 520-730 mm and conducted within a single state. Gas production volume dynamic were ahead of consumption. Then have been developed powerful pipelines Ø1020-1420 mm of continental importance, so new consumption market began to form. The most powerful players among them – European states, USA, China.

Versatility, environmental friendliness, ease and relatively safe using in comparison with such energy as coal, uranium and oil are the reasons for industry reorientation and creation of brand new technologies based on the natural gas using. Natural gas consumption growth has become the key to competitiveness and energy security not only for single manufacture, but also for entire states, so the tasks of effective and reliable natural gas transportation to the customer gaining strategic importance. Moreover, the depleted gas fields problem has become exacerbated due to impractical transportation by powerful pipelines. And the number of such depleted deposits is constantly growing in gas-producing countries.

The existing gas transferring system most of the gas exporting countries of the Eurasian continent is based on pipelines system, which in most cases was built by former USSR. Recent events have demonstrated not only the need for modernization and restoration of the system, but also the vulnerability of "collective gas pipe" on the relationship between the transmission system operators. At any time, all of gas transporting participants (exporters and importers) could become hostages to force majeure, which are formed on any pipeline section. In addition, there is the formation of new powerful markets of natural gas consumption - such as China and India, where the gas supply has not only financial but temporal aspects.

The problem of transporting and consuming of natural gas huge amounts has increasingly quantitative and geographic dynamics. Sources, delivery destinations and even the most modern gas markets could be classified as dynamic. Therefore, the diversification task of ways and means of gas transportation is very relevant in today's natural gas industry.

The most known alternative to "gas pipe" is the compressed gas container transportation. Development of this kind of gas transportation service directly connected with relatively small and specialized gas markets - motor transport refueling, gas providing to remote and difficult accessible areas with relatively low consumption levels. But present economic environment with periodic crises, energy prices growth and increased competition between the world's leading economies, makes container transportation method acquires potentially a viable alternative for small and medium energetic.

The consumption structure of natural gas displays the main consumers: electricity production and major industry which are occupying respectively 24.4% and 32.3% of the total gas market. Typically, these segments are represented by large power plants and powerful plants which have no alternatives for gas pipelines. The only exception are the powerful supply systems of liquefied gas. But two other segments of the gas market - commercial and residential (14% and 21.8%, respectively) don’t have such tight restrictions and can be attributed to small and medium consumers.

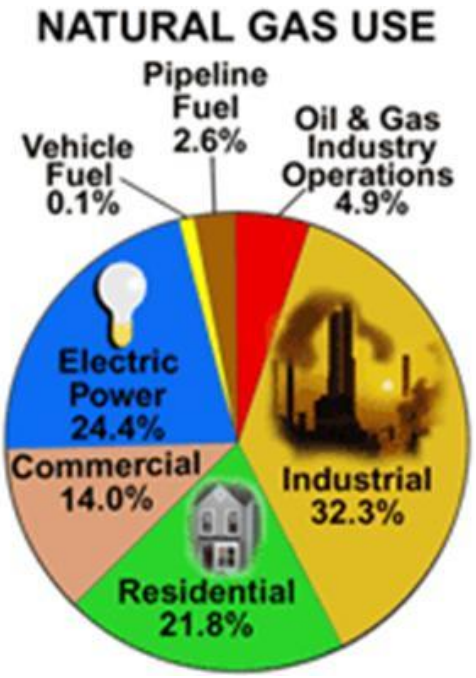

Figure 1. Natural gas use pie chart.

The features of commercial and residential domestic gas using segments are: significant seasonal and other consumption fluctuations, high gradation levels and geography of supply, significant sensitivity to pricing of gas traders. All mentioned above makes gas pipelines not a very convenient way of supply and, in some cases, moves the container gas transporting ahead.

It should be noted that technology of gas container transportation to the European continent very underestimated today. Against the background of the significant achievements of the container type gas transportation across the both Americas and the states of Eurasia, this technology has considerable investment and innovation potential. Usually, in Europe, the containers are used to transport liquefied petroleum gas (LPG) - propane-butane mix, but it production requires considerable capital expenditure on the construction of propane liquefaction and decontamination. But experience has shown that this technology can not override the seasonal demand fluctuations of energy consumption. A transportation of compressed methane usually provide supplementation of automobile CNG filling stations network (Fig. 2a) and individual gas consumers (individual small settlements and industries) due to relatively small fleet of gas containers, small capacity containers (Fig. 2b) and the significant cost of natural gas from traders.

Figure 2. Equipment for mobile CNG stations: a) mobile methane refueling, b) CNG cylinders for CNG stations, c) methane transporter.

Therefore, it is necessary to consider separately these obstacles for CNG container transport development. It should be noted that preparation of methane to pipeline transportation requires significant costs for manufacturer as much as gas preparations to liquefaction. Actually, spending directly connected with the preparation precisely for transportation, because, in the LPG case, gas should first be converted from a gas to a liquid state and then, using sophisticated refrigeration and thermal vacuum chambers, should be delivered to the special equipment stations which are prepared it for realization. In the pipeline transportation case - gas should be not only cleaned from the hydrate forming impurities [1], but also should be compressed many times by powerful gas compressor stations (hereafter GCS) along entire pipeline. Container transportation of compressed methane doesn't require such preparations. And this is the main advantage of this type of transportation because quality requirements defined by the consumer can be significantly reduced. Really, the presence of the higher hydrocarbon impurities in methane only increases its caloric content, water and liquid impurities could be easily removed from the gas by draining the container and that operation doesn't need even additional equipment, and the formation of hydrates could be easily prevented with addition of small amounts of methanol or by simple heating of gas reducing system elements. The only exception is dangerous or harmful impurities - hydrogen sulfide, sulfur or carbon monoxide.

Therefore, compressed natural gas container transportation (mostly methane), can use technology of raw (unrefined) natural gas transportation [2]. This gives a great advantage over the other types of CNG gas transportation because there are appear an economic reasons for the development of small and depleted gas fields, simplifies transportation of associated gas of oil fields, significantly expanding the geography and gas supply ways of the gas transmission lines. Currently had already been created a series of compressors for CNG (Fig. 3).

Jordair Compressor inc.

Chongqing Gas
Compressor Factory Co., Ltd.

Figure 3. Worldwide samples of equipment for natural gas compressing.

Modern gas containers industry uses high-pressure pipes with a diameter of 0.3-0.5 m. This limits, to some extent, as volumes of transportation as consumption of compressed natural gas. The main task for the final formation of CNG technology in Ukraine and some countries in Europe now is to design a universal CNG container of large capacity based on large diameter steel pipes (0.5-1 m), or other modern materials that could be used for road transportation, rail or by sea transport.

Figure 4. Worldwide samples of methane transporters.

It should be noted that compressed natural gas container transportation is quite well-known technology in the world (Fig. 4). It is already exist at international standard on 20- and 40-foot containers with pressure up to 2.5 MPa - ISO 11120 and for cylinders up to 200 atm. - DOT 3AAX 2900. The standard contains specifications for the container units production based on marine and railroad containers, which are fit for transportation by vehicles (usually van-TIR). On the basis of these standards, the Korean firm NK CO., LTD Korea has already started containers producing for compressed gas transport CNG. Also, recently appeared large diameter pipes (1220 mm) designed for high pressure (working pressure 22 MPa). That type of pipes was produced in order to reduce transportation costs for projects like Nord Stream. Therefore, the opportunity to increase the capacity of the CPG – containers has appeared.

Figure 5. 20-foot and 40-foot containers produced by NK Co. Ltd.

Now, let's consider the example of universal containers used under high pressure (up to 25 MPa). Fully loaded containers produced by NK CO., LTD Korea can transfer by car up to 5300 m3 (Fig. 5). This corresponds to a month gas need of a small village in the summer time or daily gas production by marginal wells. Using such methane carriers allows developing small gas deposits with a small number of wells. Equipped with small gas compressors, odorizator and methanol facility on container frame, mentioned gas deposits could operate without stationary gas preparing systems at all [3]. Such systems could provide not only the gas production, but generally its transportation and sales to small consumers (settlements, camps, expeditions etc.), could provide gas supply to the refugee camps, mobile construction and military brigades, drilling stations, etc.

By the way, experience using close analogues-prototypes is already known in different parts of the world. Argentine company "Galileo" uses high pressure gas containers for gas supply in those remote areas of the country where construction of the pipeline is beside the purpose (Fig. 6). But containers which they are using, collected from a large number of small capacity items and,

moreover, they use already prepared and compressed natural gas from pipeline. This technology is called "virtual pipe" revealed very good practical results.

But that technology is useless for the "wet" gas, due to large amount of the fuel cells that obstruct drainging the condensate and impurities. Road transport of compressed natural gas is suitable in the case of relatively small operational gas consumers and low volumes of gas transportation. Also, similar technology has got significant development for small gas supplementation along all main gas pipelines.

Figure 6. "Virtual pipe" technology equipment by Galileo company.

To provide a more powerful CNG supplement it is suitable road trains, rail and maritime transport way. Highly developed railways network, low level costs for traffic management make this method a very attractive way to transport gas to commercial consumers and housing segments of the gas market. In addition, there is the possibility for organization of some specialized gas transport railways for large consumers with lifetime limitations or technological seasonal cycles. The advantages of such railways are low construction costs (consider road constriction, flatcars, locomotives and containers) – cheaper in 1.5-2 times.

Rail transport usage allows significantly reduction in cost he cost and increases the speed of construction, reconstruction, and repairing of hydrocarbon transport line. After deposits exhaustion, prepared gas railroad can be easily disassembled, logistics could be reorganized or used for other purposes. And if trains would use methane as fuel, the costs for materials and power supply rail can be almost eliminated.

Loading a single platform with two containers (container height 1.4 m, width 2.4 m), and one train with 80 platforms, will obtain 850 thousand m^3 of natural gas per train. Consider a maximum railroad load as 1 train per a half hour – will transfer 41,487 million m^3 per day, that means about 15 billion m^3 of CNG per year – this is approximate power of such gas artery. In respect that train will spend about 300 m^3 of methane per 100 km, will get gas outlays equal to 0,035% of total gas volume. Comparison with pipelines revealed: the gas transportation through 10,000 km of pipes would required the construction of more than 50 pump stations and, depending on the hydraulic pressure losses and a good selection of power stations (Fig. 7), the number of stations can be much higher [4]. Therefore, when comparing the cost for the equipment, construction and maintenance of these types of gas transportation, railway transportation demonstrates its advantages, especially for irregular and unsteady hydrocarbon stream traffic. Also, technical problems (accidents, repairs, maintenance) will show significantly less loss of natural gas with higher security. CNG railway management is more flexible, so, consider the economic crisis, it can be a decisive factor as for gas producers and traders as for consumers.

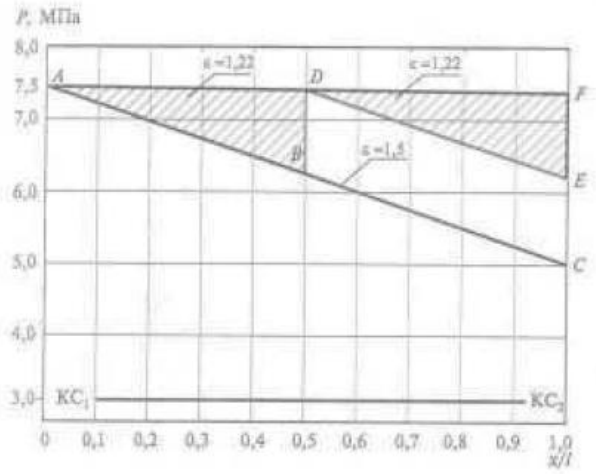

Figure 7. Energy loss due to the gas transportation by the pipeline at an initial pressure of 7.5 MPa and various degrees of compression

Return run efficiency of the train could be increased by loading natural gas purification products (such as gas condensate, oil, water) and with other goods and materials (raw materials, local produce, military, scientific and technical equipment etc.).

Maritime transport using has always been distinguished from other types by low cost. Besides classical [5] gas vessels and container transporters for LPG it is possible to tow containers assemblies directly by the water (Fig. 8).

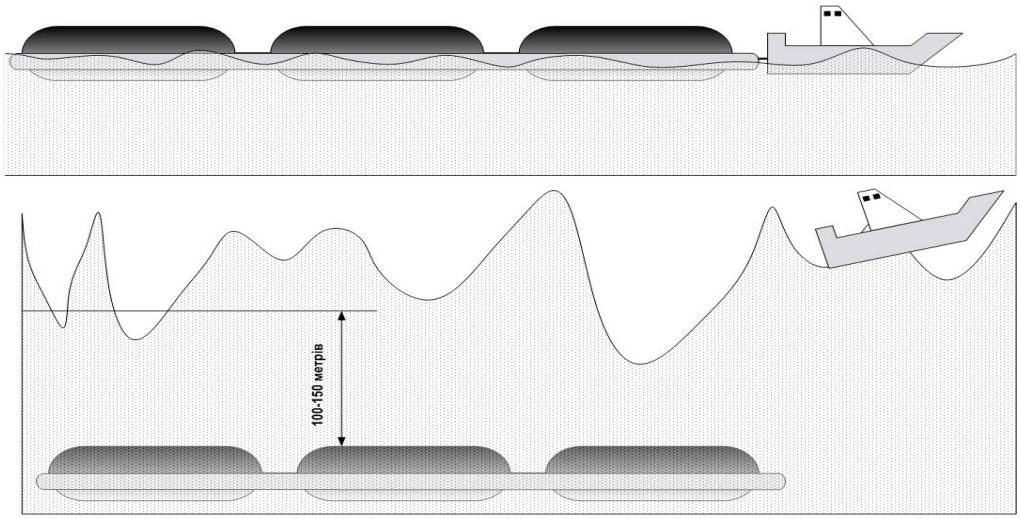

Figure 8. Towing containers by sea.

This method has got a lot of advantages:

- unlimited number of containers;
- in the case of an accident or storm, container assembly could be detached then programmed to dive under the ocean waves;
- vessel could carry additional loads;
- could be used on small waterways with shallow depth, swamps and small offshore gas deposits (Fig. 9).

Figure 9. Gas transportation scheme for the offshore gas deposits.

Such technology is acceptable as for powerful offshore gas fields (Shtokman, North/South Pars) as for small, depleted wells with presence of oil associated gas.

Main pipeline construction for natural gas, oil or other liquid (gaseous) product transportation needs an assurance that such a product exist or will soon appear at one end of the pipeline, and that there are it customers on another end. Such pipeline construction is not a cheap thing. In addition, pipelines with flammable gaseous substances can explode causing physical damage to people and the environment. So, pipeline construction costs should include costs for potential disasters. But the most important: gas pipelines built to make a profit. Primarily, it should bring profit to those whose owns land with pipelines laid. So, every oil or natural gas trading begins with picking on transportation way to the consumer in accordance with different technical and economic options [6]. And a significant component of the oil and natural gas price, except their production cost, is the cost of their transportation. Therefore, optimal choice is only possible under conditions of a wide selection of options and possibilities of their implementation.

Let's make assumption that we need to transport gaseous hydrocarbons in a volume of 100 thousand m3/day by existing main and distribution pipelines on a distance at 100 km and then, by a local means of transport carriers and low-pressure gas pipeline networks, also, on a distance at 100 km. Gas expenditure for hydrocarbons transportation by pump-compressor equipment on standard pipelines is about 8-12 % (mean rate - Wmr_pl -10 %) of the total energy flow through the distribution networks. Gas expenditure on the networks of low pressure is about 3-5 % (mean rate - Wmr_nw – 4 %). So, the overall cost of standard fuel are on average 15 % in the former Soviet states according to the evidence of classical textbooks for oil and gas business and according to expert judgment of the authors and their colleagues, who have industry experience of three decades of work in that area. During gas transportation to the total distance of 200 km (100 km by pipelines and 100 km by local networks) of hydrocarbons with preparation, intermediate cleaning and pressure increasing, the percentage of costs will be:

$$Wmr\_pl + Wmr\_nw = (10 + 4) / 2 = 7\ \%$$

Container transportation spending includes the costs for purchasing, maintenance of vehicles and fuel costs for trucks / railway wagons. Polls of trucking companies, engaged in transportation of petroleum products in Ukraine, have provided averaged fuel costs (V_fuel) as 30-50 L. per 100 km. path in terms of light crude petroleum. With an average of 10-30 th. km / year, the cars renewal cost (V_amort) at level of 100-140 L. per 100 km. of the truck path in terms of light crude petroleum. Average operating costs (V_ekspl) is 30-70 liters per 100 km. path. So, making the overall average estimates in natural units will get:

$$V\_fuel + V\_amort + V\_ekspl = 20 + 120 + 50 = 190\ L./100\ km.$$

Container transportation up to 200 km. will require standard fuel (V_av_st_fuel):

$$V\_av\_st\_fuel = 190 \times 2 = 380\ L. / day$$

When ordering the transportation of 100 thousand m^3/day (V_day) of standard fuel (it may be seasonal or urgent need of a small domestic or industrial consumers) consumption of fuel

equivalent is multiplied by the number of trucks needed (wet natural gas transportation will need two) or rail wagons (N_truck):

$$V\_aver\_st\_fuel\_sum = V\_av\_st\_fuel * N\_truck = 380*2 = 560 \text{ L. / day}$$

Recalculation of light crude oil (stabilized condensate with propane-butane fractions) on the price of natural gas with an average caloric standard market prices at the gas station and CNG filling stations in Ukraine in 2010-2012 is V_fuel_st_day / V_fuel_day = K_fuel_eq = 1:3.5. Let's calculate an approximate consumption of natural gas per 100 kilometers of container transportation, excluding the costs of industrial gas compression:

$$W\_av\_comp = V\_aver\_st\_fuel\_sum / V\_fuel\_day / K\_fuel\_eq = (560 * 3.5) / 100000 = 2\%$$

For this example, let's assume that the costs (W_av_ks) for compressing of 100 thousand standard m^3/day of raw natural gas with the wellhead compressor (from 10-20 to 40-60 atm) are equal to 3-5 % (industrial practice in Ukraine – "Shebelinsky" gas deposit, compressors "Gazdzhak").

Total percentage:

$$W\_total = W\_av\_comp + W\_av\_ks = 2 + 4 = 6\ \%$$

That is, if there is urgent and seasonal changes in unprepared gas transportation logistics to the consumer with a volume of 100 thousand standard m^3/day at distance of 200 km, described technology becomes competitive and even better on individual technological and environmental aspects. In addition, when using discrete and target gas providing systems, the risk of a contracts preparations mistake (for the gas supply planning and gas streams) are significantly reducing. Therefore, mobility and dynamism of this transportation form, as well as considerable flexibility of the gas volumes to be transported, makes container transportation method competitive with pipelines systems.

In addition, you should consider the costs and technical risks associated with the diagnosis, repairing and modernization of the "gas pipe" and all the equipment on it. Any technical problem can bring out of order very significant part of pipeline system and complicate the contractual obligations fulfillment, but container shipping is much less vulnerable to complications, because the repairing even the whole train will not affect as much on the overall transportation as a whole stop of the pipeline.

All over the world (exception is state-owned companies) on the gas market more and more weight gain independent financial players - commodity exchanges, gas traders, gas transportation consortiums. This is very conducive to the intensive development of financial instruments such as swap agreements, the stock market, investment funds.

Flexibility of technical gas supply system, efficiency of new capacities and the possibility of gas flows rapid reorientation are crucial for such agents.

It should be noted that the very form of production, preparation and transportation of natural gas in containers of various capacities brings great diversification potential of routes, transport means and utilization of gas, greatly enhances the commercialization of gas supplementation of Europe, allows the use of such funding options, which are not suitable for giant gas transportation contracts.

All mentioned above allows us to extend the gas industry geography, allows to increase the development of a "classic" gas deposits and deposits with difficult mining stocks (such as shale gas deposits). It allows to open access to small businesses (e.g. manufacturing lighters or sprays) and to medium-sized businesses (thermal systems) or to state purpose facilities (gas supply services in disaster areas).

At the late stage of the gas fields development, as well as for remote marginal wells, minimum requirement for equipment is just specialized mobile compressors, which are, at least, quite widespreaded at oil and gas market, and had been made today by numerous companies.

It is very illustrative example of market processes in Ukraine: with an annual gas pumping through Ukrainian main pipelines of 179 billion m^3, fuel gas consumption is 6 billion m^3 (3.3 %). With successful using of alternative transport gas modes, this volume could be significantly reduced, because the structure of the consumer gas market is very versatile, and the pipeline system is designed for

transportation of huge volumes of gas. Successful integration of transport alternative modes into the gas supply system can complement the gas transportation system and makes it more competitive [7]. This is especially evident from the graphs of gas consumption levels fluctuations [7].

In Ukraine, these oscillations are overlapped with changing of gas storage facilities modes, but the pipelines power equipment is so great that it is very difficult to use it to respond to changes in demands of small and medium gas consumers. Also, the new dynamic gas sources and gas markets formation makes "gas pipe" very vulnerable to fluctuations of global gas demands. Therefore, the container transporting gas method with the reduced metal content (pipes of low diameter) has a significant market segment in the gas markets and good prospects for development in the world.

Conclusions.

1. Raw and compressed gaseous hydrocarbons transportation become more profitable not only by sea and road transport, but also by railways.
2. Most gas condensate fields in the late stage of operation could be served by transport carrying natural gas under high pressure, produced by the compressor at the gas producing fishery. Then, industrial consumer, mostly, only requires a gas pressure reducing device.
3. During exploration of new deposits or their remote parts, transportation of the compressed gas with trucks or retrofitting railroad became more profitable (in condition of the gas price increasing) than to burn it off with environmental fines deduction.
4. The development of container transportation universal means of hydrocarbon products acquires strategic importance for the producing and transit countries in the world.
5. Economically reasonable distance for gas container transportation increased to 200-500 km.

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Moving to the Welfare Countries: Emigrants from Serbia 1961-2002

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Abstract. The main characteristic of Balkan region in history is permanent migration. The character of this migration is changed from period to period. After WWII in Serbia migrations had economical character. These migrations are dominated till the last decade of XX century. According to the 2002 census, in foreign countries lives more than 400,000 citizens of Serbia. About 50 percent of citizens emigrated in decades before 1990, and the next 50 percent emigrated in period between 1990 and 2002. About 80 percent of emigrations are from central Serbia, and rest are from Vojvodina Province. Major emigration from Serbia has been directed towards Austria, Germany and Switzerland. The number of emigrants from Serbia is also high in France, Italy and Sweden. Outside of Europe most of the emigrants went in the United States of America.

Keywords: Serbia; emigrants; Balkan; migration.

Introduction.

Balkan Peninsula has witnessed numerous and constant migrations throughout history. By their nature, those migrations were compulsory or organized. Compulsory movements were caused by political affairs, the economic situation or were result of religious and ethnic reasons. Austria-Hungary monarchy started with the planned migrations in this area. At first, in the middle of the 18 century, the Austrian government was settling Germans in the areas of Bačka, Banat, Srem, Slavonia and Slovenia, and later they settled Hungarians. Finally, following the occupation of this area in 1879, Austria-Hungary was settling various nations in Bosnia. However, a zone with Serbian population was established in the south part of Austria-Hungary, in the area that was named Vojna krajina (Military County). This population sustained because Austria provided certain privileges to the inhabitants within Military County because the border had to be protected. Military County was annexed to Banska Croatia in 1881, and ceased to exist as separate entity (Bubalo-Živković, et al., 2009).

The arrangement of population in Vojna krajina influenced economic, and later politic, religious, and ethnic migrations when this area was annexed to Croatia in the later period (between the two Wars and after the Second World War).

Migrations were constantly on during Turkish rule in the area of the Balkan Peninsula. Migrations were towards the areas that were liberated from the Ottoman rule (Stola, 1992). In the beginning of the Turkish rule, a part of population from lowlands and valleys was moving to mountainous regions. Sometime later, the opposite movements happened and that was from higher areas to lower ones, and large-scale migrations were from the southern parts to the north, north-west, and north-east in the boundaries of the Balkan Peninsula (Dabinović, 1938). These were 'methanastazistic' movements of population. Dr. Jovan Cvijić studied these migrations thoroughly and he used this term. The whole population was moved from Veleška klisura at Vardar to Zagrebačka gora in the period from 15th century to the beginning of the 20 century. Majority of that population were old Rashas i.e., people of the old Serbian middle-age state (Cvijić, 1918). These streams of population were flowing to Serbia for more than four centuries, later to Dalmatia, and they were populating Banat, Bačka, Baranja, Srem and Slavonia, Croatia, Styria, Carniola, they crossed to many islands, to Istria, Trieste environment, and even to Gorica. Some of them reached Abruc in Italy and Erdelj, and southern parts of Russia (Cvijić, 1922). A huge number of their descendants live today in these areas.

Following the Austria-Hungary disintegration in 1918, German population emigrated in huge numbers, leaving empty houses and properties (Malović, 2001; Bjeljac and Lukić, 2008). The whole settlements were relocated to western Bačka, southern Banat, and south-eastern Srem. They were populated by inhabitants, mainly from the mountainous regions of Croatia, Bosnia and Herzegovina, Montenegro, southern Serbia and Macedonia (Bukurov, 1976). This process continued even after the Second World War when the number of Germans significantly decreased. According to the 1921 Census, 335,910 Germans were living in Vojvodina, and that was 21.9% of the total number of Vojvodina population i.e., 66,4% of the complete number of Germans in then Yugoslavia. According to the 1948 Census, there were only 29,589 persons of German nationality in Vojvodina. Some of them were killed during the war, some of them emigrated, and some of them were in camps (Taeuber, 1944; Djurdjev, 1995). After the Second World War, more than 215,000 emigrants settled in Vojvodina; most of them in Bačka (125,684), then in Banat (79,465), and only 11,162 persons in Srem. In total, more than 216,311 people settled in Vojvodina at that time (Gaćeša, 1984). The majority of immigrants came from Lika, Kordun, Banija, then Bosnian County, Herzegovina, Montenegro, and from the southern part of Serbia, and Macedonia (Djurdjev, 1995). This process altered the ethnic picture in some parts of Vojvodina. However, this was not the end of big migrations in the area of the ex-Yugoslav republics. At the same time (during the 20th century and in the first half of the 21st century), while migrations were on at the Balkan Peninsula and in the ex-Yugoslavia republics, there were migrations abroad i.e., emigration to European and overseas countries (Kay, 1995). Economic reasons were the main motive for such migrations in Yugoslavia. By the end of the Second World War, biggest number of immigrants went to oversees countries, and even when the war was over those migrations continued (Mayer, 1975; Kosinski, 1982). Those migrations were the result of the economic situation i.e., the situation the country faced at that time. The status of a migrant was extremely difficult and around 200,000 of them who in the beginning went to west European countries crossed the ocean and went to the USA (84,000), Canada (30,400), Australia (23,350), Argentina (15,000), Brazil (5,000), and New

Zealand (560). Those migrations were completed by the end of the 1950s. The amount of migrations to northern and western Europe intensified in the 1960s (Fassmann and Munz, 1994). These parts of Europe were in need for working class because of their accelerated economic development (Castles and Kosack, 1985; Reitz, 2003). According to estimates, there were around 1,150,000 emigrants who went abroad in this period of the 1960s. During the 1970s, a number of emigrants decreased because there were no new jobs and there was a selection of foreign workers. The number of Yugoslav workers decreased from around 900,000 to 650,000, but number of family members increased. High-educated personnel (researchers, scientists) were in demand in the 1980s, when the developed world entered the new era of technologic revolution. This was the time when a lot of young and educated people emigrated. In spite of the prohibition of employing foreigners, around 30,000 workers on the average from ex-Yugoslavia were employed per year in this decade (Arsenov, 1995). Along with emigration and moving from economic underdeveloped areas to the developed inside the country, there were mass migrations from villages to towns (Lukić, et al., 2012). Those streams resulted in depopulating village-settlements and border areas (Todorović and Drobnjaković, 2010; Bubalo-Živković, et al., 2011). This is not a specific characteristic only for Serbia but also for some other parts of the world, like Ireland (Ni Laoire, 2000), Scotland (Stockdale 2002, 2006) and Romania (Ancuţa and Brujan, 2008). Since 1990 was increase number of emmigrants, including asylum seekers from Serbia (Vujadinović, et al., 2013).

Date material and method.

In this paper, the data obtained from the Statistical Office of Serbia were used, referring to the citizens of the Republic of Serbia living abroad. The data were specially processed by the country where the citizens went and the year when they left. In addition to these data, it was interesting to analyze the data on the gender and age structure, level of educational attainment of the same citizens. These data were obtained by the additional processing of data from Census 2002. However, it was not possible to get the exact number of people who left the country, so the statistical data of UNHCR and UN were also used. But the world statistics does not offer detailed information on any structure of the citizens who left Serbia, so the data were narrowed to those obtained from the Statistical Office of Serbia. The latest period of emigration is the most interesting one, so it has become the focus of the paper and the data for this period are given by years and for previous periods are given as summaries for each period.

Analytical and comparative methods were mostly used in this paper. Concerning age and gender structure of the population, the mean age of the emigrated population was calculated, as well as major age groups. The analysis of the level of educational attainment of the emigrated population was done with more details to establish the participation of the population with high level of educational attainment and to see if there really existed the 'brain drain' process.

Results and discussion.

Emigration from Serbia**.** The population of the Republic of Serbia in the period from 1961 to 2002 has increased by 18.2 %. This growth was more intensive in the first two decades, whereas in the next two decades (from 1981) the population was decreasing to a much smaller extent. In the last period between the Censuses (1991-2002) the population increased only for 70,330 persons even though 600,000 persons came from the territories of the republics of former Yugoslavia (Bubalo, 2000). In addition to the decreased natural population growth and emigration, what other elements had an influence on such a small population growth in the Republic of Serbia? The main reason for this is technical. The population of Kosovo and Metohija boycotted the Census of 1991 so the data for Albanian, Shqiptar and Muslim population could be only roughly estimated (Kicošev and Kovačević, 2005). The last Census from 2002 was not conducted in this region. Central Serbia had the same growth fluctuation, which actually represented a decrease in population size, and in the last decade the population size decreased for 14,560 persons despite the immigration of over 400,000 persons. The refugees caused the increase in the population size only in Vojvodina in the last period between the Censuses (Lukić and Nikitović, 2004; Nikitović and Lukić, 2010). But in the period 1981-1991 the population size decreased for 20,893 persons in Vojvodina (Table 1).

Table 1. The population size of the Republic of Serbia, Central Serbia and Vojvodina by Censuses from 1961 to 2002

Census	the Republic of Serbia		Central Serbia		Vojvodina	
	The population size	Increase or decrease	The population size	Increase or decrease	The population size	Increase or decrease
1961	6,678,247		4,823,276		1,854,971	
1971	7,202,915	524,668	5,250,355	427,079	1,952,560	97,389
1981	7,729,246	526,331	5,694,464	444,109	2,034,782	82,222
1991	7,822,795	93,549	5,808,906	114,442	2,013,889	-20,893
2002	7,893,125	70,330	5,794,346	-14,560	2,098,779	84,890

Source: Statistical Office of Serbia, Comparative population size from 1948 to 2002, book 9, Census 2002, Belgrade.

According to the Census 2002, there were 414,839 persons living abroad. This number comprised 344,151 from Central Serbia, and 70,688 from Vojvodina (Djurdjev, et al., 2010). More than half of these emigrants moved out in the period 1991-2002 (Table 2). The percentage is slightly smaller than 50 % (48,7 %) only in Vojvodina. If we analyze data in previous periods between Censuses, we can see that the number of emigrants is becoming smaller, which is logical. Some persons from previous periods have died, moved back to the country or moved to a third country, so it is hard to identify even an approximate number of those who moved out during the 1950s, 1960s and 1970s.

Migrations in all periods between Censuses can be characterized as migrations for economic reasons (Vuković, 2005; Hooghe et al., 2008). However, in the last period they had political, religious and ethnic character. War situation across the territory of the entire former Yugoslavia had an influence on the number of emigrants from Serbia (Ambroso, 2006), which is evident in the Census 2002 in the Table 2. The rate of emigration in the last period between Censuses is shown by years, because of its intensity. We can see that the beginning of the war in Slovenia, Croatia and Bosnia and Herzegovina caused the highest rate of emigration to be recorded in 1992 (Sardon, 2001). Slightly less than 9% of the total number of emigrants was recorded in the Census 2002. Later on, not even economic sanctions and hard life in Serbia had such a big influence on the increase in the number of emigrants as it was in 1992. However, the bombing campaign of 1999 contributed to the more intensive emigration from Serbia. This year, 21,895 persons left the country and 22,030 persons left the following year. A significantly smaller number of emigrants was recorded in 2001, but the situation in Kosovo and Metohija contributed to the increase in emigration in 2002 (20,027 persons) (CCSKM, 2007).

Table 2. Emigrants from Serbia by periods between Censuses

	The Republic of Serbia		Central Serbia		Vojvodina	
		%		%		%
Total	414,839	100.0	344,151	100.0	70,688	100.0
1991-2002	212,972	51.3	178,503	51.9	34,469	48.7
2002	20,027	4.8	16,353	4.8	3,674	5.2
2001	11,438	2.8	9,599	2.8	1,839	2.6
2000	22,030	5.3	18,582	5.4	3,448	4.9
1999	21,895	5.3	18,621	5.4	3,274	4.6
1998	14,254	3.4	12,175	3.5	2,079	2.9
1997	16,998	4.1	14,343	4.2	2,655	3.8
1996	14,180	3.4	11,936	3.5	2,244	3.2
1995	14,088	3.4	11,832	3.4	2,256	3.2
1994	15,869	3.8	13,395	3.9	2,474	3.5

1993	13,818	3.3	11,432	3.3	2,386	3.4
1992	36,437	8.8	30,721	8.9	5,716	8.1
1991	11,938	2.9	9,514	2.8	2,424	3.4
1981-1990	77,542	18.7	65,975	19.2	11,567	16.4
1971-1980	57,074	13.8	45,226	13.1	11,848	16.8
1961-1970	14,137	3.4	10,052	2.9	4,085	5.8
1960 and earlier	336	0.1	269	0.1	67	0.1
Unknown	52,778	12.7	44,126	12.8	8,652	12.2

Source: Statistical Office of Serbia, Additional Data Processing, 2002, Belgrade.

Serbia lost a lot, especially during the 1990s. In addition to the destroyed economy, partially devastated country in 1999, it lost a significant proportion of its population. According to Census 2002, around 2 % of the population from Census 1991 moved out of Serbia during 1990s. Around 3 % moved out of Central Serbia and 1.7 % moved out of Vojvodina. Who won? The winners were the countries which received those people, because they got experienced and educated work force. They did not have to invest in them, but gained all the benefits.

According to the UNHCR statistics (2002), in 1996, there were 143,559 refugees and asylum-seekers from Serbia and Montenegro in the world.The largest proportion was recorded in Germany (24,773) and Sweden (22, 463). From 1996 to 1999, the number of displaced persons was gradually increasing, so in that year, there were up to 295,696 refugees and asylum-seekers (Ministry for human and minority rights 2004). The bombardment on the territory of Serbia and war uncertainty had an influence on the increase in people from Serbia and Montenegro in the world, especially in Germany (Samers, 1998; Constant and Massey, 2003), Sweden and Great Britain. From 1999 to 2001, the number of refugees and asylum-seekers decreased again, only to reach its maximum for this period in 2003 (327,204), when there were a lot of refugees from Kosovo and Metohija. In Germany, they represented 53.1 % of the total number of refugees and asylum-seekers (Pavlica, 2005; Kogan, 2007). A great number went to Sweden, Great Britain and Switzerland, which is much fewer when compared to those who went to Germany. Up to 2005, the number of refugees and asylum-seekers gradually decreased (Meuleman, et al., 2009). The reason for a constantly high number of refugees and asylum-seekers from Serbia in the world can be found in the fact that Serbia went through a lot of turmoil in the former Yugoslavia. Since the year 1990, the situation was not war, nor peace, which brought the citizens into a difficult economic situation and forced them to seek better living conditions (Bubalo-Živković, et al., 2010). The majority of the citizens of the Republic of Serbia have gone abroad independently, without the mediation of the state. Considerably lower number of citizens of the Republic of Serbia went to work abroad organized in accordance with the regulations of employment abroad. The employment of the citizens of the Republic of Serbia abroad is regulated by international bilateral agreements or by general employment contracts which regulate more closely the conditions of living and working abroad. Earlier, the Federal Republic of Yugoslavia had concluded, with most of the Western European countries, intergovernmental agreements regulating employment and workers' rights in these countries whose application has been invalidated by the introduction of UN Security Council sanctions to the Federal Republic of Yugoslavia (Reyneri and Fullin, 2011). Remittances from the people who have emigrated to the Western European and overseas countries represent the most stable source of funding used for the development in poor countries, even in times of economic recession, both regionally and globally (Stojanov, et al., 2011). Also, the foreign currency remittances from the people living in the diaspora have been one of the main pillars of macroeconomic stability in Serbia for years. In the last ten years direct investments from the Serbian diaspora amounted to 550 million dollars primarily in small and medium businesses which employ about 22,000 people (Kosanović and Paunović, 2009).

Table 3. Destination of emigrants from Serbia

Year of departure	Total	Austria	Italy	Hungary	Germany	n Federat	Great Britain	France	Holland	Switzerland	Sweden	Canada	USA	Australia	countries and unkno
Total	414,839	87,844	20,428	5,343	102,799	5,178	4,153	27,040	6,280	65,751	14,049	10,908	16,240	7,490	41,336
	%	**21.2**	**4.9**	**1.3**	**24.8**	**1.2**	**1.0**	**6.5**	**1.5**	**15.8**	**3.4**	**2.6**	**3.9**	**1.8**	**10.0**
1991-2000	212,972	37,945	16,377	4,761	47,436	4,552	3,079	9,255	4,042	31,400	6,558	8,302	10,993	3,901	24,371
	%	**17.8**	**7.7**	**2.2**	**22.3**	**2.1**	**1.4**	**4.3**	**1.9**	**14.7**	**3.1**	**3.9**	**5.2**	**1.8**	**11.4**
2002	20,027	3,091	2,235	297	3,750	918	331	952	303	2,006	602	612	1,169	291	3,470
	%	**15.4**	**11.2**	**1.5**	**18.7**	**4.6**	**1.7**	**4.8**	**1.5**	**10.0**	**3.0**	**3.1**	**5.8**	**1.5**	**17.3**
2001	11,438	1,753	1,117	203	2,402	265	193	524	193	1,477	283	388	673	183	1,784
	%	**15.3**	**9.8**	**1.8**	**21.0**	**2.3**	**1.7**	**4.6**	**1.7**	**12.9**	**2.5**	**3.4**	**5.9**	**1.6**	**15.6**
2000	22,030	2,765	2,369	467	4,956	470	421	1,114	613	2,405	537	692	1,367	427	3,427
	%	**12.6**	**10.8**	**2.1**	**22.5**	**2.1**	**1.9**	**5.1**	**2.8**	**10.9**	**2.4**	**3.1**	**6.2**	**1.9**	**15.6**
1999	21,895	2,545	1,940	648	5,163	429	428	899	705	2,520	500	874	1,672	400	3,172
	%	**11.6**	**8.9**	**3.0**	**23.6**	**2.0**	**2.0**	**4.1**	**3.2**	**11.5**	**2.3**	**4.0**	**7.6**	**1.8**	**14.5**
1998	14,254	1,985	1,168	265	3,051	345	209	674	341	2,014	384	552	976	303	1,987
	%	**13.9**	**8.2**	**1.9**	**21.4**	**2.4**	**1.5**	**4.7**	**2.4**	**14.1**	**2.7**	**3.9**	**6.8**	**2.1**	**13.9**
1997	16,998	2,742	1,362	300	3,779	461	168	771	225	2,763	440	728	880	387	1,992
	%	**16.1**	**8.0**	**1.8**	**22.2**	**2.7**	**1.0**	**4.5**	**1.3**	**16.3**	**2.6**	**4.3**	**5.2**	**2.3**	**11.7**
1996	14,180	2,367	1,146	280	3,051	375	147	576	187	2,374	364	795	720	294	1,504
	%	**16.7**	**8.1**	**2.0**	**21.5**	**2.6**	**1.0**	**4.1**	**1.3**	**16.7**	**2.6**	**5.6**	**5.1**	**2.1**	**10.6**
1995	14,088	2,370	1,207	288	3,057	414	146	552	205	2,346	349	916	606	377	1,255
	%	**16.8**	**8.6**	**2.0**	**21.7**	**2.9**	**1.0**	**3.9**	**1.5**	**16.7**	**2.5**	**6.5**	**4.3**	**2.7**	**8.9**
1994	15,869	3,017	1,090	474	3,664	302	161	627	315	2,662	448	893	660	252	1,304
	%	**19.0**	**6.9**	**3.0**	**23.1**	**1.9**	**1.0**	**4.0**	**2.0**	**16.8**	**2.8**	**5.6**	**4.2**	**1.6**	**8.2**
1993	13,818	2,531	677	484	3,377	199	171	555	293	1,972	629	820	571	231	1,308
	%	**18.3**	**4.9**	**3.5**	**24.4**	**1.4**	**1.2**	**4.0**	**2.1**	**14.3**	**4.6**	**5.9**	**4.1**	**1.7**	**9.5**
1992	36,437	9,361	1,660	786	8,451	303	518	1,477	489	6,718	1,551	787	1,290	564	2,482
	%	**25.7**	**4.6**	**2.2**	**23.2**	**0.8**	**1.4**	**4.1**	**1.3**	**18.4**	**4.3**	**2.2**	**3.5**	**1.5**	**6.8**
1991	11,938	3,418	406	269	2,735	71	186	534	173	2,143	471	245	409	192	686
	%	**28.6**	**3.4**	**2.3**	**22.9**	**0.6**	**1.6**	**4.5**	**1.4**	**18.0**	**3.9**	**2.1**	**3.4**	**1.6**	**5.7**
1981-1990	77,542	21,769	2,133	217	16,152	252	525	5,738	729	18,840	2,586	1,102	2,344	1,476	3,679
	%	**28.1**	**2.8**	**0.3**	**20.8**	**0.3**	**0.7**	**7.4**	**0.9**	**24.3**	**3.3**	**1.4**	**3.0**	**1.9**	**4.7**
1971-1980	57,074	16,079	475	25	19,724	21	171	6,690	720	6,355	2,038	467	1,134	950	2,225
	%	**28.2**	**0.8**	**0.0**	**34.6**	**0.0**	**0.3**	**11.7**	**1.3**	**11.1**	**3.6**	**0.8**	**2.0**	**1.7**	**3.9**
1961-1970	14,137	2,373	62	8	6,336	5	50	2,244	168	709	841	152	422	293	474
	%	**16.8**	**0.4**	**0.1**	**44.8**	**0.0**	**0.4**	**15.9**	**1.2**	**5.0**	**5.9**	**1.1**	**3.0**	**2.1**	**3.4**
1960 and earlier	336	11	6	0	62	1	19	42	2	14	13	21	44	34	67

	%	**3.3**	**1.8**	**0.0**	**18.5**	**0.3**	**5.7**	**12.5**	**0.6**	**4.2**	**3.9**	**6.3**	**13.1**	**10.1**	**19.9**
Unknown	52,778	9,667	1,375	332	13,089	347	309	3,071	619	8,433	2,013	864	1,303	836	10,520
	%	**18.3**	**2.6**	**0.6**	**24.8**	**0.7**	**0.6**	**5.8**	**1.2**	**16.0**	**3.8**	**1.6**	**2.5**	**1.6**	**19.9**

Source: Statistical Office of Serbia, Census 2002, Additional Data Processing, Belgrade

In order to analyze the data by direction or regions of emigration, the data from Census 2002 were also used. During the 1990s, three countries were present: Austria, Germany and Switzerland (Table 3). The three aforementioned countries were dominant during the 1980s as well (Breit, 1985). Over 70 % of the emigrants found their homes in those countries. This is certainly a reason why such a large number of people were interested in immigrating to these countries during the 1990s (Kogan and Kalter, 2006). It is probable that their relatives and friends lived there so they had influenced new emigrants to easily choose these countries for emigration. During the 1970s, more than one third of emigrants went to Germany, over 28 % to Austria and around 11 % to Switzerland and France.

In the 1960s, almost 45 % of emigrants went to Germany, 16,8% to Austria, 15.9 % to France and a significantly smaller number to Switzerland (only 5 %). Those who relocated before 1960 mostly emigrated to Germany and France, but some of the population also went overseas (U.S.A. 13,1 %, Australia 10, 1 % and Canada 6,3 %). People went to overseas countries during the 1990s as well, but the proportion was much smaller.

The data on the number of immigrants from Serbia can be found in the statistics in some countries. On the territory of Canada, there were around 63,900 persons who were born on the territories of former Republic of Serbia and Montenegro. On the territory of Australia, according to Census 2001 of the Statistics Bureau, there were 97,135 persons declared as Serbs (De Giorgi and Pellizzari, 2006).

On the territory of Australia and according to the place of birth, in 1947 there were 5,900 people born in the region of former Yugoslavia while that number was 210,000 in 2000. What is noticed is a sudden growth in the period 1991-2000 when the growth was 42,000 persons or 4,200 annually.

Distribution of emigrants by regions (municipalities)

The intensity of emigration from certain regions, and from municipalities within the regions, depends on several elements. The first element is the population size. The larger the population size, the bigger opportunities there are for the emigration of larger number of people. The Belgrade region is the most populated region in Serbia and almost one fifth of emigrants from Central Serbia come from this region (68,150 persons or 19.8 % of the total number of emigrants). The largest number of emigrants are from the municipality of Novi Beograd (8,893 persons), and the municipalities of Zemun, Voždovac and Čukarica, with more than 6,000 persons per municipality. The emigrants from Belgrade region mostly emigrated to Germany (20.6 %), Austria (11.8 %) and the USA (10.8 %). The large numbers of emigrants are from the region of Braničevo - 46,914 persons. From the municipality of Petrovac na Mlavi there are 11,485 emigrants, from the municipality of Požarevac 8,542 people, the municipality of Kučevo 6,267 persons, and over 5,000 from the municipalities of Veliko Gradište, Žabari and Malo Crniće. The closeness of the border and low level of development of the region caused the continuous emigration, mostly to Austria (21,970 persons or 46.8%). Some went to Italy (16.1 %) and Switzerland (15.6 %). The region of Morava has 9.5% emigrants or 32,823 persons. From the municipalities of Despotovac and Ćuprija, there are 7,000 emigrants. The economic reasons had an influence on the intensive emigration from these counties. One third of emigrants went to Switzerland 31.6 %, and more than one fifth to Austria (22.2 %), to France 18.5 % and to Germany 13.8 %. The region of Pčinja has 8.3 % of emigrants or 28,491 persons. Most of the emigrants are from the municipalities of Preševo (12,991 persons) and Bujanovac (10,380 persons). The most intensive emigration was to Switzerland, more than half of the emigrants (14,492 persons). A large number of emigrants are from the municipalities of Preševo and Bujanovac because of the closeness to Kosovo and constant ethnic and religious clashes. The same reasons caused the large number of emigrants from the region of Raška, 23,822 persons or 6.9 %. Most of the emigrants are from the municipalities of Novi Pazar (10,560 persons) and Tutin (6,347 persons). Over 50 % of emigrants from the region went to

Germany. The region of Bor has more than 25,000 emigrants. This includes almost 15,000 people from Negotin. Most of them emigrated to Austria (47.3 %) and Germany 20.8%. The other regions in Central Serbia have a significantly less number of emigrants. The regions of Toplica and Pirot have only 3,241 and 1,272 emigrants, respectively.

The largest number of emigrants from Vojvodina is from the region of South Banat – 19,632 persons or 27.8 %. Most of the emigrants from the region come from the municipality of Pančevo, with more than 5,000 emigrants. The region of South Bačka has 15,699 emigrants or 22.2 % of the total number from Vojvodina. Most emigrants in this region are from Novi Sad, over 7,000. There are about 12,400 persons from the region of Srem or 17.6 %. The remaining four regions from Vojvodina have a significantly smaller number of emigrants. Emigrants mostly went to Germany. The regions of North Banat and North Bačka comprise one third of the emigrants who went to Hungary.

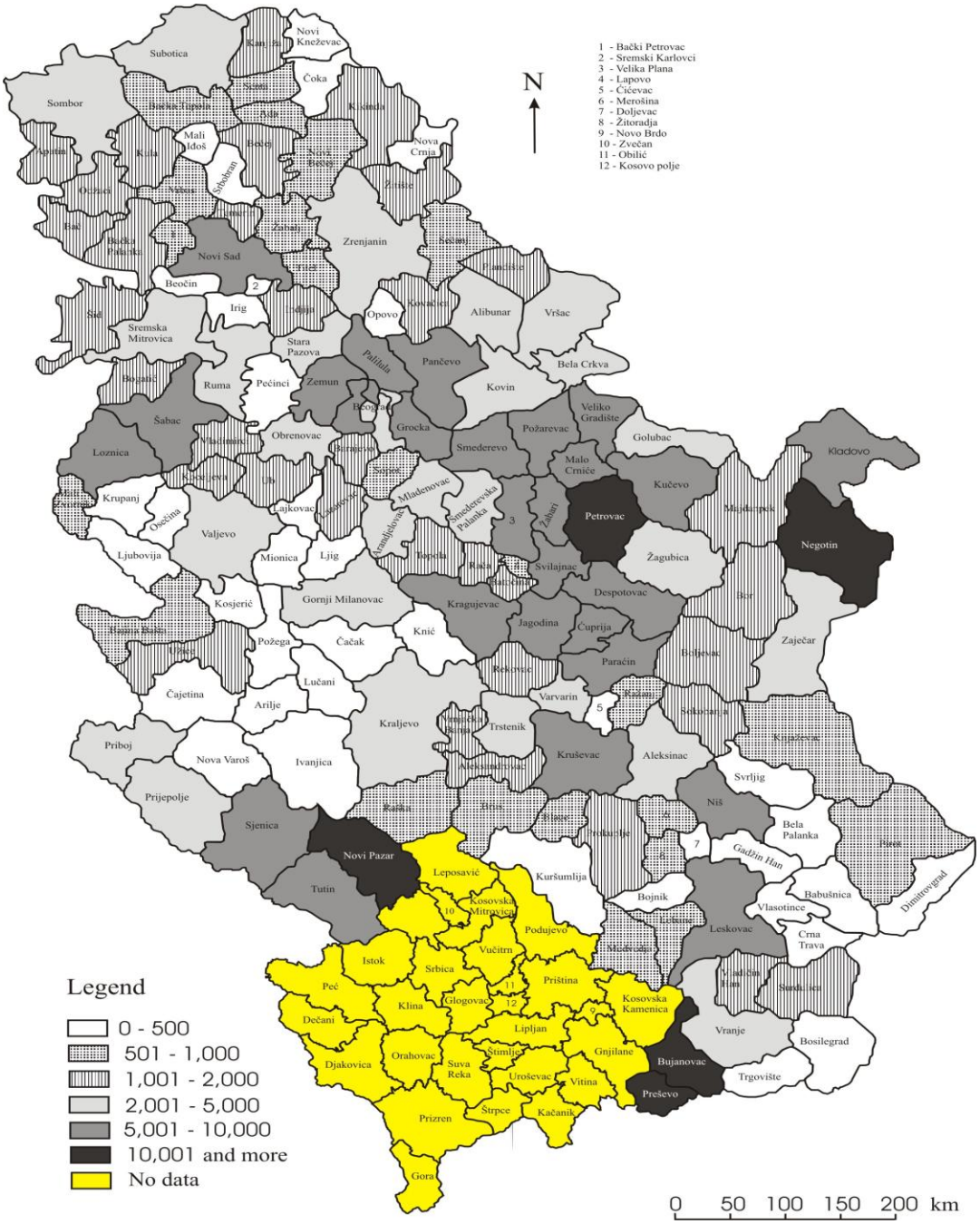

Figure 1. The origin of emigrants, by municipalities

Age and gender structure of the emigrants

The emigrants from Serbia are mainly male population. The highest number of male population moved out in the period before 1960 and was recorded in Census 2002. Furthermore, in the later periods between the censuses, the male participation in emigration is high (over 53%). Why is it that more men are leaving? This region is still dominated by the patriarchal way of thinking. Insecure economic situation in the country does not provide secure jobs, income is low, credit burden is high (Kosanović and Paunović 2009). All these elements force young and middle-aged men to go abroad. Moreover, the war situation in the vicinity, the bombardment of 1999, also influenced the decision to leave the country. In this way they could avoid a military draft.

Table 4. Gender structure of emigrants

	Total	Male	%	Female	%
Total	414,839	221,046	53.3	193,793	46.7
2002	20,027	11,206	56.0	8,821	44.0
2001	11,438	6,041	52.8	5,397	47.2
2000	22,030	11,927	54.1	10,103	45.9
1999	21,895	11,686	53.4	10,209	46.6
1998	14,254	7,611	53.4	6,643	46.6
1997	16,998	9,044	53.2	7,954	46.8
1996	14,180	7,532	53.1	6,648	46.9
1995	14,088	7,490	53.2	6,598	46.8
1994	15,869	8,390	52.9	7,479	47.1
1993	13,818	7,504	54.3	6,314	45.7
1992	36,437	19,925	54.7	16,512	45.3
1991	11,938	6625	55.5	5,313	44.5
1981-1990	77,542	41,224	53.2	36,318	46.8
1971-1980	57,074	29,990	52.5	27,084	47.5
1961-1970	14,137	7963	56.3	6,174	43.7
1960 and earlier	336	210	62.5	126	37.5
Unknown	52,778	26,678	50.5	26,100	49.5

Source: Statistical Office of Serbia, Additional Data Processing, 2002, Belgrade.

In the age structure of male and female population, the age group 25 – 55 is dominant. This means that most of the emigration consists of middle-aged population (Table 5), age group 20-59 (over 63 %). One fifth of them are young, up to 20 years of age, and only 5 % are in the elderly age group (60+).

Table 5. Large age groups of emigrants from Serbia

	0-19	20-59	60 +	% 0-19	% 20-59	% 60 +
Total	89,494	262,910	21,050	21.6	63.4	5.1
Male	46,408	143,806	11,398	21.0	65.1	5.2
Female	43,086	119,104	9,652	22.2	61.5	5.0

Source: Statistical Office of Serbia, Additional Data Processing, 2002, Belgrade.

The mean age of the population who emigrated from the country is 30, which is ten years younger than the mean age of the population in the Republic of Serbia by Census 2002 (40.2 years of age) (Statistical Office of Serbia, 2002).

Since only data from Census 2002 has been analyzed, it is logical that the oldest population who emigrated belongs to the earliest period between censuses – before 1960 (Table 6). The mean age of emigrants who left before 1960 and during the 1960s is 50+, which shows that they left the country as at an early age. This period was dominated by the migrations for economic reasons, although there are cases of political reasons. At the time of socialism and communism, it was not allowed to mention political emigration. During the 1970s, those who emigrated had the mean age of 48 and during the 1980s the mean age was around 35. Based on these data we can see that the emigrants were younger than 20 years of age when they left Serbia. During the last decade of the twentieth century and at the beginning of the twenty-first century, the mean age of emigrants was decreasing from 30 years of age in the beginning to 21.5 years of age in 2001. During the 1990s, when the reasons for emigration were economic, political, religious and ethnic, the young population was leaving Serbia.

Table 6. The mean age of emigrants from Serbia

	Total	Male	Female
Total	30.1	29.7	32.1
Male	30.9	30.5	32.9
Female	29.2	28.8	31.1
2002	25.3	24.7	27.9
2001	21.5	21.0	23.8
2000	23.5	22.9	26.4
1999	23.3	22.9	25.8
1998	23.1	22.7	25.7
1997	25.5	25.2	26.7
1996	25.4	24.9	28.0
1995	26.1	25.8	27.4
1994	26.9	26.6	28.5
1993	28.0	27.6	29.8
1992	30.9	30.8	31.4

1991	30.5	30.2	31.3
1981-1990	35.2	35.5	33.8
1971-1980	47.6	47.8	46.8
1961-1970	54.2	54.4	53.9
1960 and earlier	56.7	56.3	57.9
Unknown	13.1	12.8	14.9

Source: Statistical Office of Serbia, Additional Data Processing, 2002, Belgrade.

Conclusion.

Emigration from the territory of Serbia has always been present throughout history. After World War 2, population emigrated for economic reasons. These reasons remained in the later decades, but in the last decade of the twentieth century, political situation in the country and the region contributed to emigration. Most of the emigrants moved out in 1992, after the situation in Bosnia and Herzegovina and in 1999 after the bombardment.

The population immigrated mostly to European countries, Germany, Austria and Switzerland. In the post-war period, France was interesting for Serbian emigrants. They went to France, because it was a friendly country towards Serbia. However, the number of emigrants going to France was decreasing during the 1980s.

People who emigrated from Serbia as relatively young, at the age of thirty, had an impact on the increase participation of the elderly in Serbia and the increase in the mean age of the population. 'Population drain' had such an impact that there people with university degrees participated more in emigration population (8.7 %) than those who remained in Serbia (6.2 %) in 2002.

When will there be a decrease in emigration from Serbia? This is hard to predict, because emigration continued during the first decade of the twenty first century. Poor economic situation, a large number of firms closing down and the issue of Kosovo with a lot of international tension are all contributing to the insecurity of the region and emigration.

The migration issue is, actually, the central demographic issue of Serbia in the coming decades. Unfortunately, Serbia is traditionally an emigration country. Therefore, if the fundamental change of the direction of this component of population movements is omitted, the economical pressure on the labour force will be additionally enhanced. In addition, the indirect effects of emigration of the most vital parts of the population are reflected in the loss of potential descendants of emigrants who realize their fertility in the receptive countries. It is known that the majority of migrants are the ones in reproductive and productive years, between the ages of 20 and 40 and that is the part of the labour force of Serbia that is numerically most vulnerable.

It must be acknowledged that the new values determine new trends and that better conditions for successful professional fulfilment become more and more dominant motif for emigration of the most educated and the most talented people. It is necessary to stop the loss of the great intellectual potential by creating the conditions for the realization of professional goals in their own country. Also, in the coming period, it is necessary to establish a bilateral cooperation with the EU and other developed countries, scientific and specialized institutions around the world in scientific-technical, cultural and other plans in order to provide adequate specialization and professional training of young people from the Republic of Serbia with the provision of their return and work engagement in the country of origin. The realization of measures for better utilization of human resources for the development of the country implies the cooperation of experts both in the homeland and those in the diaspora, and the use of migrant population and all of their resources for the reduction of poverty and unemployment, as well as regional disparities.

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The Effect of Company Fundamentals on Stock Values

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Abstract. The influencing factors of stock values change with respect to the changes on economic factors depended on the selected time interval. These factors can be considered under two main categories (microeconomic and macroeconomic). The aim of this study is to identify the effect of selected microeconomic factors (Total Asset Turnover Ratio, Debt Ratio, Current Ratio, Price to Earnings Ratio, Net Profit Margin, and Book Value) on stock values between the second quarter of 2000 and the third quarter of 2012. This study is among the few researches which consider sector level performances of the stock values.The selected sectors for the analyses are electric, food, communication, paper, chemistry, metal-product, metal-main, stone, textile, commerce and transportation. The results indicate that Book value is highly significant positive impact on the stock prices of all the sectors. The effects of remaining factors are found to be different for each sector.

Keywords: microeconomic factors; sector level analyses; stock values, ISE.

Introduction.

Both microeconomic and macroeconomic factors have impact on company stock movements. Microeconomic factors are determined by analyzing a firm's financial situation. In the analysis of the firm, besides the evaluation of the title ofthe company, its history, reputation,capital,reserves, competence andskillsof managers, creditworthiness,new investment projects, production type, capacity, turnover, export opportunities, annual increases insales andexports, the marketcondition compared to its competitors, profitability and profitdistributionpolicy, etc. can be considered (Aksoy, 1988).This study aims to identify the influencing factors of stock movements by considering selected microeconomic factors (company fundamentals).

Company Fundamentals

The factors related to company fundamentals in terms of affecting stock prices may be company performance, top management changes, and creating new assets, dividends, earnings, etc. According to Molodovsky (1995), dividends are the hard core of stock value. Dividends' importance is emphasized by Williams (1938) as well. He states that an asset value equals the present value of all cash flows of the asset. Microeconomic factors are determined by some indicators. These indicators are financial ratios derived from company financial statements. Some of the ratios are provided below.

The Stocks' Market Turnover Ratio: Despite being highly open to the public, if the stocks stay fixed on the shareholders, company stocks cannot have higher liquidity (they cannot be easily converted to money).

Earnings per Share: The share of each stock is important, beside company revenues (Arslan, 2002).

Price/Earning Coefficient: Company revenues may differ annually. But the stock prices continuously change in the market. Monitoring the return per share according to changing stock values enables estimating their prices for a specific time interval and therefore it is determined to

be the most important comparison technique to establish real price. By using this coefficient, the stocks in the market can be compared. High coefficients mean valuable stocks (Arslan, 2001).

Current Ratio: This ratio which needs to be greater than one shows the ability of a company to pay its short term liabilities (Arslan, 2002).

Book Value or Liquidation Value: Book value or **liquidation value** of a stock can be determined by $(EquityValue)/(NumberofStocks)$. Since Book Value or liquidation value of the stock don't consider the expected cash flows, it is only important in case of bankruptcy or liquidation.

Book Value/Market Value Ratio is used in developed capital markets to estimate the value of a stock which is not bought or sold in the market.

The next section discusses the related literature review. The third section is about the obtained data and used methodology. In the forth section, the results are presented. Finally, the study is concluded by discussion of the results.

Literature Review

It has been a subject to identify the relationships between stock prices and organisational performance for long years. The emerging factors in determining the relationships can be ordered as financial structure of the firm, company management, capital expenditure, dividend policy, insider trading, company share and value in the sector, government interventions, the information quality in financial statements, etc. On the other hand, since it is hard to quantify these relationships, studies prefer using some indicators instead of factors in their analyses.

The literature identifies that internal factors (company fundamentals) are some of the major influencing factors of stock prices. The other emerged factors are inflation, economic conditions, investor behavior, and the behavior of the market and liquidity. Additionally, some studies examine the influence of interrelated factors.

Financial Statement Analysis

Financial statements are the financial reports which are used to summarize the outcomes of company business (Reeve & Warren, 2008). Financial statements are necessary to assess the liquidity, solvency and financial flexibility of a company and to evaluate the past and future performances of the company (Kieso et al., 2007).

According to Gibson (2009), managers, stockholders, bondholders, security analysts, suppliers, lending institutions, employees, labor unions, regulatory authorities, Government and the general public evaluate financial statements to improve their decisions according to their area of interest. The principal company financial statements include income statement, the balance sheet, and the statement of cash flows. Income statement for a specific period summarizes revenues, expenses, gains and losses, and is concluded with the net income. But, balance sheet shows the financial condition of an accounting entity on a particular date.

The Importance of Financial Statements in the Evaluation of Stocks

Prediction of financial crises and failures takes the attention of consultants and researchers because of global economic situation. Therefore, the directors of corporate organizations are responsible to inform the owners and general public correctly about the organization in order to provide reliable information for them.

The decision of investment is made based on the published financial statement information. Managers need detailed financial analysis on each of the firm's financial statements in order to understand the patterns and to use the outcome of the analysis while communicating with other stakeholders. Financial institutions use financial statements to determine creditworthiness of potential loan seekers. Government and other agencies benefit from financial statements for resource charges and allocations. On the other hand, Cash flow statement reconciles items, usually cash that appeared in the Balance Sheet and the profit that generated as Cash.

Malhotra and Malhotra (2008) define financial statements as the summary of operating, financing, and investment activities of firms for a time interval. Managers should evaluate firm's strengths and weaknesses by the help of financial statement analysis in order to obtain advantage and prevent failure.

At the beginning, financial statement analysis generally considers financial ratios by evaluating income statement, balance sheet and statement of cash flows. Ratio analysis is used to compare a company with the other industry firms, leading firms and the previous results of the

same firm. Through benchmarking, the firm's financial results against its own competitors or industry averages, the company can determine the relative strengths and weaknesses of the firm and prepare future plans. Therefore, investors and creditors can understand better the relative position of a firm within the industry and make investment/lending decisions by considering the economic factors instead of depending on officer's intuition (Malhotra and Malhotra, 2008).

Ratio analysis is a common and easy analytical tool to evaluate the firm performance. On the other hand, their interpretation may cause problems particularly when some ratios provide contradictory signals. Hence, the subjective evaluation of ratio analysis is necessary, because an analyst must pick and choose ratios properly to judge the overall firm performance (Malhotra and Malhotra, 2008).

Internal Factors (Company Fundamentals)

The literature related with the internal factors is presented in this section. Demir (2001) evaluates financial leverage ratio, profitability ratio, return on assets, dividend payout ratio, price earnings ratio, market value book value ratio, turnover ratio, earnings per share, net profit growth rate, and the rate of increase in equity as the companies' internal (microeconomic) factors in his study. He considers the data between 1999 and 2000 for the analyses. The results show that financial leverage ratio, profitability ratio, dividend payout ratio, price earnings ratio, market value book value ratio, turnover ratio, earnings per share and net profit growth rate are effective on stock value. It is noted that the most influential factor is market value book value ratio. This is followed by earnings per share, price to earnings ratio and profitability ratio in orderly.

Since IFRS suggests providing the minimum information for scenario analysis and risk assessment, companies may provide management's financial review by describing and explaining s**tandard setting** of the company which includes financial performance, financial position and some company related uncertainties with financial statements (Oxelheim, 2003).

Hartono (2004) examines the influence of a sequence of positive and negative dividend and earning information on stock prices from 1979 to 1993. The data is collected from Center for Research in Security Prices (CRSP) tapes in US. He finds out that the positive recent earning information is significantly related with stock prices when it follows negative dividend information, and the negative recent earning information is significantly related with stock prices when it follows positive dividend information. According to his study, there is a short-term reaction of stock prices on the earnings and dividend information and no long-run dynamic relation.

Docking and Koch (2005) assesses investor reaction to dividend increase or decrease and finds out that dividend change announcements greatly influence the stock prices if the news are against the recent market direction during volatile times. First of all, with slight statistical significance, announcing to raise dividends brings a greater increase in stock price if market returns become normal or downward and more volatile. Secondly, announcing to lower dividends shows a significantly greater decrease in stock price when market returns are upward and more volatile.

Lee (2006) uses two types of index data: annual Dow Jones industrial average (DJIA) index data between 1920 and 1999 and annual Standard and Poor's (S&P) 400 industrial index data between 1946 and 1999. The findings reveal that investors overreact to nonfundamental information. On the other hand, at the beginning they seem to underreact to fundamental information (dividend, book value and earning) without significant impact of fundamental information in long term. It is also suggested by the findings that the residual income model gives a better valuation than the dividend discount model.

Canbaş et al. (2007) examine the relationship between the firm characteristics and stock returns between July 1992 and June 2005 including all nonfinancial ISE firms. They determine firm size, book-to-market ratio, book leverage, market leverage and earnings-to-price ratio as firm related characteristics. They observe that common stocks of small ISE firms have higher monthly returns than the common stocks of large firms. They also observe that high book-to-market firms seem to have a higher return than the low book-to-market firms. Moreover, high-leverage firms' stocks appear to have higher returns than low-leverage firms' stocks. Contrarily to the literature, the portfolio with the lowest earnings-to-price ratio provides the highest rate of return.

Savin et al. (2007) modify and use the pattern recognition algorithm of Lo, Mamaysky and Wang (2000) to investigate whether "head-and-shoulders" (HS) price patterns influence future stock returns on the data from the S&P 500 and the Russell 2000 between 1990 and 1999. They observe little or no support for the profitability of a stand-alone trading strategy. But, they strongly identify that the

pattern could explain excess returns. Through the combination of the strategy with the market portfolio, a significant increase in excess return for a fixed level of risk exposure can be obtained.

Wang and Di Iorio (2007) examine the relationship between stock returns and some firm-specific characteristics in Chinese A-share market by employing an extension of Fama and MacBeth cross-sectional regression model and find that firm factors, such as book-to-market ratio and firm size, are influential in explaining stock returns.

Malhotra and Malhotra (2008) consider days-sales-outstanding ratio, days cost of goods sold in inventory and total debt/equity ratio as input variables and cash flow per share, return on equity, return on assets, return on invested capital, inventory turnover, asset turnover, current ratio, quick ratio and interest-rate coverage as output variables by employing data envelopment analysis (DEA). They achieve the relative efficiency scores for selected 12 firms (six are efficient and the others are relatively inefficient).

Campbell et al. (2010) study the reasons of systematic risks for value and growth stocks. They firstly test systematic risk pattern by considering the findings of Campbell and Vuolteenaho (2004) that value stocks' returns are mainly sensitive to permanent movements of aggregate stock prices but growth stocks' returns are mostly sensitive to temporary movements of aggregate stock prices. They attempt to discover whether these patterns are influenced by the behavior of value and growth firms' cash flows, or the discount rates that investors apply to these cash flows. The results reveal that cash-flow fundamentals of growth and value companies establish high annual betas of growth stocks with the market's discount-rate shocks, and of value stocks with the market's cash-flow shocks. Thus, growth stocks' systematic risks are not totally determined by investor attitude.

Campbell et al. (2010) also aim to explore firm-level characteristics which determine firms' sensitivities to market cash-flow and discount-rate shocks. They identify that historical return betas and return volatilities strongly influence firms' sensitivities to market discount rates, but slightly estimates sensitivities to market cash flows. On the other hand, accounting variables principally the return on assets and the debt-asset ratio are found to be main predictors of firms' sensitivities to market cash flows. They state that accounting data should be more important to determine a firm's cost of capital in a two-beta model similar to Campbell and Vuolteenaho's approach (2004) which reports the importance of cash-flow sensitivity.

Campbell et al. (2010) conclude that firm-level cash flows influence firm characteristics on firm sensitivities to market cash flows and discount rates when compared to firm-level discount rates. They suggest that company fundamentals strongly influence cross-sectional patterns of systematic risk in the stock market.

Al-Tamimi (2011) considers some internal factors including earning per share, dividend per share, book values, and other company performance related factors. The most important internal factors are reported to be earning per share (EPS) and dividend per share (DPS).

By considering the literature review above, this research assesses the following ratios as the potential microeconomic factors: Total Asset Turnover Ratio, Debt Ratio, Current Ratio, Price to Earnings Ratio, Net Profit Margin, and Book Value.

Data and Methodology.

Data. Since Istanbul stock exchange market is a relatively young market compared to the other developed markets, large amount of data cannot be achieved about the companies. Istanbul Stock Exchange (ISE) market was founded on December 26, 1985 in order to ensure that the trade among the securities are performed in a secure and stable environment and furthermore commenced to operate on January 3, 1986.

This study selects 48 companies which are operating in 11 different sectors of Istanbul Stock Exchange including electric, food, communication, paper, chemistry, metal-main, metal-product, stone, textile, commerce and transportation sectors. While selecting the companies FORTUNE 500 list for Turkey is considered. Since the other classification channels such as Istanbul SanayiOdası (ISO) do not include the list of all companies in the sectors, FORTUNE 500 list for Turkey is found to be proper in order to select the companies. The companies are selected from each sector by considering their data availability, profitability and performance in Istanbul Stock Exchange Market.

The data which is obtained from ISE's and company's websites is selected as proxy for that specific sector spans from the second quarter of 2000 to the third quarter of 2012 including 50

observations. The sectors selected for the analyses include electric, food, communication, paper, chemistry, metal-product, metal-main, stone, textile, commerce and transportation.

Finally, the financial ratios as the possible determinants of company fundamentals are calculated. The assessed ratios are Total Asset Turnover Ratio, Dept Ratio, Current Ratio, Price to Earnings Ratio, Net Profit Margin, and Book Value.

Methodology. SPSS 18 is used for Non-Linear and Multivariate regression. Non-linear Regression method is preferred in the first step of this study to investigate the role of company own specific factors on stock price movements. The data is first checked for the multi-collinearity. The general formula for a multi-factor model is appeared to be as follows:

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \epsilon_t$$

We apply the natural log transformation. Logarithmic transformations are used to simplify mathematical expressions of large numbers, and can be applied in finance and business (Beginnersinvest, 2012).

The natural logarithmic transformation removes skewness to allow least squares models in obtaining unbiased results. Also, through natural log transformation heteroscedasticity problem can be corrected.

$$LogY_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n + \epsilon_t$$

In the first step, the multi-factor model in equation (4.1) is used to identify the importance of each predetermined factors on sector level stock-price movements. In the second step, normality, heteroscedasticity, serial correlations, and diagnostics in multi-factor regression are checked. According to the diagnostic checking results, multi-factor regression model (4.1) is modified and optimum model for each sector is determined. In the last step, estimation results for each sector are recorded.

$$LogY_t = \alpha + \beta_1 TA + \beta_2 DR + \beta_2 CR + \beta_2 NPM + \beta_2 PE + \beta_2 BV + \epsilon_t \quad (4.1)$$

Where $LogY_t$ denotes the logarithm of stock values, TA, DR, CR, NPM, PE and BV denote; total assets turnover, dept ratio, current ratio, net profit margin, price to earnings and book value respectively.

Empirical Results.

Estimation results for each sector are summarized in Table 4.1.

Book value is identified to have highly significant positive impact on the stock prices of all the sectors. Total asset turnover ratio has significant and positive effects on Metal Products, Stone, Commerce and Transportation sectors but has significant negative effects on **Textile Sector**. Debt ratio is observed to have significant negative influence on Stone and Metal-Product. However, on Transportation, Paper and Food sectors, it has significant positive influence. The current ratio is found to have significant and negative effect on Transportation and Metal-Main sectors while it has significant and positive effect on Electric, Metal-Product and Textile sectors. Net profit margin is measured to have significant positive influence on **Electric sector** and negatively influential on **Transportation Sector**. The results for Price to Earnings Ratio have significantly brought out positive coefficients for Paper, Stone and Textile sectors and negative coefficient for **Communication Sector**.

Furthermore, when the estimation power of the factors is considered, the internal factors are appeared to strongly explain the change in stock prices for Electric, Commerce, Stone, Textile, Communication and Chemistry sectors. Paper, Metal-Product, Transportation and Food sectors are somehow explained by the considered factors. However, **Metal-Main Sector** is weakly estimated by the internal factors.

Overall results indicate that Book Value is the most extensive significant internal determinant of the stock prices in all eleven sectors.

Table 1. Multi-Factor Non-Linear Regression Analyses Results

Sector		Factors						
		Total Asset Turnover	Debt Ratio	Current Ratio	Net Profit Margin	Price to Earning Ratio	Book Value	Adjusted R2
Electric	Coefficient	-0.066		0.345*	0.223	-0.055	0.667*	0.817
	p-value	0.379		0.000	0.006	0.404	0.000	
Food	Coefficient	0.041	0.339*	-0.114	0.064	0.068	0.593*	0.315
	p-value	0.768	0.098	0.499	0.657	0.601	0.000	
Communication	Coefficient	-0.077	-0.251	-0.082	-0.128	(-0.593)*	0.532*	0.612
	p-value	0.431	0.165	0.539	0.289	0.000	0.000	
Paper	Coefficient	0.162	0.218*		0.172	0.452*	0.387*	0.495
	p-value	0.144	0.071		0.147	0.000	0.002	
Chemistry	Coefficient	0.147	-0.020	-0.112	0.185	0.119	0.783*	0.571
	p-value	0.137	0.898	0.368	0.119	0.297	0.000	
Metal-Main	Coefficient	0.064		(-0.443)*	0.094	-0.010	0.318*	0.187
	p-value	0.634		0.004	0.534	0.943	0.022	
Metal-Product	Coefficient	0.408*	(-0.58)*	0.28*	0.078	-0.066	0.623*	0.391
	p-value	0.001	0.008	0.049	0.542	0.580	0.003	
Stone	Coefficient	0.261*	(-0.366)*		0.125	0.558*	0.507*	0.666
	p-value	0.012	0.000		0.193	0.000	0.000	
Textile	Coefficient	(-0.36)*		0.333*	-0.122	0.395*	0.862*	0.623
	p-value	0.005		0.004	0.234	0.002	0.000	
Commerce	Coefficient	0.229*	-0.022	0.039	0.095	0.062	0.797*	0.772
	p-value	0.006	0.837	0.661	0.232	0.387	0.000	
Transportation	Coefficient	0.644*	0.538*	(-0.375)*	(-0.351)*	0.097	0.476*	0.348
	p-value	0.000	0.001	0.013	0.035	0.427	0.007	

*Note: * indicates significantly different from zero at the given significance level*

Discussion.

The results of the analyses in this research are generally confirming the findings of the previous research on the influencing factors of stock returns. However, it has also few surprising results which are discussed as follows.

This study investigates the relationship between financial ratios of the companies and their stock prices in order to clarify internal determinants of the stock price movements in different sectors. This study has a significant contribution to the literature since there is no study extensively focusing on the sectoral differentiation. Empirical results show that degree of impact is different in different sectors. Book value is found to be the most significant internal determinant of the stock price movements for all sectors as the previous literature has reported (Demir, 2001; Canbaş et al., 2007; Wang and Di Iorio, 2007). The impacts of other financial ratios vary for different sectors.

Furthermore, when the estimation power of the factors is considered, the estimation powers of the evaluated internal factors are appeared to be strong for the stock prices in Electric, Commerce, Stone, Textile, Communication and Chemistry sectors while they moderately explain Paper, Metal-Product, Transportation and Food sectors. Though, they weakly estimated the fluctuation of stock prices in Metal-Main sector.

Conclusion.

Firms and individuals are making considerable investments on the shares in stock exchange markets. But, stock movements can easily be influenced by many factors which are continuously changing over time. Therefore, it becomes very important to identify the factors which may have impacts on stock fluctuations.

Determination of these factors enhances portfolio investment decisions in order to maximize the profit allocating the capital into different stock options. Therefore, this research is motivated to

extensively evaluate the influencing factors of stock movements by employing some statistical and econometric methods. Firstly, it starts from the analyses of internal factors of the firms.

The most powerful internal determinant of the stocks is found to be Company Book Values.

Every research has some limitations. Despite being one of the most comprehensive studies performed on the companies operating in Istanbul Stock Exchange, one of the limitations of this study is the determination of the companies and sectors through the stock market. The companies are selected according to Fortune 500 list for Turkey, since it provides the most proper and complete categorization system of the companies which are listed in Istanbul Stock Exchange from different perspectives. The other ranking organisations consider different types of firms for some specific sectors.

Since Turkish stock market is a relatively young market when it is compared to the world's developed stock markets, even this research selects the leading successful companies in their sectors, it can not provide large amount of data. For larger sets of data, the validity of this study can give better results.

Another limitation is that many companies in ISE do not provide proper information in their income statements. They haven't properly adapted their reporting mechanism to International Financial Reporting Standards (IFRS). Therefore, they are not considered during the analyses of the study because some information required for analyses is missing. However, it is also observed that companies are satisfying the agreed basic standards more and more. Hence, this study can not cover long time intervals because of the availability of the necessary data for the analyses.

Some of the sectors such as banking sector are not selected because of their sector specific data. Since banks have different type of and very detailed financial reporting system, the literature generally prefers studying banking sector separate from the others.

Closed companies or powerful but young companies listed in Fortune 500 are also not included in the analyses. Since, they cannot provide data for the considered timeline.

However, it is observed that Turkish Stock Market as one of the developing markets is overcoming more and more this kind of difficulties in collecting the available data.

Chung (2006) reports that the literature mostly focuses on developed economies but not on less developed economies. Since, Turkish economy is one of the most developing markets in the world; the findings of this study have very important implications.

It is realized in the literature that very few studies consider sectoralbehaviours of the stocks. Hence, this study can be distinguished from the others in that it evaluates the fluctuations of the stocks in sectoral basis.

Since the study has also sector specific findings, they may improve different strategies for the sectors in order to increase the financial performances of the companies in these sectors.

This study is valuable for the company managers in that it can help them by identifying their sector specific internal and external determinants. Therefore, they may take the necessary steps in order to enhance company performance.

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Reconstruction of Nietzsche's Theory of Simulation

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Abstract. The article shows the interior plane of contact of thinking of German philosopher Friedrich Nietzsche and French philosopher Jean Baudrillard. We have formed the metaphor world of Nietzsche and his philosophy and found the common code between these metaphors and philosophic language of the language of the simulation theory by Jean Baudrillard. The decoding and interpretation of the material was made on its basis. As a result, we came to the conclusion that Nietzsche philosophy had the simulation plane before postmodernism and it is possible to reconstruct the simulation theory of his philosophy at the rational level. The article considers the specified mechanisms of Nietzsche simulation theory. Zarathustra personality, the great tempter and connects the mechanisms of faith and courage.

Keywords: simulation; metaphorical universe; Dionysus and Ariadne; Zarathustra; play-illusion; realistic and imaginary.

Introduction.

In modern philosophy it is very important Nietzsche's philosophy as a life philosophy, as the carrier of the principles of Frankfurt school of Existentialism and postmodernism.

It is very productive to study Nietzsche's philosophy from the simulation point of view. We think that it will be a linking point between German philosophy and French postmodernism. Deleuze and Baudrillard while being closer to philosophy of Nietzsche they emphasized on these dimensions. It is necessary to examine the specific rational mechanisms in philosophy of Nietzsche which are established in the Baudrillard's framework of the theory of simulation as a general revision of the elements of Nietzschian theory.

Research Methods and Sources.

The works of Nietzsche and Baudrillard are used while working on the article. The used research method is Metaphorical analysis of the texts developed by me when I made the formations of metaphorical universe and then decoding –translating it on a particular philosophical language. At the end I made a reconstruction of entire theme within the given philosophy.

In order to reconstruct the theory of simulation in Nietzsche's philosophy one should accentuate the following components in Nietzsche's metaphoric world:

1. The domain of the universe before the clouds;
2. The domain of the universe after the clouds;
3. Ariadne, who is on the highest summit;
4. The meeting of Dionysus and Ariadne on the summit;

5. Movement towards the country of children.

Now the code identifying certain correspondence between these metaphors and the philosophical language linked with the theory of simulation should be found and afterwards this entire metaphoric construction should be translated into the given theoretical language. Let us follow step by step.

1.The place of the universe which is located before the clouds, including the abode of the God/Monster; the God/Monster hinders the way leading to the highest summit – this is a certain border of the universe, beneath which lies everything: sea, plane, caves, mountains, rivers, the labyrinth of life, in general; beasts, gnomes, a lot of paths, travelers, Socrates-Hermit; here Dionysus and his fellow-traveler wander; masks and numerous horrors are here too.

This is that section of the philosophical teaching, where the final results of the conducted philosophical "work", ideas, opinions are offered: the scene of the philosophical teaching is the already realized philosophy in certain matter, it depicts and conveys the already created reality. This is the level of reflection of the development of the imaginary, where the following are distinguishable from one another: fictitious imagination – myth and intimation of something about the real, mask and reality, where unmasking is possible.

2. The domain of the universe, which is located beyond all the clouds and stars, on the summit, near boiling lava, from which the lower part of the universe appears in its unity and reality, from which the way will be found out of the labyrinth and the latter will transform into a landscape. From here every spring and every stream originates, every wind and every star descends, Dionysus having gone up to Ariadne will descend from here too. This is "the forbidden place" of the universe, and the God/Monster guards the road leading to it. This is the "epicenter" of the universe, governing everything in this universe and remaining itself always invisible for strangers' eyes: the sight of Socrates looking from under the clouds fails to reach up to Ariadne. Only Dionysus and his fellow-traveler endowed with the highest creative power can ascend completely. This is that section of the philosophical teaching, where the main laboratory, the side scenes of philosophy, meta philosophy is located, towards which everybody cannot move, and this is not necessary at all. It should always be hidden from the majority of viewers. This is that level of the philosophical thought, that phase of the development of the imaginary, where the difference between the fictitious and the real, mask and reality becomes obliterated, for the informer himself participates in the creation of the reality. No unmasking occurs here, as there is nothing beyond the masks. This is the level of simulation, where there remains no place for reflection.

3. Woman/Ariadne, being on the summit and waiting for Dionysus there, she does not exist independently of Dionysus' desires, for there are no children of Ariadne and the country of children, no way out of the labyrinth and its transformation into a landscape before the fecundation by Dionysus. Therefore, in Nietzsche's words, everything here has the only "solution" – pregnancy. Ariadne is the reality in the third phase of the development of the imaginary, which does not offer anything and does not intimate anything before we ourselves create it by our own force, i.e. Ariadne represents absence of the basis/reality. The reality is what we conceive it to be by the power of our imagination. This is the dimension of simulation, higher than the level of reflection, where the real and the imaginary are no longer different from one another, where there is no basis/reality behind the imaginary, as "opinion" or the imaginary becomes reality, replacing it. Ariadne's mythogenic image points to the fecundation of the reality, i.e. the domain of simulation, where everything occurs with play, manipulation, which is substituted for everything natural.

4. Hence, the relationship of Dionysus and Ariadne, sexual union –creation of reality with play, myth, illusion; its creation from oneself.

5. And movement towards the country of children – respectively, thrusting of a certain field of reality upon the level of reflection.

Now we can say that the difference between the first two and the ultimate two phases of development of the imaginary, on which the crucial "turning point" lies, which is found with Baudrillard, is also represented fully in Nietzsche's philosophy. The very domain before the clouds of Nietzsche's metaphoric world "implies the theology of the truth and the secret", and that after the clouds "blesses the time of the simulated". Respectively, there must be a section in Nietzsche's philosophy, which may be entitled the theory of simulation. In my view, this can in fact be found in the German philosopher's thought, which although is not set apart, and is dispersed in an unordered manner in his numerous works, still can be reconstructed as a whole. J. Baudrillard in

his book "The Simulated and Simulations" writes: "Simulation is pretending to have what others do not have". But he continues so: simulation is not simple pretending, "one who pretends to be ill, can lie down and say that he is ill. One who simulates illness realizes some of its symptoms." "Concealing or pretending leaves reality intact in principle: the difference between them is always evident. It is only veiled. Simulation threatens the difference between "the true" and "the false", "the imaginary" and "the real"...If all symptoms can be "developed" and not be regarded as a natural fact, then all illnesses may be considered as simulated and simulation". As a result of this "development" of symptoms, in the end, "the feigned signs will be confused with the real elements and one will suddenly find oneself in the real, the only function of which, according to J. Baudrillard, is "devouring" any manifestation of simulation and turning everything into reality of any kind. This "finding one's way" to reality by means of "the play of symptoms", "play of signs", i.e. substitution of the play, "the operative" for reality is a fairly well-known point in Nietzsche's philosophy too. In his book "Human, All-Too-Human" he writes: "Der Heuchler, welher immer ein und die selde Rolle spilt, hort zuletzt auf, heuchler zu sein; zum Beispiel Priester, welche als junge Manner gewohnlich bewust oder unbewust Heuchler sind, warden zuletzt naturlich und sind dann wirklich, ohne alle Affectation, eben Priester; oder wenn es der Vater nicht so weit bringt, dann vielleicht der Sohn, der des Vaters Vorsprung benutct, seine Gewohnung erbt. Wenn Einer sehr lange und hartnackig E t w a s s c h e I n e n will, so wird es ihm zuletzt schwer, etwas Anderes zu s e i n. der Beruf fast jedes Menschen, sogar des Kunstlers, beginnt mit Heuchelei, mit einen Nachmachen von Aussen her, mit einem Copiren des Wirkungsvollen. Der, welcher immer die Maske freundlicher Mienen tragt, muss zuletzt eine gewalt uber wohlwollende Stimmungen bekommen, ohne welche der Ausdruck der Freundlichkeit nicht zu erzwingen ist, -- und zuletzt wieder bekommen diese uber ihn Gewalt, er i s t wohlwollend" (6.72)

That is why, Nietzsche refers to becoming "a great personality" as pretending to be "a great personality": "Der recept zu dem, was die Masse einen grossen Mann nennt, ist leicht gegeben. Unter allen Umstanden verschaffe mann ihr Etwas, das ihr sehr angenehm ist, oder setze ihr erst in den Kopf, dass diess und jenes sehr angenehm ware, und gebe es ihr dann. Doch um keinen Preis sofort: sondern man erkampfe es mit grosster Anstrengung oder scheine es zu erkampfer. Die Masse muss den Eindruck haben, das seine machtige, ja unbezwingliche Willenskraft da sei: mindestens muss sie da zu sein scheinen" (6.298)

According to Nietzsche, the Catholic church played a similar role in the Middle Ages, it was based on artificial, fictitious necessities, which "were to be created first where they had not existed". Against this background, the following words by Nietzsche are noteworthy: "Man kan beobachten, dass figirtes Gahnen bei Einem, de res sieht, naturliches Gahnen herrorruft. Die nachgeahmte Gebarde leitete den, der nachahmte, zu der Empfindung zuruck, welche sie im Gesicht oder Korper des Nachgeachmten ausdruckte." (6.176)

The copying of the above-mentioned effects, roles, masks and gestures, their repetition-playing implies play-simulation attempting to deceive us, deceive itself and pose as reality, which it attains eventually through persistence and it indeed transforms into reality, replacing the latter. In the form of these effects, symptoms, signs, and gestures one is dealing with that phase of the development of the imaginary, which is called the level of simulation with J. Baudrillard.

According to Nietzsche, the main thing is not the reality of something, but a certain opinion about it. E.g. here are the philosopher's words on a saint: "Nicht das, was der Heilige ist, sonder Das, was er in den Augen der Nicht-Heiligen bedeutet, giebt ihm seinen weltthistirischen Werth. Dedurch, dass man sich uber ihn irrte, das man siene Seelenzustande falsch auslegte und ihn von sich so stark als moglich abtrennte, als atwas durchaus Univergleichliches und fremdartig--- Ubermensschliches: dadurch gewann er die ausserorderdentliche Kraft, mit welcher er die Phantasie ganzer Volker, ganzer Zeiten behrrschen konnte"(6.139)

The following words of J. Baudrillard are in tune with the extract above: "Perhaps, beginning with Machiaveli, every politician in his heart of hearts has always been sure that exactly the possession of the simulation domain is being at the helm, that politics is a certain simulation model, rather than real creation and domain" (1.352). Nietzsche viewed the questions of the man creator, the driving motives of humankind and the phenomenon of freedom on the same plane. It is obvious that according to the German philosopher, the most important "Und doch ist dieses Leiden am Naturlichen in der Realitat der Dinge volling unbegrundet: es ist nur die Folge von Meinungen uber die Dinge"(5.139), that the thought, opinion on the reality – reputation, name, outward

aspect, meaning – is more important than this reality proper, because, although it is false, illusory, self-willed from the beginning, consequently it sticks to reality and replaces it, becoming the essence of the thing. Nietzsche believes that people always tend to strive towards the subordination of reality to the imaginary.

But how is the real substituted by the imaginary? How does it happen that the thought of a thing becomes inalienable from it, turning into its essence? According to the author of "The Gay Science", this is a belief:" Einzuschen, dass unsaglich mehr daren liegt, wi die Dinge heissen, als was sin sind. Der Ruf, Name und Anschein, die Geltung, das ubliche Mauss und Gewicht eines Dinges-im Ursprunge zuallermeist ein Irrthum und eine Willkurlichkeit, den Dingen ubergeworfen wie ein Klied und seimen Wesen und selbst seiner Haut ganc fredmist durch den Glauben daren und sein Fortwachsen von Geschlecht zu Geschlecht dem Dinge allmahlich gleichsam an-und eingewachen und zu seinem Liebe selber gewortden: der Schein von Anbeginn wird zuletst fast immer zum Wesen und wirkt alsWesen" (5.422).

Thus, good playing out the symptoms and signs of reality, which may represent the copying-playing the model of reality, i.e., to use J. Baudrillard's jargon, "the operational of the real", on the basis of the belief (the higher the level of the playing these symptoms, the better the belief is kindled and established) merges with reality, substitutes it, itself turning into reality in the end. Here we are dealing with the phase of simulation of the development of the imaginary, in which reality and play, myth, fiction and reality are no longer distinguished from one another, where the basis-reality no longer exists, but there is only the field of hyperreality. As was noted, the domain after the clouds of Nietzsche's metaphoric world is linked to this field of hyperreality or, more specifically, the sexual act of Dionysus and Ariadne represents the metaphor of the creation of reality by playing.

In this regard several fragments are interesting in which Nietzsche denies the objective reality, i.e. the reality towards which the imaginary should have descriptive relationship, and regards everything real as created, operational. The essence of these fragments is manifested in the most concentrated manner in the following words:" Was sind den unsere Erlebnisse? Vielmehr Das, vas wir hineinlegen, als Das, was darin liegt! Oder muss es gar heissen: an sich liegt Nichts darin? Erleben ist ein Erdichten?"(7.114).

Therefore, Nietzsche arrives at the conclusion that for him "no reality" exists and that the creation of new "names", "assessments" and "probabilities" is tantamount to the creation of new "things". Thus, with the German thinker kindling of belief in something fictitious and its introduction afterwards causes gradually the transformation of the fictitious into the reality proper. The stronger the belief in it, the more "successful" this process will be, which in its turn will depend on how high the level of performance of this fiction of reality is, i.e. how good and convincing the playing out of signs, symptoms, effects occurs here, how well the copying/repetition of the model of reality happens. In the philosopher's view, strong individuals, greatest creators, attempting to create and establish reality in this way, depended on the strong belief of others in them, which in its turn was based on the firm belief in oneself.

In "Human, All-Too-Human" one reads: " Bei allen grossen Betrugern ist ein Vorgang bemerkenswerth, dem sie ihre Macht verdanken. Im eigen Tlichen Acte des Betruges unter all den Vorbereiyungen, dem Schauerlichen in Stimme, Ausdruck, Gebarden, immitten der wirkungsvolten Scenerie, uberkommt sie der G l a u b e a n s i c h s e l b s t : dieser ist es, der dann so wundergleich und bezwingend zu den Umgebenden spricht. Die sie aus diesem Zustande der Selbsttauschung nicht herauskommen: oder sie haben ganz selten einmal jene helleren Momente, wo der Zweifel sie uberwaltung;gewohnlich trosten sie sich aber, diese helleren Momente dem bosesn Widersacher zuschiebend. Selbstretrung muss da sein, damit Diese und Jene grossartig w i r k e n" (6.72).

That is why Nietzsche believed that "the worst fate" of a preacher is that he renounced the belief in which he had already convinced everybody. According to the philosopher, all great creators were always a prey to doubts, and required constant reassurance in the belief in them.

As was noted, the belief in oneself, one's actions, words and respectively the belief of others in us and all this depend on the extent of copying-playing out the model of reality. When is reality feigned best of all? When is simulation realized best of all? This happens when the model of reality is copied perfectly, i.e. when these fictitious symptoms are no longer distinguishable from the real and their substitution for reality becomes possible.

To attain this is very difficult. Therefore, in Nietzsche's view, it must be accessible only to the elite. On the one hand, simulation, like any lie, as posing, which is also deceiving and giving out the fictitious as reality, requires great skills of improvisation, inventiveness, playing and, generally, creation. On the other hand, for the purpose of copying the model of reality at a high level, greater convincingness and establishment of a belief, it demands from the creator great courage, which implies madness, self-torture, selflessness, and even readiness to die. In the book "Daybreak" Nietzsche writes: "Jene Saufzer der Einsamen und Verstorten zu horen: "Ach, so gebt doch Wahnsinn, ihr Himmlischen! Wahnsin, dass ich endlich an mich selber glaube! Gebt Delirien und Zuckungen, plotzliche Lichter und Finisternisse, schreckt mich mit Frost und Gluth, wie siekein Sterblicher noch empfand, mit Getose und umgehenden Gestalten, last mich heulen und winseln und wie ein Their kriechen: nur dass ich bei mir selber Glauben finde! Der Zweifel frisst mich auf, ich habe das Gesetz getodtet, das Gesetz angstigt mich wie ein Leichnam einen Lebendigen: wenn ich nicht m e h r bin als das Gesetz, so bin ich der Verworfenste von Allen. Der neue Geist, der in mir ist, woher ist er, wenn er nicht von euch ist? Beweist es mir doch, dass ich euer bin; der Wahnsinn allein beweist es mir." Und nur zu oft erreichte diese inbrunst ihr Ziel zu gut.." (7.28)

According to Nietzsche, the great creator, genius implementing all this – establishment of a new belief and a new reality is called a seducer. "Isn't Zarathustra a seducer?" he asks in "Ecce Homo" and the adequate answer to M.Heidegger's question should be sought for probably here.

Now let us see what Nietzsche writes in his book "Beyond Good and Evil": "Das Genie des Hezzens, wie es jeder grosse Vezborgene hat, der Versucher-Gott und geborne Rattefanger der Gewissen, dassen Stimme bis in die Unterwelt jeder Seele hina-Beusteigen weiss, welcher nicht ein Wort sagtinicht einen Blick blickt, in dem nicht eine Rucksicht und Falte der locking lage, zu dessen Meisterschaft es gehort, das ser zu scheinen versteht und nicht Das, was er ist , sonder was Denen, die ihm folgen, ein Zwag mehr ist, um sich immer naher an ihn zu drangen, um ihm immer innerlicher und grundlicher zu folgen... von dem ich eben sprach, und die ser immer woieder, kein Geringerer namlich, als der Gott Dionysos, jener grosse Zweideutige und Versucher Gott, dem ich einstmals, wie uhr wisst, in aller Heimlichkeit und Ehrturcht meine Erstlinge dargebracht habe... Inzwishen lernte ich Vieles, Allzuvieles uber die Philosophie dieses Gottes hinzu, und wie gesagt, von Mund zu Mund,- ich, der letzte junger und Eingeweihte des Gottes Dionysos und ich durfe wohl endlich einmal damit antangen, euch , meinen Freunden, ein Weng, so weit es mir erlaubt isn, von dieser Pholosophie zu kosten zu geben? Mit halber Stimme, wie Billig: den es handelt sich dabei um mancherlei Heimliches, Neues, Fremdes, Wunderliches, Unheimliches"(8.237-238).

To the given passage directly echoes the words from the same book, where Nietzsche foretells the "birth" of a new image. Unlike this new variety of philosophers, he calls old philosophers non-seducers, dogmatists, as the metaphoric image of which wise Socrates may serve. Nietzsche believed that the unfruitful period of the dogmatist philosophers came to an end. It was necessary to overcome it. "Beyond Good and Evil": "Vorausgetzt, dass die Wahrheit ein Weib ist – wie? Ist der Verdacht nicht gegründet, dass alle Philosophen, sofern sie Dogmatiker waren, sich schlecht auf Weiber verstanden? dass der schauerliche Ernst, die linkische Zudringlichkeit, mit der sie bisher auf die Wahrheit zuzugehen pflegten, ungeschickte und unschickliche Mittel waren, um gerade ein Frauenzimmer für sich einzunehmen? Gewiss ist, dass sie sich nicht hat einnehmen lassen:-und jede Art Dogmatik steht heute mit betrübter und mutloser Haltung da. " (8.11)

Conclusion.

1. The conducted work has shown that the linking point of German philosophy and French postmodernism lies in simulation sphere.
2. It is possible to do rational reconstruction of theory of simulation in Nietzsche's philosophy like it is presented in Baudrillard philosophy.
3. Nietzschian version of theory simulation, the mechanism of simulations is in faith and courage which are united in the face of tempter of Dionysus and Zarathustra.
4. Full correlation exists between the metaphorical universe and philosophical language in Nietzsche's philosophy that indicates the validity of our method on various topics.

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Syntactical Connections in Old English (Composite Sentence)

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Abstract. The article focuses on the evolution of the composite sentence in English. Special attention is given to Old English and different ways of syntactical connection of the clauses within a composite sentence. It is specially stressed that the syntactical structure of Old English was determined by the nature of its morphology on the one hand, and by the relation between the spoken and the written forms of the language, on the other. The authors come to the conclusion that the whole Old English syntax was paratactic and that subordination in it was not developed enough.

Keywords: Old English; syntax; subordination; parataxis; composite sentence; history of English; language change; Anglo-Saxon; development.

Introduction.

The aim of this research is to provide some insight into the evolution of the composite sentence in English. Despite a large number of studies devoted to linguistic change in general and to the history of English in particular, there are areas that have seen little or no systematic investigation. The fact remains that English is by no means untypical as far as syntactic change is concerned as it has changed in a number of ways in the past thousand years. Syntax is the arrangement of words into phrases, clauses, and sentences. In fact, the word syntax is derived from the Greek word “syntaxis”, which means “arrangement”. In other words, syntax is the part of grammar which deals with sentences and combinability of words. The core of syntax is the study of the sentence. On the one hand, syntax embraces the structure of the sentence, that is, its components, their structure and the relations between these components, and on the other hand structural and communicative types of sentences.

Though since the nineteenth century there have been some excellent studies in historical phonology and morphology, syntactic change was very often not represented in the textbooks on the history of English. In this paper we plan to concentrate on Old English mostly.

Literature review.

The fact is that synchronic and diachronic linguistics were not really distinguished prior to de Saussure [1]. Only when his works appeared, linguistics had been recognised as a scientific discipline and scholars reached the conclusion that grammatical systems can be changed through the process of language acquisition. Later the development of the "principles and parameters" approach to syntax in the work of N. Chomsky [2] provided a solid foundation for the development of a rich and insightful approach to comparative and historical syntax and now diachronic syntax is becoming fully integrated in contemporary syntactic theory. Here we regard diachronic syntax as a form of comparative syntax, where the comparison is between two different stages of the same language rather than between two different languages or dialects. Concerning the nature of syntactic structures, we also adopt the theory developed by Noam Chomsky and his associates and known as generative grammar [3].

According to this theory, all languages are systems, or rather series of interrelated systems governed by rules. Languages are highly structured; they consist of patterns that appear in various combinations and rules that apply to produce these patterns. Because any language is systematic, the history of any language is the history of change in its systems. Change occurs at different rates and times within the subsystems of a language.

Research

The particular aspect of language change that we are interested in is syntactic change, particularly change in the means by which words and phrases are combined in English to form composite sentences. The approach described in this paper also combines the insights of formal syntactic analysis with quantitative methodology and the tools of corpus linguistics.

We also believe that the historical development of a language as a continuous slow process without sudden breaks and quick transformations. Nevertheless we find it convenient to follow the commonly accepted division of the English language into three periods. Of course, these periods are matters of convenience and the dividing lines between them are purely arbitrary. But within each of the periods it is possible to recognize certain broad characteristics and certain special developments that take place. Thus, the period from 450 to 1150 is known as Old English. It is sometimes described as the period of full inflections, because during most of this period the endings of the noun, the adjective, and the verb are preserved more or less unimpaired. From 1150 to 1500 the language is known as Middle English. During this period the inflections, which had begun to break down toward the end of the Old English period, become greatly reduced, and it is consequently known as the period of leveled inflections. The language since 1500 is called Modern (New) English. By the time we reach this stage in the development a large part of the original inflectional system has disappeared entirely, and we therefore speak of it as the period of lost inflections [4, 46].

Scholars studying the diachronic development of English agree that word order in Old English, at least compared with that in Modern English, was relatively free. Old English was mostly a synthetic language and possessed a system of grammatical forms which indicated connections between words. The word order of Middle English, predictably, falls between that of Old English and that of Modern English, less free than Old English but often with more options than Modern English allows. Further, the tendency toward rigidity of syntax increases throughout the Middle English period as inflections are lost [5, 180].

There are many excellent modern books on Old English, but most focus on the material needed for a basic literary understanding of the poetry and prose of the period, or have other limited goals. Some books also proceed to more advanced study in English historical linguistics and deal with Old English spellings, sounds and morphology but either do not address syntax at all or cover only word order and simple sentence patterns.

The syntactical structure of Old English was determined by the nature of its morphology on the one hand, and by the relation between the spoken and the written forms of the language, on the other. As Old English was mostly a spoken language, its written form resembled oral speech (with the exception of translations from Latin and poems, as "the old poetic language on the whole showed a great many divergences from everyday prose, in the choice of words, in the word forms, and also in the construction of the sentences" [6, 54]). As a result, the syntax of the sentence was relatively simple: complicated syntactical constructions occurred rarely, coordination of clauses prevailed over subordination though composite sentences occurred rather frequently. Still in early

original prose many constructions are not very accurate and seem disorderly and loosely connected; the prose of this period is characterized by unexpected turns from direct to indirect speech, by polysemantic conjunctions and other connectors, distant position of modifiers and the words they modify and so on. Still Old English syntax is recognizably English; in some passages the word-order at least is almost without exception that of the modern language. At other times, we seem to be wrestling with a foreign language.

In Old English there were different ways of syntactical connection of the clauses within a composite sentence: clauses could be linked together with certain connectors, that is syndetically; clauses could be linked together by their order without a connector (asyndetically); some subordinate clauses could be joined by definite forms of the verb. These means of syntactical connection were often combined and in some cases the distinction between coordination and subordination is very subtle.

For example, when sentences of different syntactical value are simply placed together, one by the side of the other, we usually refer to this type of connection as paratactic (parataxis or coordination). The absence of connectors is a characteristic feature of this type of connection and the clauses here look as if they were independent of each other. But what seems to be parataxis, mere coordination in this connection, is only apparent; on closer observation we realize that parataxis with complete independence of the sentences does not occur at all because clauses cannot be connected without a certain kind of hypotaxis or subordination. The fact that two sentences are put together paratactically proves that there is a logical connection between them, that one sentence in some way modifies the other. In other words, what seems formally a paratactic connection is logically hypotaxis or subordination [7], e.g.:

- Ic wat, inc waldend god abolgen wyrð ...[8] – I know **[that]** the ruling god will be angered by you two ...
- Be þam ylcum fæderum, we foresprecende wæron, awriten is ... [9] – It is written by the same preachers of **whom** we were talking ...
- þā cōmon þēōfas eahta, woldon stelan þā māðmas [10] ... – And eight thieves came there, **who** wanted to steal the treasure ...

The second clauses in the examples above are actually, though not formally, subordinate to the clauses preceding them; for this reason they are sometimes referred to as "semi-subordinate clauses" [11, 102].

These examples prove that Old English did not draw as clear a distinction between subordinate and coordinate clauses as is the case in modern English. Besides, though Old English had a few ways of subordinating one clause to another, it favoured the other pattern of parataxis – the juxtaposing of clauses with no formal signal of their relationship other than a coordinate conjunction:

- **þa** he forþ on þat leoht com, **þa** beseah he hine under bæc wið þes wifes, **þa** lesode heo him sona ... [12] – **Then [when]** he came forth into that light, then looked he back toward that woman, **then** slipped she from him immediately ...

Thus, we can say, that to some extent on the whole Old English syntax is paratactic, that is lacking subordinating conjunctions, at least in comparison with syntax in Modern English, which is hypotactic, that is characterized by the use of dependent and subordinate clauses. In Old English texts there was much less of the complex subordination that characterizes English prose now. Most syndetic clauses within the sentence tended to be linked simply by the conjunctions "and/ond" meaning *and* and "þā" meaning *then/when/after*:

- Þā geahode se cyning Polimius be ðām witseocum menn, hu sē apostol hine fram ðære wōdnysse ahredde, **and** het hine to him gelangian [13] ... – When the king Polymius heard of the mad man and how the apostle had saved him from madness, he asked him to be fetched ...
- Þā ofslihð se dēōfol ðe him wiðstandað, and hī þonne farað mid halgum martyrdome to heofenan rice [13]. – **When/After** the devil destroys those who resist, they go to the heaven as holy martyrs.

When we consider these and other conjunctions in Old English we realize that they are polysemantic and express different types of coordination and subordination. Thus, the conjunction *swa* in the examples below introduces temporal (1), adversative (2) conditional (3) types of clauses and clauses of manner (4):

• (1) … heora blōd is heora lif, and **swa** hraðe swa hi beoð dēāde, **swa** beoð hī mid ealle geendode. – … their blood is their life, and **as soon as** they are dead they are totally ended [13].

• (2) We sind Godes gefylstan, **and swa** ðeah ne do we nan þing to Gode buton Godes fultume [13]. – We are God's ministers, **yet** we do nothing for God with out his help.

• (3) … þu scealt greot ētan þine lifdaga **swa** þu laþlice wrohte onstealdest [8].– … you shall eat the earth all your life long **because** you have committed an awful crime …

• (4) Drihten cwæð, Far **swa** ic ðe sæde [13] … – The Lord said: "Go!" **as** I said to you …

Another thing that is so peculiar about Old English is its fondness for correlation. This may have its origin in, and so be a more sophisticated manifestation of, the same feeling of insecurity in the face of the complicated sentence which produced repetitions and loosely connected clauses as mentioned above:

• **Swa swa** man afandað gold on fyre, **swa a**fandað God þæs mannes mod on mislicum fandungum [13] … – **As** a man tries gold in the fire, **so** God tries the mind of man …

• **Þa** wearð hē and ealle his geferan forcuþran and wyrsan þonne ænig oðer gesceaft; **and þa** hwīle þe hē smeade hu hē mihte dælan rice wið God, **þa hwīle** gearcode se Ælmihtiga Scyppend him and his geferum helle wīte … [13] – **Then** he and all his followers became more wicked and worse than any other creatures; **and while** he meditated how he might share power with God, the Almighty Creator prepared hell-torment for him and his followers …

Conclusion and Perspectives

Much of the difficulty with correlative pairs arises from the fact that the conjunction and the adverb have the same form. All that also proves the fact that subordination in Old English was not developed enough, subordinating conjunctions needed the support given by correlative particles and the whole system of subordination in Old English had just started to develop.

We believe that our further research should be aimed at disclosing more subtle distinctions between different types of conjunctions and conjunctive words in the making of the composite sentence as a major structural sentence pattern of English.

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Способы синтаксической связи в древнеанглийском языке (на материале сложного предложения)

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Аннотация. В статье рассматривается эволюция средств связи между частями сложного предложения в английском языке. Особое внимание авторы уделяют древнему периоду развития английского языка, останавливаясь на зависимости синтаксических связей от морфологической структуры языка. Проведенный анализ фактического материалы позволяет сделать вывод о преобладающей роли паратаксиса и слабой развитости подчинительных связей в сложных предложениях древнеанглийского языка.

Ключевые слова: Древнеанглийский язык; синтаксис; подчинение; паратаксис; сложное предложение; средства связи; диахрония; англо-саксонский период.

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Developing General Cultural Literacy through Teaching English in a Russian University: Competence and Semiotic Approach

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Abstract. The article is devoted to some of the issues of teaching English in a Russian university, which arouse as a result of introducing new educational standards and it discusses the ways of forming students' general cultural competence by using authentic curricula, in order to meet the requirements of those standards. It also shows the importance of semiotics for acquisition a foreign language and culture, and reveals the worth of "personalia" as a culture language sign, as well as peculiarity of its functioning, which lies in its ability to represent social and cultural values and priorities in personal-precedential form, thus making a contribution to developingan individual'sconcept scheme and, consequently, general cultural literacy.

Keywords: general cultural competence, sign, personalia, concept scheme, federal educational standards, higher educational institutions, English language teaching.

Introduction. There is no need to argue that the main trend in the development of science, technology, education and other areas of human activity in the twenty-first century is the trend towards globalization. As a result, each individual is included in the process of intercultural communication, both in terms of personal and professional interactions. Reforming the system of Russian higher education implies changes not only in the formal structure, but also its content component.

According to the new educational standards of higher professional education, the most important task of the university is to help the students develop the competences (ability to apply knowledge, skills and personal qualities)vitally important for the further successful professional and social life. Those may include social and cultural, administrative and managerial, academic and professional competences. Russian federal educational standards divide them into two groups: general cultural and professional ones. Being a general academic subject, teaching foreign language is aimed, in the first place, at forming a student's ability to be a full participant of intercultural communication. However, it is not limited to this mission, and that is the subject of this research.

Materials and methods. The sources for this articleare the authentic textbooks for English as a foreign language students published by various British publishing houses: Macmillan, Heinemann, Express Publishing, as well as some fundamental research of the Russian scientists

and Federal educational standards for higher institutions. The methods used in processing the material are: method of continuous selection, method of comparative contextual analysis, method of applied analysis.

Discussion. The requirements of Federal educational standards must be met and are clearly reflected in the curricular used for teaching English in Russian universities. Here we are going to discuss how it is achieved and provide some examples. One of thestandards says "the graduate must possess the culture of thinking, be able to synthesize, analyze and process information", and this is perfectly realized in most language-learning tasks, especially the reading ones, as follows:

"What is personal information?

Personal information is information about you. It can be your name, address or telephone number. It can also be the type of job you do, the things you buy whenyou are shopping and the place you went to school.

Why is managing my personal information important?

Today, like it or not, our personal information is held by many public and private organisations. These may include:government departments, banks and building societies,gas, electric, phone and internet sservice providers, supermarkets and high-street retailers,employers,hospitals and doctors,mail-order and internet companies, the police,schools, airlines and travel agents, local councils.

What is my personal information used for?

Although most of the personal information stored about you will provide benefits like better medical care and financial reassurance, it also brings dangers. If your personal information is wrong, out of date or not held securely, it can cause problems. You could be unfairly refused a job, benefits or credit, or a place at college. In extreme cases, you could be a victim of identity theft or arrested for a crime you did not commit.

(Extract taken from Personal Information Toolkit, 2007, published by the Information Commissioner's Office)

Example:

Personal information includes details of where you live. **T**

33 Personal information includes information about your family.

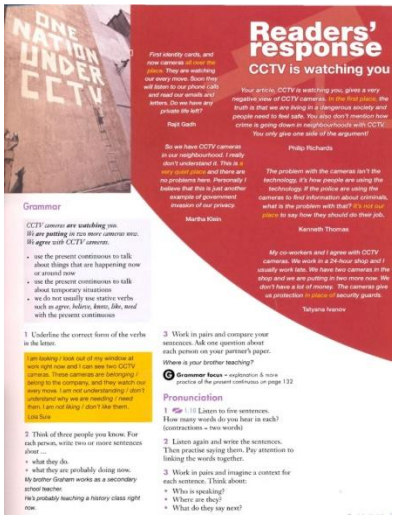
34 Some people do not like organisations holding their personal information.

35 The leaflet lists all the organisations that hold your personal information.

36 Private organisations are not allowed to hold personal information.

37 Social networking sites store your personal information.

38 Personal information is not kept by shops.



39 Utility companies hold your personal information.

40 On balance, storage of your personal information is likely to be positive for you.

41 If your personal information is wrong, your doctor could refuse to treat you.

42 It is likely that you will be a victim of identity theft if your personal information is wrong".[6], which teaches the students to compare and contrast the ideas, and analyze the meaning of different lexical and grammar structures.

A lot of Russian students admit they have learned to structure their thoughts thanks to numerous step-by step writing tasks in the authentic English text books, thus building the required by the standards ability "to be able to build oral and written argument logically and clearly".We consider it unnecessary to provide samples of these tasks here, as they can be found in every textbook aimed at learners of different age.

Another excellent example of developing the right competences is represented by the text "Readers' response" in Macmillan Global pre-intermediate [1], where we can find a discussion of the positive and negative effects of using CCTV cameras, demonstrating "abilityto understand significance and function of the information in the development of modern society, to recognize the dangers and threats caused by this process".

Finally, there is no doubt cognition of your individual self is of primary importance, and the authors of Macmillan Global Intermediate [2] give the language learners a wonderful opportunity to understand the way they perceive information, so that they could use this knowledge both for their own benefit and for the social good, which fully corresponds to the competence “to critically evaluate their strengths and weaknesses, to chose the ways and means to developtheir best qualities and address the shortcomings”.

The second issue caused by impact of these global processes is the change of formation principles of students’general cultural competence, entailing the transformation of the conceptual scheme of culture representative. The notion of a conceptual scheme was developed by such researchers as W. Quine, D. Davidson, P. Strawson, M. Lebedev. The latter, having systematized all the existing points of view, defines the term as "a set of common worldview and elements of knowledge, i.e. some (scientific) view of the world "[3]. Language training of a modern specialist certainly involves not only teaching to find, analyze and organize information from various sources in foreign languages, but also developing the ability to determine its cultural value. Thus, the process of foreign language teaching in modern conditions turns more into the process of enriching cultural experience and the formation of the overall cultural competence of students.

General cultural competence is defined A.V.Khutorskoy as a "range of issues in relation to which the student must be competent, must have knowledge and experience of, it features national and universal culture, spiritual and moral foundations of human life and humanity, cultural foundations of family, society, social phenomena and traditions, the role of science and religion in human life ... and the same referrers to the experience of students’understanding of the scientific picture of the world, expanding to all mankind, and to cultural understanding of the world" [4]. Formation of general cultural competence takes place on the basis of common cultural content of education, including the "foundations of science, arts, domestic and international traditions ... which are reflected in the school subjects and learning areas, and is expressed in the form of concepts, laws, principles, methods, hypotheses, theories, ritual actions, text, and other works of art that are considered fundamental achievements of the mankind" [4]. Without mastering this complex knowledge of ideas, values, ways of learning, thinking and practice it is impossible to imagine relationships and interaction among people, harmony between an individual and society, people and nature.

One of the means of forming general cultural competence in the process of teaching a foreign language can be the signs of the language of culture . Language of culture, in the broadest sense, are those tools, signs, symbols , texts, which allow people to enter into communication with each other, and to guide them in the cultural space. Language of culture is a universal form of understanding reality, which organizes all emerging or already existing ideas, perceptions, concepts, images, and other similar meaningful patterns or, otherwise, carriers of meaning. The basic structural unit of the language of culture, in terms of semiotics are sign systems. Sign is a material object (phenomenon, event), acting as an objective replacement of some other object, properties or relations,being used for acquisition, storage, processing and transmission of messages (information, knowledge). Having acquired its significance, the sign begins to function as an independent unit, influencing, in a certain way, the recipients by the meaning stored in it. The complete understanding of its content depends on various socio-cultural factors, such as age, education, belonging to different social strata and religious denominations, etc. Personalia, which in this paper is understood as a proper name of a fictitious or real personality, is characterized by recognition and importance for the natives of culture, and reflects their cultural and moral orientations, values and attitudes. Study of personalia as a sign of culture allows to detectthe national-specific value systems reflected in this unit which exist in culture natives’ conceptual sphere, as well as the universal elements relevant for most cultures, and evaluate the contribution thissignmakes to the formation of the general cultural competence. [5]

The importance of information transmitted by a proper name is recognized by the representatives of various science and the research of these units has a long academictradition .However, the significance of personalia isbroader and more complex than of the name, as the substantial components of this sign may refer to several sociocultural concepts at the same time. Each personality as a sign of language of culture, corresponds to a certain "set of semantic features", i.e. content of this unit, and in this set there exist characterizing features of two types.

Some reflect the actual data associated with the name, others carry information about the priorities of social activities of individuals to establish universal values.

Nevertheless, when being used, as a rule, the entire set of semantic properties of personalia is not fully realized, but only those which have a priority value for a particular communication purpose, and thus, it is possible to unite a number of personalias into a specific category according to a dominant trait. In other words, they allow you to judge about the relevance of the person's individual qualities for thesociety and about the pursuit to develop them in a human being. Examples of name substituing certain human characteristics can be observed in many educational and journalistic materials, as well as in fiction.

For instance, in one of the learning tasks students should identify in the text dialogue expressions different from record. One of them is the following phrase, which can be seen as an ironic statement: «You're not exactly Miss Einstein yourself!»[6], which in the text of this entry corresponds to the expression: «You are stupid too!».

Similarly, we can evaluate the following example:

«His name was Brad. And he did look a bit like Brad Pitt» [7]. The main characteristic implemented in this context is obviously the visual appeal, beauty and sexuality.

This kind of generalization, for example, may be observed in those cases when it comes to analyzing the widespread popularity ratings based on various criteria. In particular, among the encountered in contemporary periodicals and Internet sites are the following rating categories: influential, popular, sexy, famous, recognizable, well-dressed, and some others, somehow similar to the categories listed above.

We believe that the personalias are associated with certain concepts through characterizing features contained in them. As a basis for the interpretation of concept we take the term of Y.S. Stepanov, i.e.: "The concept is a phenomenon of the same order as the notion. Concept is a clot of culture in human consciousness; something that makes culture part of the mental world of a human being, it is a "bunch" of ideas, concepts, knowledge, associations and feelings that accompany the word. Unlike the meanings concepts not only can be understood, they are experienced. They are the subject of emotions, likes and dislikes, and sometimes conflicts. On the other hand, the concept is something with the help of which people, ordinary, normal people, not "the creators of cultural values" get involved and included into culture, and in some cases affect it "[8], Characterizingproperties form the conceptual configuration comparable to the configurations of concepts. Personalias reflectsuch concepts as: Collectivism and Individualism, Focus on Relationships and Desire to Succeed, Tradition and Novelty, Beauty and Benefits, and all of them, basically, are a representation of socially constructed values.

The meaning of the personaliasis born in the interaction between the sign and the recipient due to the work of the individual consciousness of the perceiver, and the ability to perceive depends on their aggregate socio-cultural experience. The recipient understands the meaning of personalia not as a reference to a particular individual or real factual information, but rather as an evaluation of the activityof the denoted person according to the social and cultural criteria existing in the community he belongs to. As a result,personalias become the personification of priorities of activities and their incentive. The main function of personalia, in our opinion, is to present information about the major worldviews of a particular community, expressed in person - shaped form, and education is the most important area in which personalias realizetheir function.

Proceeding from the fact that the possibility of reference is guaranteed by some level of knowledge about the object, we conclude that there is an interdependence between a personalia and the conceptscheme of the native of culture, which becomes apparent in its adjustment according to the value, philosophical and ideological attitudes of the community. In the process of learning a foreign language educator often finds that students are unable to decode some signs of the language of culture, personalias in particular. There are two variants of contextually conditioned impossibility to identifie the referent of the definite descriptions. In the first case, the situation is caused by the fact that the knowledge possessed by the recipient, not high-grade enough, incomplete or does not meet the requirement of truthfulness. A typical example of the difficulties associated with the lack of knowledge can be the problems of representatives of non-native culturesin the quest to matchpeople to their achievements:

"The 35th president of the USAwas:

a) Bill Clinton b) J.F. Kennedy".[9]

or:

America	invent discover	Captain James Cook
The television		John Logie Baird
Australia		theWrightBrothers
The telephone		Christopher Columbus
Theairplane		Alexander Graham Bell

[9].

In the situation of insufficient knowledge the context can be clarified by means of coordinating a recipient's individual conceptual scheme and the scheme, shared by all the members of the community. In this case, a common concept scheme represents some minimum allowable knowledge and coordination, in this case, will occur ascompleting the recipient's knowledge by obtaining the missing information. Thus, the recipient'sindividual concept scheme can be adjusted according to the model the commonly shared standard scheme, since most of personaliaspresented in the textbooks are individuals who have made a discovery or an invention of world significance.

According to E.S. Kubryakova "as soon as the speakers of a particular language obtain "additional information about the world, "they also acquire (through the meaning of the words or patterns in theirvocabulary) a range of information about the objects of the world or its structure, and the reflexes of such information replenish the conceptual system of the speakers of the language. Which part of the system they will become –will the specified range of information be included in its core or its periphery – does not depend on language, but on the ontological essence of the designated and its pragmatic value. In this sense, you cannot leave beyond the conceptual picture of the world what a person's thought in the act of nomination was already aimed at , and what has already been recorded in the form of socially proven conventional sign". [10] Consequently, the introduction of new information entails not only broadening of the horizon of knowledge, but also the transformation of worldviews.

Moreover, there is also another version of a mismatch resulting from the conflict between the two social concept schemes fixed by natural languages and existing in socio-cultural communities. Coordination of such schemes causes the need not to adapt to something conventional to eliminate inconsistencies, but to establish equivalence between two classes of concepts. This situation can be understood easier if we use such description as "the inventor of the radio." In this case, natives of the Russian-speaking culture refer this description to the nameof A. Popov, whereas in the western world the authorship of the invention of this device is attributed to G. Marconi, as we can see in the reference books and educational textbooks, which are an integral part of the educational system. Moreover, whereas lately in Russia, Marconi's name, anyway, is mentioned in connection with the invention of the radio, Popov'sname does not appear in non-Russian information sources at all. Therefore, coordination of concept schemes in these cases require explanation that each of these descriptions matches two referents, and to identify an exact match, there can be used clarifying descriptions, for example, in the latter case it may be such a descriptive characteristic "the owner of the patent for the invention of radio".

Analysis of the empirical materialhas shown that personalias differ in the way they are mentioned in the text of books depending on how detailed their presentation is. There can be identified three forms of presenting information: a detailed account of an individual, brief biographical information and a mere mention.

In the first case, understanding of the significance of personality for the culture provides detailed context representing both factual information and connotative elements traced in keywords and the author's expressive and evaluatingcharacteristics. As a rule, this method of presentation is typical for personalias with the characteristics especially important for the people belonging tothe Western culture, but, perhaps, unfamiliar to foreign-language readers, for example, Cindy Jackson. However, such a unit can not be regarded as a real sign when being presented for the first time, because, as pointed out by Ch.S. Pierce,a compulsory condition of the sign's functioning is representing an already known idea,which is not observed in this case. So, the relationship between the signifier, referent, concept and connotation is formed by direct acquaintance with the information, but the next presentation the mentioned proper name cannot be considered as sign for the perceiver.

Nevertheless, for the sender of the message, this figure is already a sign, and, therefore, it is possible to trace the means used to convey the meaning and to form the semiotic units in the minds of the recipient. First, based on the factual information provided in the context develops the substantive significance, i.e.notion. Secondly, emotive lexicon can give an idea of the author's or authors' of the text as a cultural community representatives' attitude to the individual, representing the specific properties and characteristics. These aspects make the referent and interpretantof the sign. However, according to Ch.W. Morris who developed the theory claiming the process of semiosis also includes the impact of the sign and its interpreter, it is logical to assume that the final meaning of the analyzed unit, according to the results of its interpretation will depend on the moral and values of the interpreters. An example of such a situation could be personalities such as Helen Keller. Her name is not as widely known in the Russian cultural environment, although this woman, thanks to the invention of specific communication systems, has enabled deaf people to communicate with each other. However, due to the established in contemporary Russian culture attitudes towards disability, perception of this personality occurs with some distortion in comparison with the meaningimplied by the sender. We can assume that, in this case, change of the meaningfor the recipient happens as a result of stereotype of persons with disabilities existing in a socialist society,who are unable to become productive members of community. Here we see, among other things, a reference to the social value of "benefit" made by a corresponding concept. For the natives of Russian culture, understanding of the significance of this kind of personalities causes a contradiction between the features of utility, socially significant achievements embodied in these signs and their own socio-cultural settings. So, the perception through the prism of the specific socio-cultural stereotypes of the Russians distorts the original idea of iconic figures and changes its meaning in subsequent presentations of the personalia.

Many texts and tasks of the authentic textbooks promote the idea of equal opportunities for all peoplethat emerged initially on the ground of American culture. This is evidenced by the facts contained in the biographical information regarding various celebrities. For example, Madonna worked as a waitress, Elvis Presley was a truck driver, Sylvester Stallone began his career as a carpenter [11].

Another typical example of the importance of the individual for Western culture we see in the statement quoted in one of the books: «When you go to work, if you see your name on the building, you are rich, if your name is on your desk, you are middle-class, if your name is on your shirt, you are poor »[1]. On the contrary, in the Russian tradition it was not commonto advertise your name openly orto calla company after yourself; this trend appeared only in the recent years under the influence of globalization.

To sum up, learning a foreign language not only contributes to the development of the students' communication skills but creates favourable conditions for building their general cultural competences so highly demanded in the modern world.

As forpersonalias, which, being the signs of the language of culture, areassociated with relevant concepts in the minds of its natives, they are a personal-precedential form of expressing the socio-cultural values, they accumulate information about the ideal in culture, for example, to be useful for the society, or to be famous and influential thanks to money, appearance or unusual behavior. Presentation of personalities in the process of teaching a foreign language does not only contribute to the development of knowledge of students, but also a change in their perception of the world, values, cultural understanding, and, consequently, the formation of the general cultural competence of the future specialist.

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